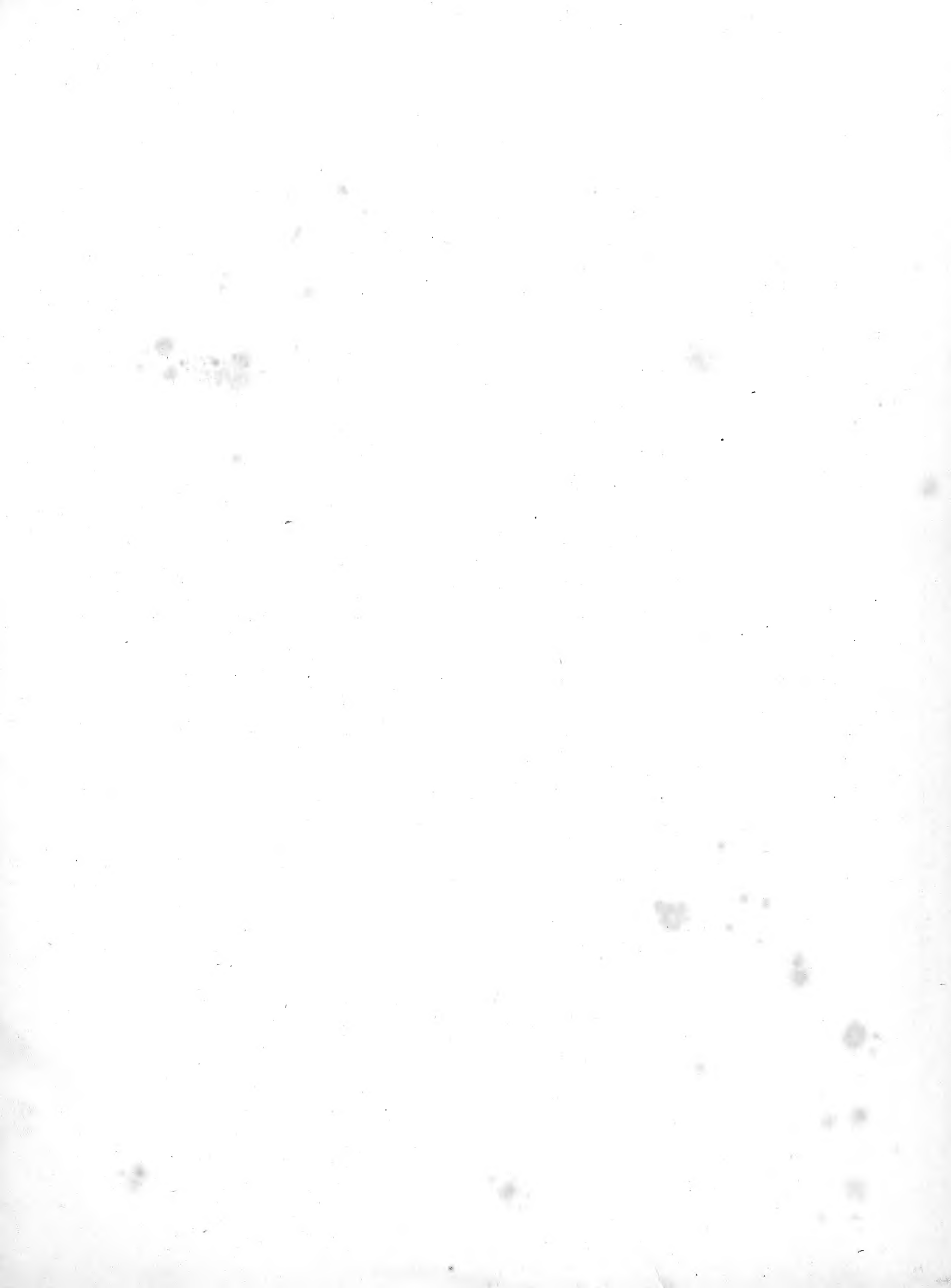
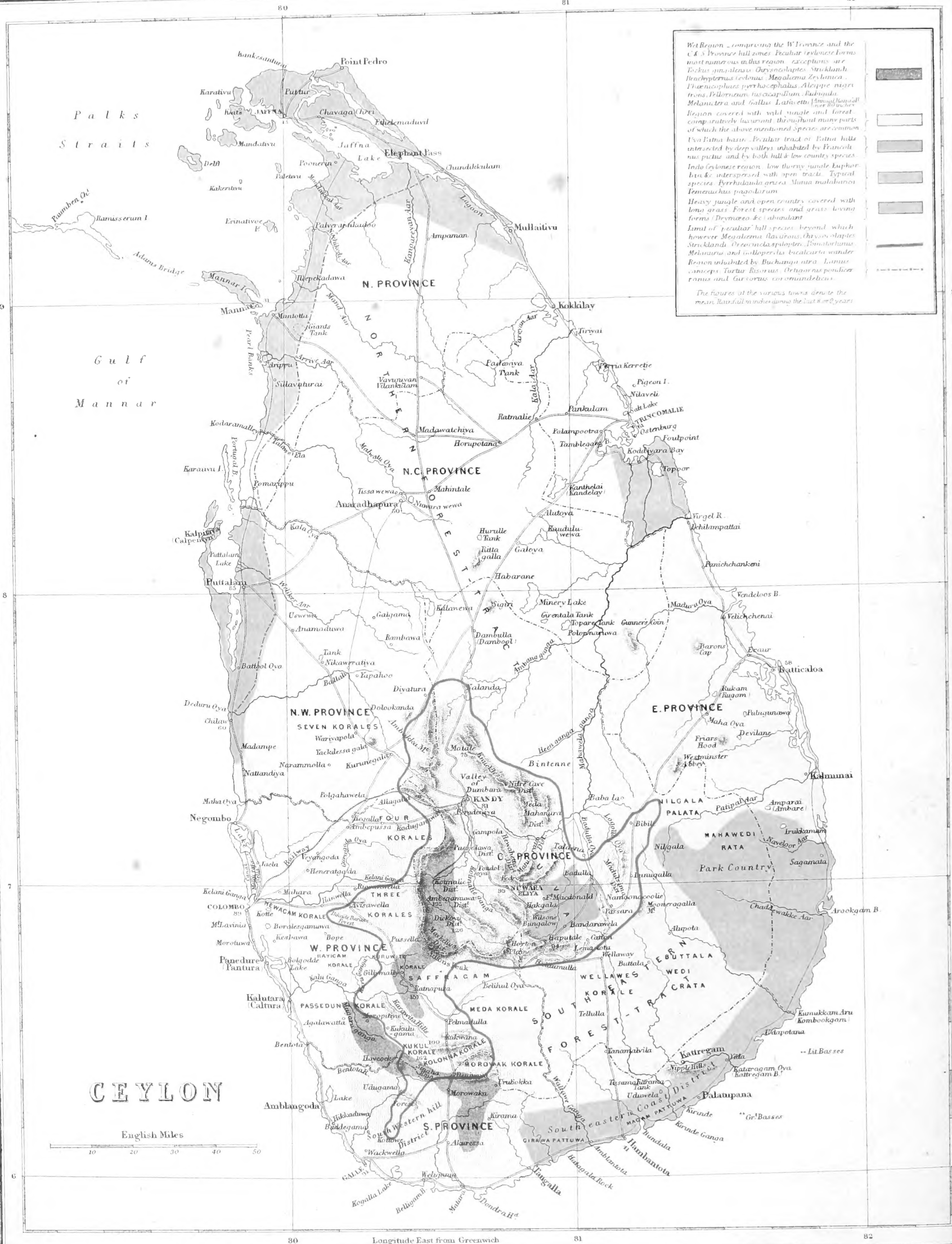


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A HISTORY
OF THE
BIRDS OF CEYLON.

BY

CAPTAIN W. VINCENT LEGGE, R.A.,

FELLOW OF THE LINNEAN SOCIETY.

FELLOW OF THE ZOOLOGICAL SOCIETY.

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION,

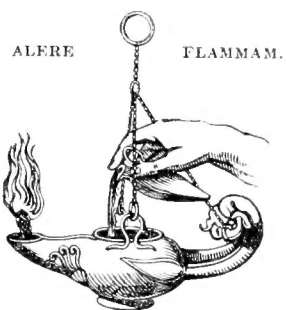
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ETC., ETC.

LONDON:

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TO

HIS ROYAL HIGHNESS

ALFRED ERNEST ALBERT, DUKE OF EDINBURGH,

K.G., K.T., G.C.M.G., P.C., ETC.,

THIS WORK IS DEDICATED,

BY SPECIAL PERMISSION,

IN MEMORY OF THE VISIT OF HIS ROYAL HIGHNESS TO CEYLON

IN THE YEAR 1870.

BY HIS OBEDIENT HUMBLE SERVANT,

THE AUTHOR.

P R E F A C E.

OF late years Ornithology has made more rapid strides than perhaps any other branch of zoological research. In Oriental regions more particularly many naturalists have, within the last quarter of a century, prosecuted their studies with the greatest vigour; enormous collections have been made, entirely new regions explored, and their avifauna investigated with all that energy which collectors of the 19th century bring to bear on their work and doings in the forests of the tropics. The pens of Blyth, Jerdon, Wallace, the Marquis of Tweeddale, Swinhoe, Père David, and Allan Hume have brought our knowledge of the avifauna of India and the countries to the eastward of it to a high degree of perfection. At the time of the author's arrival in Ceylon much had been done by Layard, and the results of his labours were being largely added to by the researches of Mr. Holdsworth; but nevertheless, up to that period, no complete treatise on the birds of the island had been written. As a rising British colony, with fast-developing resources and wealth, an increasing European community, and an educated element in the native population, the production of a book on its avifauna which should take a place in the series of zoological works which are invariably the outcome of civilization seemed to the author a positive necessity.

This idea was combined with a strong desire to create a taste for natural history in the minds more particularly of the educated native community, and the hope of founding an ornithological school in Ceylon, such as had been the effect of the labours of Jerdon in the Indian empire.

With this view, therefore, the author devoted his entire spare time during an 8½ years' residence in the island to the study of its ornis and the amassing of a large collection of specimens. Towards the close of his work he received no little encouragement in a promise of help from the Government made to him by the late Governor, Sir William Gregory, who, during his term of office in Ceylon, did so much for the advancement of science in all its branches, and to whom the author is much indebted for his recent exertions with the existing Government on his

behalf. On his return to England in 1877 it only remained for the author to combine his acquired knowledge of the life-history of the birds of Ceylon with a comparison of his collection (the largest ever made by one individual in the island) with series of specimens and skins in the British Museum and the collections of brother ornithologists in London, illustrative of the ornis of adjacent countries; and after three years of *incessant* labour the work has been brought to a conclusion.

A non-residence in London, within daily reach of the libraries, with their stores of ornithological literature, and the collections with which that great civilizing centre teems, has been a serious disadvantage to the author. Furthermore the vast amount of correspondence and supervision which the publication of the work entailed on him was much increased by his residence at a distance from those engaged in its printing and illustration. The scientific reader will therefore, it is to be hoped, pardon the various shortcomings which the author feels must, on this account, exist throughout the work.

Its mission, however, is not to impart knowledge to the scientific ornithologist in Europe, for it cannot pretend to any such degree of merit; it is intended purely as a text-book for the local student and collector in Ceylon; and though the author has as yet met with comparatively little support among the class for which he has worked so hard, yet if he succeeds in inculcating in the minds of only a few of the inhabitants of Ceylon a taste for the study of birds, which he apprehends must always rank foremost among the wonderful creations of an all-wise and bountiful Providence, his labour of love will not have been in vain. On the other hand, while his sincerest gratitude is evoked by the patronage which the Royal Family have been graciously pleased to bestow upon his humble labours, the author cannot but tender his best thanks to his friends and the general public in England for the cordial manner in which they have supported him.

W. V. LEGGE,
Captain R.A.

Aberystwith, September 2, 1880.

INTRODUCTION.

THE island of Ceylon, although it contains none of those remarkable forms which characterize the birds of some of the Malay islands, undoubtedly possesses a rich avifauna; and, considering its geographical area (about five sixths that of Ireland), the number of species is very large. The tropical position of Ceylon, coupled with its location in the path of the monsoon winds and rains, fosters the growth of luxuriant vegetation and verdant forests, which, as a matter of course, teem with all that wonderful insect-life necessary for the sustenance of birds, and hence the large number of resident species inhabiting it; whilst the fact of its being situated at the extreme south of an immense peninsula makes it the finishing point of the stream of Waders and Water-birds which annually pass down the coasts of India; and, lastly, the prevalence of a northerly wind at the time of the migration of weak-flying Warblers brings these little birds in numbers to its shores.

The abundance of the commoner species inhabiting the cultivated country near the towns on the west coast, and the semicultivated interior traversed by the railway and the highroads leading to the principal towns, at once strikes the traveller on his arrival in the island; and the wonderful variety of bird-sounds heard during the course of a morning stroll, though they cannot vie in sweetness with the notes of the denizens of English groves, are, notwithstanding, quite as attractive. The laughing voice of the larger Kingfishers, the extraordinary booming call of the "Jungle-Crows" (*Centropus rufipennis* and *C. chlororhynchus*), and the energetic shouts of the Barbets when first heard fill the European traveller with astonishment, and more than compensate for the absence of the mellifluous voice of the Thrush and Blackbird.

As regards brilliancy of plumage, when we consider the tropical nature of their abode, the birds of Ceylon are decidedly mediocral. We find but little of that conspicuous beauty which characterizes the avifauna of many of the islands of the Austro-Malayan region, or even some of the birds of the Himalayas, nor do we meet with the gorgeous plumage of those of tropical America, or even the handsome dress worn by so many of the feathered inhabitants of African forests. When the naturalist has made the acquaintance of the Sun-birds, Pittas, and Kingfishers there is not very much left in the way of brilliant plumage to attract him. Notwithstanding, many species are conspicuous for grace and elegance of form combined with an attractive coloration; and if we except the above-mentioned families, the *peculiar* birds of the island number among their ranks some of the most beautiful species inhabiting it.

Before proceeding to the consideration of the ornithological features of the island, it will be well to notice briefly the labours of those naturalists who have heretofore interested themselves in the birds of Ceylon.

Labours of former Writers.—In 1743 George Edwards, Library Keeper to the Royal College of Physicians, published a work entitled ‘A Natural History of Uncommon Birds,’ and in it figured several species inhabiting India and Ceylon, among which were “The Black Indian Cuckow” (*Eudynamys honorata*), “The small Red-and-green Parrakeet” (*Loriculus indicus*), “The Black-and-white Kingfisher” (*Ceryle rudis*), “The Indian Bee-eater” (*Merops viridis*), “The Black-headed Indian Icterus” (*Oriolus melanocephalus*), “The Crested Red or Russet Butcher-bird” (*Lanius cristatus*), “The Pyed Bird of Paradise” (*Terpsiphone paradisi*), “The Purple Indian Creeper” (*Cinnyris asiaticus*), “The Cowry Grosbeak” (*Munia punctulata*), “The Short-tailed Pye” (*Pitta coronata*), “The Minor” (*Eulabes religiosa*), and “The Emerald Dove” (*Chalcophaps indica*). Of these it will be observed that but one species, the Lorikeet, is peculiar to the island.

During the latter half of the eighteenth century Gideon Loten was nominated Governor of Ceylon by the Dutch, and, happening to be a great lover of birds, collected and employed people to procure specimens of species which attracted his notice; and from his labours we first learn something of the *peculiar* birds of the island. He had drawings prepared of many species, which he lent to an English naturalist named Peter Brown, who published in London, in 1776, a quarto work styled ‘Illustrations of Zoology.’ His descriptions of the birds he figured were given in French and English, and related to the following species named by him thus:—“The Brown Hawk” (*Astur badius*), “Great Ceylonese Eared Owl” (*Ketupa ceylonensis*), “Red-crowned Barbet” (*Xantholæma rubricapilla*), “Yellow-cheeked Barbet” (*Megalæma flavifrons*), “Ceylon Black-cap” (*Iora typhia*), “Spotted Curucui” (*Cuculus maculatus*), “Red-vented Warbler” (*Pycnonotus hæmorrhous*), “Yellow-breasted Flycatcher” (*Rubigula melanictera*), “The Green Wagtail” (*Budytes viridis*), “The Rail” (*Rallina eurizonoides*), “The Pompadour Pigeon” (*Osmotreron pompadora*). The artist who delineated these species was Mr. Khuleelooddeen. Some of the drawings are fairly accurate; but others are grotesque and unnatural, showing the poor state of perfection to which the illustration of books had up to that time been brought.

We pass on now to a man of a different stamp, Johann Reinhold Forster, who gave Latin names to several of the peculiar Ceylonese forms which now stand, having been published after the Linnean period (1776). This author was likewise indebted to Governor Loten, of whom he speaks in his Introduction that he found a great field for his tastes in the science of natural history, and to assist him in his researches taught several slaves drawing. Forster’s work, entitled “Indische Zoologie,” was published at Halle, in Germany, in 1781, and is written in German and Latin, purporting to be a “systematic description of rare and unknown Indian animals.” The following species are figured and described:—*Circus melanoleucus*, *Strix bakkamuna*, *Trogon fasciatus*, *Cuculus pyrrhocephalus*, *Rallus phœnicurus*, *Tantalus leucocephalus*, *Anser melanonotus*, *Anhinga* (*Plotus*) *melanogaster*, *Anas pæcilorhyncha*, and *Perdix bicalcarata*. Through Loten’s instrumentality, therefore, 10 species were described by Forster, in addition to those which Brown figured, and which were afterwards named by Linnæus, Gmelin, and others. Prior to the advent of Templeton and Layard he did more for Ceylon ornithology than any other naturalist. One or two species were made known by Latham in his ‘Synopsis,’ such as the “Ceylonese Crested

Falcon" (*Spizaetus ceylonensis*) and the "Ceylonese Creeper" (*Cinnyris zeylonicus*); but these were afterwards found to inhabit India; and Levaillant figured two Barbets in his 'Histoire Naturelle des Barbes,' one of which (the Yellow-fronted Barbet) is peculiar to the island.

A long gap now occurs, when little or nothing was done to elucidate the avifauna of the island; and we hear nothing of the birds of Ceylon until Dr. Templeton, R.A., went out there to be stationed. Taking a great interest in the natural history of his temporary home, and at the same time not being a sportsman himself, he depended on his friends for specimens, which he forwarded to Blyth, then curator of the Asiatic Society's Museum, Calcutta, for identification. Fortunately for ornithology one of these friends was Mr. Edgar Leopold Layard, the now well-known ornithologist, and at present Her Majesty's Consul at Noumea. This gentleman, on his arrival in the island, set about collecting for Dr. Templeton, and, in his capacity as an officer in Government service, had ample opportunity for travel and exploration of the jungle.

The same zeal and untiring energy which has throughout life characterized Layard's career was brought to bear upon the study of the Birds of Ceylon; and in a few years his great exertions in collecting bore fruit in a series of papers called "Notes on the Ornithology of Ceylon," published in the 'Annals and Magazine of Natural History,' which demonstrated to the scientific world that Ceylon was far richer in birds than any one had supposed. The account of his important labours is best given in his own words, contained in his kind notice of this work in a late number of 'The Ibis':—"I arrived in Ceylon in March 1846, and for some time, having no employment, amused my leisure in collecting for my more than friend, Dr. Templeton, who had nursed me through a dangerous illness, and in whom I found a congenial spirit. My chief attraction there was the glorious Lepidoptera of the island; but I always carried a light single-barrelled gun in a strap on my back to shoot specimens for the Doctor. He himself, like Dr. Kelaart, never shot, but depended on his friends for specimens. I, of course, soon became interested in the 'ornis;' and on Templeton's leaving at the end of 1847 or beginning of 1848, he begged me to take up his correspondence with the late Edward Blyth, then curator of the R. A. S. Calcutta Museum. He left me his list of the species then known to exist in the island, numbering 183, and Blyth's last letter to answer. From that day almost monthly letters passed between the latter and myself, till I left Ceylon in 1853. The list and the correspondence are still in my possession.

"When I left I had brought up the list to 315; deduct from this the novelties added by Kelaart, and some which I think he has wrongly identified (but which are included in my list in the 'Annals and Magazine of Natural History'), 22 in number, and it leaves me the contributor of 110 species to the Ceylonese ornithology, examples of most of which fell to my own gun.

"My collecting-trips never extended to those hill-parts where Dr. Kelaart collected, Nuwara ELLIYA, &c. I was twice in Kandy, once at 'Carolina,' an estate near Ambegamoa, and once as far as Gillymally, *viâ* Ratnapura."

Besides this, Layard, as he informs me *in epist.*, collected from Colombo to Jaffna, *viâ* Puttalam, Jaffna to Kandy on the Central Road, Colombo to Galle, and round to Hambantota,

Pt. Pedro to Mullaittivu, and thence back to the Central Road. The specimens procured on all these trips, as well as during Layard's residence at Pt. Pedro and other parts of the island, were sent to Blyth for identification, which resulted in the names given by the latter to not a few of the peculiar forms. He published papers from time to time in the 'Journal of the Asiatic Society of Bengal,' and also in 'The Ibis' so late as 1867.

Blyth, however, received specimens from another source, namely, from Dr. Kelaart, a native of Ceylon, and who went out from England in 1849 as Staff-Surgeon to the Forces. This gentleman, though he did not shoot himself, obtained specimens of many of the hill-birds inhabiting the vicinity of Nuwara Eliya, where he resided, and furnished Blyth with skins and notes for some of his papers, one of the most important of which is a "Report on the Mammalia and more remarkable Species of Birds inhabiting Ceylon," published in the 'Journ. Asiat. Soc. Bengal' for 1851. In 1852 Dr. Kelaart published his 'Prodromus Faunæ Zeylanicæ' in Ceylon, chiefly noted for the outline account of the mammals and reptiles of the island, with which he was better acquainted than with its birds. For this work, Layard, as he writes in 'The Ibis' for the current year, supplied him with all his "lists and numerous specimens, not only of birds, but of many mammals and reptiles new to him; and it was arranged that we should bring out a second part of the 'Prodromus' (then in MS. only), which should consist of the Birds, to be written by me." It appears, however, that Kelaart broke faith with him, and issued his 'Prodromus' with the notice of the birds (Part II.) compiled by himself. Thus "left out in the cold," Layard, on his return to England, published the valuable notes referred to above. He also compiled a considerable portion of the notice of the birds of the island contained in Emerson Tennent's 'Natural History of Ceylon,' and furnished the author with voluminous notes, whilst his large collection supplied the materials for the "List of Birds" printed in the work. This was published in 1868, and besides describing the habits and instincts of the mammalia, birds, reptiles, fishes, and insects of the island, includes an interesting monograph of the elephant. During the interval between the last-mentioned date and the year 1854 scarcely any thing was published concerning the ornis of Ceylon, with the exception of a stray paper now and then contributed to the 'Journal of the Asiatic Society,' some of which emanated from the pen of Mr. Hugh Nevill, C.C.S., who recorded the occurrence of the Wood-Snipe in the Part for 1867, which was not published till 1870. At this time Mr. Holdsworth was devoting his attention to the ornithology of the island, and a co-worker, the author, who arrived on the island a year later (Oct. 1868), had likewise commenced to collect vigorously. Mr. Holdsworth, who landed in the island in September 1875, was sent out from England to study the habits of the Pearl-Oyster, and find out the cause of the failure of the Pearl-fisheries, with a view of advising the Government what should be done for their better management. His appointment necessitated his residence, off and on, at Aripu, which is adjacent to the Pearl-banks, and while there he devoted his spare time to a study of the birds in the vicinity of the station. He also collected at Colombo and at Nuwara Eliya during both monsoons. The outcome of his labours during seven years' residence in Ceylon was his "Catalogue of the Birds found in Ceylon," published in

the 'Proceedings of the Zoological Society of London,' 1872, and by far the most complete treatise which had ever been compiled on the avifauna of the island. The author devoted particular attention to the synonymy of the birds, which, up to that time, was in a very confused state; and the result was the working-out of the correct title of each species, which constituted a most valuable addition to the literature of the Ceylonese ornithology. The catalogue numbers 326 species.

In this list 24 species were added by the author, which are published under the following titles:—*Hypotrionchis severus*, *Picus æruginosus*, *Pandion haliaëtus*, *Buteo desertorum*, *Huhua pectoralis*, *Brachypternus puncticollis*, *Prionochilus vincens*, *Erythrosterina hyperythra*, *Arrenga blighi*, *Geocichla layardi*, *Zosterops ceylonensis*, *Estrela amandava*, *Chrysocolaptes festivus*, *Francolinus pictus*, *Chettusia gregaria*, *Terekia cinerea*, *Tringa salina*, *Sterna leucoptera*, *Sterna gracilis*, *Phaethon rubricauda*, *Sula fiber*, *Taccocua leschenaulti*, *Drymoipus jerdoni*, *Gallinago nemoricola*. Of the above, *Zosterops ceylonensis* was not an additional species, but a new name for *Zosterops annulosus* included in Layard's list. The *Butalis muttui* of Layard's list appeared also under another title (*Alseonax terricolor*), though this identification afterwards proved to be erroneous. *Arrenga blighi* was a new species described by Mr. Holdsworth from specimens procured by Mr. Bligh and himself.

A few were omitted, which the author considered had been species wrongly identified, or had been recorded by Kelaart on doubtful evidence; these were—*Ephialtes scops*, *Malacocercus griseus*, *Cisticola homalura*, *Phyllopneuste montanus*, *Phyllornis aurifrons*, *Heterornis malabaricus*, *H. cristatella*, *Picus macei*, *Alauda malabarica*, *Cuculus bartletti*, *Turtur humilis*, and *Branta rufina*. Among this number *Cuculus bartletti* appears to be the Small Cuckoo (*Cuculus poliocephalus*, p. 231); and *Turtur humilis* seems to have been accidentally omitted, as no mention whatever is made of the species. The *Zosterops annulosus* of Layard's notes, as we have seen, was discriminated as a new species. Figures are given of *Arrenga blighi*, *Zosterops ceylonensis* and *Z. palpebrosus*, *Brachypteryx palliseri*, and *Erythrosterina hyperythra*.

Review of present Work.—The total number of species included in the present work is 371, of which two are introduced birds, viz. *Padda oryzivora* and *Estrela amandava*. Of the remainder, 18 species, besides the two just mentioned, are treated of in footnote articles, or noticed in the Appendix; of these, *Falco chicquera*, *Accipiter nisus*, *Scops malabaricus* (App.), *Palæornis columboides* (App.), *Lanius lucionensis*, *Siphia nigrorufa*, *Munia rubronigra*, *Fuligula rufina*, *Phalacrocorax fuscicollis*, and *Fregata aquila* are considered as doubtfully occurring. The following, *Cotyle obsoleta*, *Oceanites oceanicus*, *Phaethon indicus*, *Coturnix communis*, are looked upon as doubtfully identified; two species, *Schœnicola platyura* and *Brachypternus intermedius* (red race of *B. puncticollis*), are doubtfully determined; *Alauda parkeri* is perhaps not a good species; whilst one bird (*Stercorarius antarcticus*) may have, perhaps, been conveyed to the island in the form of the single example of the species noticed. In addition to the above, *Fuligula ferina*, *Turnix sykesi*, and a species of *Anser* are referred to in "Notes" as likely to occur. The following 24 species have been added by the author to Mr. Holdsworth's

list:—*Baza ceylonensis*, sp. n., *Scops minutus*, sp. n., *Glaucidium radiatum*, *Cuculus poliocephalus*, *Brachypternus intermedius*, ? *Schœnicola platyura*, *Locustella certhiola*, ? *Cotyle obsoleta*, *Prinia hodgsoni*, *Turtur tranquebarica*, *Coturnix communis*, *Machetes pugnax*, *Calidris arenaria*, *Ægialitis geoffroyi*, *Æ. jerdoni*, *Glareola orientalis*, *G. lactea*, *Tringa temmincki*, *Ciconia alba*, *Tadorna casarca*, *Sterna saundersi*, *Sterna fuliginosa*, *Anous stolidus*, *Sula cyanops*, *Phaethon flavirostris*. Four species have been renamed—*Spizaetus nipalensis*, *Pyctorhis sinensis*, *Prinia socialis*, and *Acridotheres tristis*, which appear in this work as *Spizaetus kelaarti*, *Pyctorhis nasalis*, *Prinia brevicauda* (App.), and *Acridotheres melanosternus*.

In the subjoined Table will be found all the species which are recognized in the work as peculiar to the island; among them are included two birds about which there are doubts as to their not being found in India. These are *Drymœca insularis* and *Brachypternus intermedius*, the former of which may perhaps be the same as a South-Indian Wren-Warbler (*D. inornatus*). The birds here tabulated are all figured, with the exception of *Prinia brevicauda* and *Turdus kinnisi*, the reasons for the omission of which will be found in the Appendices.

TABLE OF BIRDS PECULIAR TO CEYLON.

Families.	Number of species.	Name.	Hill-district (under 5000 feet).	Low country.	Nuwara-Eliya plateau and over 5000 feet.
Falconidæ	2	{ <i>Spizaetus kelaarti</i>	*	..	*
		{ <i>Spizaetus ceylonensis</i>	*	*	*
Bubonidæ	3	{ <i>Athene castanonota</i>	*	*	*
		{ <i>Scops minutus</i>	*	? *	
		{ <i>Phodilus assimilis</i>	*		
Psittacidæ	1	<i>Palæornis calthropæ</i>	*		
Trichoglossidæ	1	<i>Loriculus indicus</i>	*	*	
Picidæ	3	{ <i>Chrysocolaptes stricklandi</i>	*	*	*
		{ <i>Brachypternus ceylonus</i>	*	*	
		{ <i>Brachypternus intermedius</i> (App. II.) ..	..	*
Capitonidæ	3	{ <i>Megalæma zeylanica</i>	*	*	
		{ <i>Megalæma flavifrons</i>	*	*	
		{ <i>Xantholæma rubricapilla</i>	*	*	
Cuculidæ	2	{ <i>Centropus chlororhynchus</i> .....	..	*
		{ <i>Phœnicophaës pyrrhocephalus</i> .....	..	*
Dicruridæ	2	{ <i>Buchanga leucopygialis</i>	*	*	
		{ <i>Dissemurus lophorhinus</i>	†	*	
Corvidæ	1	<i>Cissa ornata</i>	*	¶	*
Muscicapidæ	3	{ <i>Stoparola sordida</i>	*		
		{ <i>Alseonax muttui</i> .....	..	*
		{ <i>Hypothymis ceylonensis</i>	*	*	

TABLE OF BIRDS PECULIAR TO CEYLON (*continued*).

Families.	Number of species.	Name.	Hill-district (under 5000 feet).	Low country.	Nuwara-Eliya plateau and over 5000 feet.
Turdidæ	4	{ Myiophoneus blighi	*	..	*
		{ Turdus kinnisi (App. II.)	*	..	*
		{ Turdus spiloptera	*	*	*
		{ Oreocincla imbricata	*	..	*
Brachypodidæ	2	{ Rubigula melanictera	*	*	†
		{ Kelaartia penicillata	*	..	*
Timaliidæ	10	{ Malacocercus rufescens	*	*	*
		{ Garrulax cinereifrons	*	‡	
		{ Pomatorhinus melanurus	*	*	*
		{ Alcippe nigrifrons	*	*	*
		{ Pellorneum fuscicapillum	*	*	†
		{ Pyctorhis nasalis	*	*	
		{ Prinia brevicauda	*	*	
		{ Elaphrornis palliseri	†	..	*
		{ Drymœca valida	*	*	
		{ ? Drymœca insularis .....	..	*
Dicæidæ	2	{ Pachyglossa vincens	*	*	
		{ Zosterops ceylonensis	*	..	*
Hirundinidæ	1	Hirundo hyperythra	*	*	§
Ploceidæ	1	Munia kelaarti	*	..	*
Sternidæ	3	{ Acridotheres melanosternus .....	..	*
		{ Eulabes ptilogenys .....	*	||	
		{ Sturnornis senex	*	¶	? *
Columbidæ	1	Palumbus torringtoniæ	*	..	*
Phasianidæ	2	{ Gallus lafayettii	*	*	*
		{ Galloperdix bicalcarata	*	*	*

† Not common.

‡ Certain forests of Western Province in N.E. monsoon.

§ Occasional.

|| Spreading into the forests at the base of the hills, particularly in the W. Province.

¶ In the forests of the Passedun Korale, down to 600 feet near Moropitiya.

It will be seen that this Table comprises 47 species. One *peculiar genus* (*Elaphrornis*) inhabits the island, its nearest ally being the Malayan and Himalayan *Brachypteryx*; and a subgenus (*Sturnornis*) is likewise recognized.

Affinities of the Ceylonese Avifauna.—We now come to the important point of the relationship of the Ceylonese ornis to that of adjacent regions; and this, as might be expected from the geographical position of the island and its separation from the mainland merely by a

shallow strait, is closer to that of South India than to the avifauna of any other part of the peninsula. Wallace, in his great work on the Distribution of Animals, considers the island of Ceylon and the entire south of India as far north as the Deccan as forming a subdivision of the great "Oriental Region." It is, however, in the hills of the two districts, which possess the important element of a similar rainfall, where we find the nearest affinities both as regards birds and mammals; and this is exemplified by the fact of some of the members of the Brachypodidæ and Turdidæ (families well represented in both districts) being the same in the Nilghiris and the mountains of Ceylon, while many of the Timaliidæ and Turdidæ in one region have near allies in the other. For example, *Malacocercus (Layardia) rufescens*, *Pomatorhinus melanurus*, *Alcippe nigrifrons*, *Garrulax cinereifrons*, *Myiophoneus blighi*, *Oreocincla imbricata*, *Turdus kinnisi*, and *Palumbus torringtonia* in Ceylon are respectively represented in the hills of South India by *Layardia subrufa*, *Pomatorhinus horsfieldi*, *Alcippe atriceps*, *Garrulax delesserti*, *Myiophoneus horsfieldi*, *Oreocincla nilgherriensis*, *Turdus simillima*, and *Palumbus elphinstonii*.

But though this strong similarity in the avifauna of the mountains in question, as well as their geological characters, indicate a contemporaneous upheaval and enrichment with animal life of their surfaces, a similar connexion is found between the northern parts of the island and the low country of the Carnatic. Here, again, we have in the fossiliferous limestones of the two regions an undoubted connexion, and also an affinity in their avifauna, which differs totally from the mountain-districts on either side of the straits. The northern parts of Ceylon, as well as the south-eastern, both of which I shall speak of in my remarks on the geographical features of the island, may be considered to constitute an Indo-Ceylonese subregion, and are inhabited by the same species as the south-east coast-districts of the peninsula. *Brachypternus puncticollis*, *Anthraceroceros coronatus*, *Malacocercus striatus*, *Pycnonotus hæmorrhous*, *Merops viridis*, *Pyrrhulauda grisea*, *Mirafra affinis*, *Turtur risorius*, *Buchanga atra*, and perhaps *Cursorius coromandelicus* are species characteristic of the north of Ceylon and of Ramisserum Island and the plains of Tanjore, but which are not inhabitants of the damp Malabar district. On the other hand it is noteworthy that *Gallus sonnerati* and the Lesser Florrikin (*Sypheotides aurita*), common in the Carnatic, have not yet been detected in North Ceylon. It is by way of the low-lying country of the Carnatic (the fauna of which, it may be remarked in passing, is allied to that of Central India) that the cool-season migrants enter the island of Ceylon, leaving numbers of their fellows in Southern India; and this forms an additional ornithological bond between the two districts. Some of these migrants come from the regions at the foot of the Himalayas, and tend to the supposition that there is a Himalayan element in the avifauna of Ceylon; but this is but very slight, if, indeed, it should at all be recognized, for migratory species, such as *Scolopax rusticula* and *Gallinago nemoricola* (which only inhabit the upper ranges and the high mountains of Southern India, and whose *locale* depends solely on climate), cannot be taken into consideration. One genus (*Pachyglossa*) certainly does constitute a bond of affinity. The distinctness of the avifauna of the Southern-Indian and Ceylonese mountains from that of the Himalayas may be shown by the fact that most of the Himalayan typical Timaline genera, *Suthora*, *Stachyris*, *Trochalopteron*,

Actinodura, are wholly absent from Ceylon, and but poorly represented in the hills of South India, there being only three species of the numerous genus *Trochalopteron* in the Nilghiris and Palani hills and not any of the others. Again, there is only one species of *Garrulax* in South India and one in Ceylon. Of the widely spread genus *Pomatorhinus*, found in the Himalayas, Burmah, and Java, there is only one species in each of the southern hill-regions in question. The genus *Alcippe* is about equally represented in both regions. These data show that though there is a connexion between the ornithology of the Himalayas and that of Ceylon it is but slight, and only what one would expect in mountain-districts of adjacent ornithological regions. It is noteworthy that the Liotrichidæ, or Hill-Tits (one of the three peculiar families of the Oriental Region, and which are abundant in the Himalayas), are absent from Ceylon.

Certain Indian families are entirely absent from Ceylon, either as residents or migrants; they are the Eurylaimidæ (Broadbills)—a Himalayan and Malayan form,—the Pteroclidæ (Sand-Grouse), the Otididæ (Bustards), Gruidæ (Cranes), and Mergidæ (Mergansers). Among these families it is remarkable that some member of the Gruidæ has not yet been found in the cool season in North Ceylon; for, though the country is not thoroughly suited to their habits, the members of this family being migratory (and one of them, the Demoiselle Crane, extending to South India), it is singular that they do not extend their migration a little further south and reach the shores of Ceylon. I have heard a vague rumour of a Crane being seen near Mullaittivu; and it is not wholly improbable that the above-mentioned species (*Anthropoides virgo*) will some day be added to the occasional migrants during the N.E. monsoon. Another family, Vulturidæ, has a place in the Ceylonese avifauna, owing to a straggler having recently appeared in the island. Here, again, is an instance of species which, one would think, ought to occur as visitants in the N.E. monsoon; for I am informed that Vultures are not unfrequently seen in the Tanjore district; and *Gyps indicus* breeds in the Nilghiris.

Besides the widely distributed Grallatorial and Natatorial forms common to both India and Ceylon, certain Indian genera of western distribution are represented in the island. They are *Cuculus*, *Ceryle*, *Halcyon*, *Cypselus*, *Caprimulgus*, *Corone*, *Lanius*, *Turdus*, *Phylloscopus*, *Cinnyris*, *Hirundo*, *Motacilla*, *Corydalla*, *Turtur*, *Francolinus*. Of these the Cuckoos are remarkably numerous.

If we turn now towards the Malayan region we find, in spite of its more remote geographical position, quite as close an affinity as with the Himalayas—which may perhaps be accounted for on the theory held by some that there was at one time a connexion between the two regions. It may, however, be remarked, in passing, that if this did occur it must have been, in all probability, by way of the Andamans and Malacca, as we find the 15,000 feet contour of ocean-depth passes up near the east coast of the island into the Bay of Bengal to lat. 10° N. This Malayan affinity is shown in the existence in Ceylon of a Malayan form, *Phænicophaës*, and a member of a typical Sunda-Island genus, *Myiophoneus*. It is also worthy of note that the island is visited by a Malaccan emigrant, *Gorsachius*, which has rarely been met with in India. This is remarkable, as, in all probability, before the submergence took place which altered the Malayan

region, the hills of South India were just as much connected with Malacca as those of Ceylon. A closely allied Swallow to our "peculiar" *Hirundo hyperythra* is found in Malacca; and Malayan genera of Pigeons (*Carpophaga*, *Osmotreron*, and *Chalcophaps*) are also found in Ceylon, and perhaps to a greater extent, when we look at its small geographical area, than in India. Certain Australian and Malayan birds, such as *Haliaetus leucogaster*, *Coturnix chinensis* (found also in China), *Mycteria australis*, extend into Ceylon, not to mention the Waders (*Limicolæ*), which range from Asia thence to the Australian continent, taking in Ceylon in their path.

The island, however, is not dependent on these latter for its migratorial Waders, in which, as also in some water-birds (Anatidæ), it is very rich. It forms, in fact, the southernmost Asiatic limit of the flight of many European and Asiatic Grallatorial and Natatorial forms; and hence the large numbers of these birds which are found in the cool season along its shores. Of these the following species are noteworthy:—*Scolopax rusticola*, *Gallinago nemoricola*, *Machetes pugnax*, *Tringa minuta*, *Totanus ochropus*, *Totanus fuscus*, *Tringa minuta*, *Limosa ægocephala*, *Himantopus candidus*, *Recurvirostra avocetta*, *Ædicnemus scolopax*, *Hæmatopus ostralegus*, *Anas acuta*, *Anas ciria*, *Anas crecca*, and *Phaenicopterus roseus*.

Geographical Features and Inland Distribution.—Having now considered the important question of the affinities of the Ceylonese avifauna it is necessary to notice the geographical features of the island as bearing upon the inland distribution of the birds inhabiting it. Ceylon is an island of about 270 miles in length and 138 in breadth, lying between lat. 5° 50' and 9° 50' N., and between long. 79° 40' and 61° 50' E.; it is separated from the mainland of India by a shallow strait 35 miles wide, which is traversed by a chain of islands, between which lies a long sandy shoal called Adam's Bridge, which is alternately raised and lowered on the north and south by the action of N.E. and S.W. monsoons. For ornithological purposes the island may be divided into four regions or districts—the dry forests of the entire north and south-east, the arid maritime belts of the north-west and south-east coasts, the damp Western-Province region, and the hill-zones of the Central and Southern Provinces. The northern part of the island consists of a vast plain covered with forest, except near the sea, where, particularly on the north-west coast, there are open tracts studded with low thorny jungle. This region is called in the present work the "northern forest-tract," and is here and there studded with very rocky abrupt hills, rising suddenly out of the forest-clad plain. Sigiri, Rittagalla, and Mahintale rock are some of the most notable among these acclivities. This region, which lies to the north of the high land intercepting the moisture brought up from the ocean by the S.W. and N.E. monsoons, is alternately swept by a dry westerly and easterly wind, and is covered with tolerably luxuriant forest and wild secondary jungle, inhabited chiefly by members of those Indian families which are most strongly represented in the island, the Flycatchers, Drongos, Barbets, Bulbuls, Babbler (Timaliidæ), and Cuckoos, but also contains many of the forest-loving "peculiar" forms, which have their stronghold further south. The northern forest-tract likewise is the home of many of the larger

Water-birds and “Waders” which affect the numerous tanks* in the heart of the jungle. The most luxuriant vegetation in this part of the island is to be found on the banks of the rivers, where the Koombook (*Terminalia glabra*) is one of the most characteristic trees. In the drier parts the forest is sprinkled plentifully with the iron-wood (*Mimusops indica*), the fruit of which is the favourite food of many birds. The open scrubby belt of land bordering the N.W. coast, as also the island of Manaar and parts of the peninsula of Jaffna, are characterized by a very different flora. Here almost every tree is of a thorny nature, and the low and almost impenetrable masses of brushwood are filled with Euphorbia-trees (*Euphorbia antiquorum*), which is the characteristic plant of the district. This region is the home of plain-loving birds, such as *Pyrrhulauda grisea*, *Merops viridis*, *Munia malabarica*, and is the almost exclusive habitat of *Buchanga atra*, *Lanius caniceps*, *Turtur risorius*, *Ortygornis pondiceriana*, and *Cursorius coromandelicus*, which appear to have extended their range from the Carnatic hither and not passed beyond the forests which hem in the district. Here, too, is the great haunt of the migratory Waders, which swarm on the muddy flats between Jaffna and Manaar, and also congregate round the salt lagoons of the N.E. coast. These latter are surrounded with heavy jungle, inhabited by the same birds as further inland, but which stands back at some distance from their grass-begirt shores.

Southward of the region just considered we have on the west coast the damp, luxuriant, typically Ceylonese region, cultivated with rice in some parts and in others clothed with tall forest, of which the characteristic trees are the gigantic Hora (*Dipterocarpus zeylonensis*), the Doon (*Doona affinis* and *Doona congestiflora*), the stately Keena (*Calycophyllum tomentosum*), and the lofty Dawata (*Carallia integerrima*). This tract, which comprises the Western Province and “South-western Hill-district,” is intersected with ranges and groups of hills heavily timbered in some parts

* Many of these large irrigation-works claim a place among the most gigantic monuments of ancient enterprise and labour; they literally astonish the traveller and fill his mind with wonder as he stands on the vast bunds and looks down on the wild and lonely scene, pondering on the means and appliances which the engineers of those distant times must have used to get the great stones in their places. Whole valleys have been dammed up, and sometimes the strong floods of three rivers thrown back and spread out into a great lake, the waters of which must have irrigated thousands of square miles. The bund of the great Padewiya tank extends for 11 miles across a valley, and in olden times, before this enormous embankment was broken down by the rush of mighty floods, the water was, as Emerson Tennent tells us, thrown back for 15 miles along the valley. I regret to say I never visited this tank; but I have seen other bunds of great size, of which perhaps that which holds back the waters of Kanthelai tank is the finest. This tank, which has been lately restored, was built by King Maha Sin, A.D. 275; and the following details kindly furnished me by Mr. E. Scott Barber, C.E., who repaired the bund, may not be uninteresting to my readers:—“When up to ‘spill-level’ (22 feet), the tank contains 3580 acres, and is 17 miles round. The bund is 60 feet high and 290 feet in width at the bottom; it is 6800 feet in length, and contains 19,121,296 cubic yards of material. It is ‘pitched’ with large boulders from bottom to 60 feet up the slope and from 3 to 4 courses deep. The outlet was by two culverts 4 feet by 2 feet, situated at either end of the bund; the stones forming them average $1\frac{1}{2}$ to 2 tons in weight, and are ‘tongued’ together in the centre.” The top of this mighty embankment was about 60 yards wide and covered with jungle and large trees. As it was, it gave one the impression, when walking along it, of standing on a natural ridge or long low hill!

and covered with bamboo-cheena in others; the valleys, constantly rained on during the south-west monsoon, and likewise receiving a heavy downfall in the north-east monsoon, are the dampest spots in the island, and harbour numbers of Timaliidae (*Malacocercus rufescens*, *Garrulax cinereifrons*, *Alcippe nigrifrons*, *Pellorneum fuscicapillum*), also Brachypodidae (*Hypsipetes ganessa*, *Criniger ictericus*, *Rubigula melanictera*). The cultivated districts are conspicuous for the numbers of the common Bulbuls, Barbets, Doves (*Turtur suratensis*), smaller Timaliidae (*Cisticola*, *Prinia*, *Drymæca*, &c.), as well as some numbers of the Heron family, which are seen about the paddy-fields. A considerable portion of the uncultivated soil in the Western Province and also in the lower hills is overgrown with a dense bramble (*Lantana mixta*), popularly known as "Lady Horton's wood," and which was introduced (unfortunately) into the island about the year 1830. It thrives on gravelly soil, and especially on land which has once been cultivated, sometimes clothing more than an acre without a single break. The fruit of this pest is eagerly sought after by many birds, particularly Bulbuls (*Rubigula*, *Pycnonotus*, *Ixos*); and to this fact the wonderful manner in which it has been propagated is due. The damp, heavy forests of the Adam's-Peak range descend continuously into the low country of Saffragam, and through them several true hill species (*Eulabes ptilogenys*, *Palæornis calthropæ*, *Garrulax cinereifrons*) range to a lower level than anywhere else, being quite common in portions of the Kuruwite and Three Korales.

We now come to the consideration of the fourth ornithological district, the lofty hills of the Southern Province, rising up on the north of the valley of Saffragam, of which Ratnapura is the chief town. The first-named region is entirely occupied by a group of high mountains and elevated valleys, forming a perfect mountain-zone, inside of the base of which there is scarcely any land of less elevation than 1500 or 1700 feet. This lofty district culminates in the high Pedrotallagala range (8200 feet), just on the north of the plain of Nuwara Eliya, from which extends an elevated plateau, intersected by forest-clad ridges, and dotted here and there with the curious natural fields called patnas, for some 20 miles south to the Horton plains (7000 feet), whence the lofty Haputale range stretches to the east and the Adam's-Peak range round to the west as far north as the Four Korales, the slopes of both dropping at once into the low country. The coffee-districts of Dimbula and Dickoya are enclosed by the latter on the east of the Nuwara-Eliya plateau, each with its dividing range; while the Uva patna-basin (a curious tract of grass-covered or patna-hills) forms its eastern flank, and slopes out into the Bintenne country through the valley of Badulla, being bounded on the extreme east by the lofty ridges of Madulsima. On the north of the Pedro mountain high ranges jut out towards the upland valley of Dumbara, beyond which the Knuckles and Ambokka ranges, running on each side to the north-west and north respectively, complete the Kandyan mountain-system. The southern hill-ranges bound the south side of Saffragam, and are comprised of the Kukkul, Morowak, and Kolonna Korales, the highest point being Gongalla, a little over 4400 feet in altitude. Of late years the forest has been felled for the planting of coffee, as in the Central Province; but there are still large tracts of forest in the Kukkul Korale in which Central-Province birds (*Cissa ornata*, *Eulabes ptilogenys*, *Sturnornis senex*,

Palæornis calthropæ, *Zosterops ceylonensis*, *Culicicapa ceylonensis*) abound, and in which both *Gallus lafayettii* and *Galloperdix bicalcarata* are plentiful. The northern portion of this korale, lying between the Karawita hills and the hilly forests of the Passedun Korale, consists partly of semicultivated land and partly of a curious and little-known tract of open grassy hills with wood-dotted dingles, resembling the patnas of the Kandyan country, and on the open parts of which Grass-Warblers, Wren-Warblers, and Munias are common, while Babblers (*Pomatorhinus*) are found in the groves; but otherwise an absence of bird-life is decidedly noticeable.

It is in the coffee-districts and valleys lying beneath the estates which are dotted with patna-grasses, particularly "Maana-grass" (*Andropogon martini*), and patched here and there with groves of luxuriant trees lining the courses of the streams, where the hill-species, both "peculiar" and Indian, intermingled with not a few low-country forms, abound; but it is also in these spots where the original ornithological features of the country are being gradually changed by the disappearance before the woodman's axe of such a vast area of forest, and species such as *Palumbus torringtoniæ*, *Merula kinnisi*, *Eulabes ptilogenys*, *Stoparola sordida*, and *Culicicapa ceylonensis* (true hill-species) are being driven into the upper forests, or are locating themselves to a considerable extent about the open estates where once their forest-home stood.

In the upper forests and in the Nuwara-Eliya plateau we lose the stately trees of the genera *Doona*, *Dipterocarpus*, &c., and find stunted, though thick-trunked, arboreal forms, for the most part profusely clothed with handsome mosses; and these woods, with their circumscribed patnas, are the favourite haunts of the peculiar birds enumerated in my table, as well as many Indian species, both permanent and migratory. Of the former may be mentioned *Merula kinnisi*, *Culicicapa ceylonensis*, *Parus atriceps*, *Cisticola schænicola*, *Pericrocotus flammeus*, *Pericrocotus peregrinus*, *Hypsipetes ganeesa*, *Pratincola bicolor*, *Orthotomus sutorius*, *Corydalla rufula*; of the latter, *Turdus wardi*, *Erythrosterne hyperythra*, *Larvivora brunnea*, *Hierococcyx varius*, *Phylloscopus nitidus*, *Phylloscopus magnirostris* are noticeable.

The eastern subdivision of Southern Ceylon, which is shut off from the influence of the south-west monsoon by the eastern slopes of the Kolonna and Morowak-Korale mountains and their spurs, which run south towards Matara, presents one of the most remarkable instances of a sudden change in physical aspect and floral character that can, perhaps, anywhere be met with in such a small island. Possessing a totally different climate, and consequently a distinct flora, the avifauna of this region has little relation to that of the damp south-western division. The birds of the vast forest which stretches southwards from the Haputale mountains to the confines of the scrubby maritime district are the same as those of the northern forests; and the ornis of the coast-region is precisely the same as that of the north-west coast, except that it includes several species, such as *Prinia hodgsoni*, *Taccocua leschenaulti*, and *Pycitorhis nasalis*, which seem to have their head-quarters here, and are not found (in such abundance, at any rate) in that part. Characteristic species of the two regions are *Xantholæma hæmacephala*, *Pyrrhulauda grisea*, *Merops viridis*, *Picus mahrattensis*, *Upupa ceylonensis*, and *Cittocinclla macrura*, none of which, with the exception of the latter bird, are found in the adjoining damp district. The numerous shallow

salt lagoons and leways are the resort of Waders, Terns, Herons, Flamingoes, and Water-birds, all of which are characteristic of the north-west of the island. The north-eastern part of the subdivision in question is called the Park country, the borders only of which, I much regret to say, are known to me. This tract consists of open glades and small plains covered with long grass and surrounded by heavy jungle, in which there are numbers of birds, the prevalence of Woodpeckers being noticeable. As regards the open country, it is not unlikely that some new Timaline species may be found in it.

Lastly, with regard to the great families of Scolopacidæ and Charadriidæ, which form such a large proportion of the Ceylonese ornithology, and which migrate to the island in vast numbers at the commencement (October and November) of the cool season, as will be seen on a perusal of this work, their great haunts are the lagoons, tidal flats, marshes, and tanks near the coast along the northern shores of both sides of the island. On the west coast these cease to the southward of Negombo, and the sea-board is only intersected with deep mangrove-lined lagoons and lakes, which are quite destitute of "Wader"-life, save that of one or two species, as the ubiquitous *Tringoides hypoleucos* and the very abundant *Totanus glareola*. The entire east coast, however, is more or less inhabited by Sandpipers, Stints, Shore-Plovers, and other members of these families. From the Virgel down to Batticaloa the sea-board is not so favourably suited to their habits as further south, where they again become very abundant, and occupy the coast-line, with its numerous estuaries, leways, and lagoons, down to Hatagala. Nowhere, however, do these interesting birds muster in such force as from the Jaffna peninsula, with its inland salt lagoon and large salt lake, down the west coast to the immense tidal flats at the embouchure of the Manaar channel. The entire coast of this region is shallow, the tide receding some distance, and leaving exposed an oozy shore, covered in places with green weed. On these flats myriads of small Waders congregate, and species (such as the Turnstone and that anomalous bird the Crab-Plover) which are not plentiful on the east coast are here found in abundance. In this district are of course included the islands of Palk's Straits, on which these birds are likewise equally abundant.

Monsoons and Seasons.—There are, roughly speaking, two seasons in Ceylon, which are ushered in by the advent of two monsoons, the south-west and north-east. The former commences to blow in April, after the termination of the hottest time of the year, the sultry weather of March. For about a fortnight violent squalls, accompanied by downpours of rain, drive in from the sea on the west coast; and along the western slopes of the mountain-ranges, where the moisture resulting from this wind collects, the rain is just as heavy and more continuous. This weather, which is called the "little monsoon," is, though unpleasant, preferable to that which preceded, when there was an absence of wind and the nights were very sultry. It is the signal for the commencement of the spring migration. Insectorial birds (Warblers &c.) immediately move northwards, and the Waders, which throng the salt lagoons and estuaries on the northern and eastern coasts, commence their long flight towards northern regions. After the cessation of the little monsoon there is a lull, when the weather is again unpleasantly hot and "steamy," until

the end of May, when the south-west wind again blows with greater violence than before, for in some years the "little monsoon" is not by any means strong. The rain at this period is also much more continuous, and sometimes very heavy downfalls are experienced, as in 1876, when 11 inches fell at Colombo in twenty-four hours. At this time of the year perfectly different weather is experienced on the east coast, when the same south-west wind, deprived of its moisture by its passage over great tracts of forest, has become intensely dry and almost warm. After the burst of the monsoon is over the wind gradually lessens throughout the months of July, August, September, and beginning of October, when the weather again becomes sultry. The great autumn migration is now setting in: myriads of Sandpipers, Stints, and shore-birds in general are now travelling southward from Northern Asia, and some species, as the Pintailed Snipe and the Golden Plover, arrive on the north coast, and even reach the south-western district (Galle) as early as the middle of September; at the same time Warblers and Wagtails arrive in the island and rapidly spread over the country.

About the middle of October, and sometimes as early as the first week in that month, the first signs of the N.E. monsoon may be looked for on the east coast. Heavy thunderstorms coming from the land every afternoon betoken the breaking up of the S.W. monsoon; they continue for about a fortnight, and then the wind, with rain, sets in from the north-east; at the same time on the west coast heavy thunderstorms are experienced every evening, which, in the same manner as those which preceded them on the east coast, take place later each consecutive evening until they cease. During this time migrants from India continue to arrive, and a local movement of birds towards the west coast takes place. The north-east wind, which is not so strong as the south-west, reaches the west coast only in the form of a land-breeze at night, which is scarcely felt until about Christmas. In the meantime, at the end of November, a strong northerly breeze sets in down the west coast; this is locally styled the "long-shore wind," and is mainly conducive in adding to the ranks of migrants of all classes, but particularly to those of the Grallatorial order. Snipe now come in great numbers, and by the middle of December large bags may be made in almost any good district.

Internal Migrations.—It is natural that the prevalence of two winds blowing at different seasons from opposite quarters across the island should cause a movement of species inhabiting the coast districts on each side of it. This is most observable on the coast of the Western Province, south of Negombo, as here the wind is damp, and, as we have just seen, accompanied by heavy rains, which induce certain species to leave the sea-board and retire inland in order to obtain shelter from the force of the monsoon. It would appear to any one studying the avifauna of a coast-district, like that of Colombo for example, that all these birds had left that side of the island; but this is not the case, as they are mostly to be found after the rains of June in the sheltered districts of the interior, not far from the coast. On the other hand, however, various species which are not resident on the west coast visit it when the S.W. monsoon has died away and the N.E. monsoon has commenced to blow on the east coast, tending to carry them towards

the south-west. Instances of such birds are to be found in the Paradise Flycatcher (*Terpsiphone paradisi*) and the Indian Sky-Lark (*Alauda gulgula*), which latter bird is found during the south-west monsoon in numbers at the tank-meadows in the northern forests, while the former (in the red stage) inhabits both the northern and south-eastern forest-tracts. Species that move away from the *immediate* western sea-board are *Dendrochelidon coronata*, *Eudynamys honorata*, *Thamnobia fulicata*, *Tephrodornis pondicerianus*, and *Parus cinereus*; but a few miles inland, in sheltered spots, these birds may be found all the year through, except perhaps the latter, which must be classed as an uncertain N.E. monsoon visitant to the maritime districts of the Western Province.

In the mountains the movements of the hill species are very noticeable in those districts west of Nuwara Eliya which are exposed to the violent winds and rain which accompany the incoming of the monsoon in May. The Hill-Myna (*Eulabes ptilogenys*), the Blue Tit (*Parus atriceps*), the handsome Torrington Wood-Pigeon (*Palumbus torringtoniæ*), the large Bulbul (*Hypsipetes ganeesa*), the Orange Minivet (*Pericrocotus flammeus*), the Jay (*Cissa ornata*), the Hill-Barbet (*Megalæma flavifrons*), the Jungle-fowl (*Gallus lafayettii*), and the Spur-fowl (*Galloperdix bicalcarata*) are among the more prominent species which appear in the upper ranges (from 5000 to 8000 feet) as soon as the calm weather of the N.E. monsoon has set in in November.

At this season of the year also low-country birds, which, as a rule, only range into the hill-zones to an inconsiderable elevation, ascend to the upper hills. *Artamus fuscus*, *Oriolus melanocephalus*, *Upupa ceylonensis*, *Pycnonotus hæmorrhous*, *Layardia rufescens*, *Terpsiphone paradisi*, and *Hypothymis ceylonensis* are species which either occasionally ascend to altitudes above 5000 feet, or are found yearly in the upper zone during the N.E. monsoon.

True Migrants.—The arrival of the migratory species, which takes place, as already mentioned, at the termination of the S.W. monsoon, greatly adds to the avifauna of the island. The Insectorial migrants consist chiefly of Muscicapidæ, Laniidæ, Motacillidæ, and Sylviidæ, while the Grallatorial are made up of Scolopacidæ and Charadriidæ. The members of the first-mentioned order are wholly migratory; but certain species of the two latter remain to some extent as non-breeding loiterers throughout the year. The following is a table of migrants:—

ACCIPITRES.	PICARIDÆ.	INSESSORES.
Baza lophotes.	*Cuculus canorus.	Oriolus indicus.
Falco peregrinus.	Cuculus micropterus.	Lanius cristatus.
Cerchneis amurensis.	Cuculus poliocephalus.	Buchanga longicaudata.
Circus æruginosus.	Cuculus passerinus.	Alseonax latirostris.
Circus cineraceus.	*Cuculus maculatus.	†Siphia rubeculoides.
Circus melanoleucus.	Hierococyx varius.	Muscicapa hypertyhra.
	Coccyzus coromandus.	*Cyanecula suecica.
	Merops philippinus.	Larvivora brunnea.

Turdus wardi.	GRALLÆ.	*Tringa temmincki.
Geocichla citrina.	*Porzana bailloni.	‡Limicola platyrhyncha.
*Monticola cyana.	Porzana fusca.	*Calidris arenaria.
*Sylvia affinis.	Rallina euryzonoides.	§Strepsilas interpre.
Acrocephalus dumetorum.	? Hypotaenidia striata.	Numenius lineatus.
Locustella certhiola.	*Rallus indicus.	Numenius phæopus.
Phylloscopus nitidus.	*Scolopax rusticula.	‡Recurvirostra avocetta.
Phylloscopus magnirostris.	*Gallinago scolopacina.	Squatarola helvetica.
Phylloscopus viridanus.	Gallinago stenura.	Charadrius fulvus.
Hirundo rustica.	*Gallinago gallinula.	†Ægialitis geoffroyi.
*Hirundo erythropygia.	‡Limosa ægocephala.	†Ægialitis mongolica.
*Motacilla maderaspatensis.	‡Terekia cinerea.	*Chettusia gregaria.
Motacilla melanope.	†Totanus glottis.	Hæmatopus ostralegus.
Budytes viridis.	†Totanus stagnatilis.	†Sterna caspia.
Corydalla richardi.	‡Totanus fuscus.	Larus brunneicephalus.
Corydalla striolata.	Totanus calidris.	Tadorna casarca.
†Pitta coronata.	Totanus glareola.	Anas acuta.
	Totanus ochropus.	Anas circia.
	†Tringoides hypoleucus.	Anas crecca.
	*Machetes pugnax.	Spatula clypeata.
	†Tringa subarquata.	?§ Phœnicopterus roseus.
	†Tringa minuta.	*Ardea goliath.
	†Tringa subminuta.	Gorsachius melanolophus.

COLUMBÆ.

*Turtur pulchratus.

* Rare stragglers to the island in *N.E. monsoon*, or irregular migrants in small numbers.

† Migratory for the most part, non-breeding birds remaining throughout the year.

‡ Possibly a regular migrant in small numbers.

§ Rarely a loiterer in Ceylon in *S.W. monsoon*.

In this list the families Cuculidæ and Sylviidæ muster strongest among land-birds, but do not, it will be observed, furnish as many representatives as the Grallæ (Waders). Among the latter it is noteworthy how many species “loiter” or remain behind in the breeding-season. A knowledge of this fact is all the more interesting, as, until very recently, it was not known that members of the Gralline order, such as *Totanus*, *Tringa*, and *Ægialitis*, ever remained in the tropics throughout the year; now, however, the researches of Mr. Hume in the Andamans, and of myself in Ceylon, have fully proved this to be the case. Stragglers to Ceylon at uncertain times of the year have not been included in the list, as they cannot be looked upon in any way as migrants. Among these may be mentioned *Neophron ginginianus*, *Nisaetus pennatus*, *N. bonelli*, *Baza ceylonensis*, *Buteo desertorum*, *Pastor roseus*, *Alsocomus puniceus*, *Sterna dougalli*, *Anous stolidus*, *Sula leucogastra*, *S. cyanops*, *Stercorarius antarcticus*, *Phaethon flavirostris*, *P. indicus*, and *Fregata minor*. Of these, *Pastor roseus* and *Sterna dougalli* are the only species which, when they do visit the island, appear in numbers.

Breeding-season.—The majority of Ceylon birds breed during the first half of the year, the exact times varying according to locality and climate. In the Western Province the height of the breeding-season is, as in India, during the rains of April, May, and June. At this time the

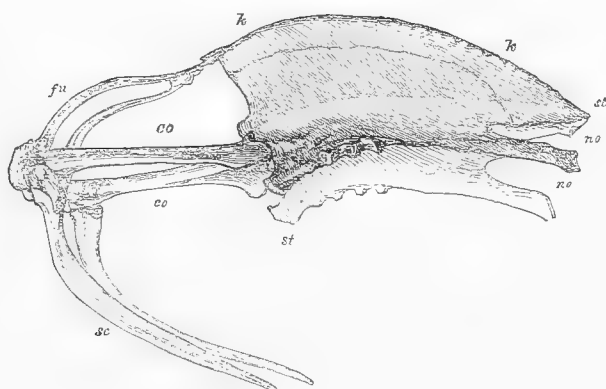
jungles teem with insect-life, and all forest-birds are busy rearing their young. In very moist districts, such as Ratnapura and the Passedun Korale, eggs may be found in August and even September. Among early breeders in the Western Province may be cited the Barbets and Woodpeckers. On the eastern side of the island many birds commence to breed in November and December, while the heavy rains are falling; but the season continues, nevertheless, throughout the first three or four months of the year, and many birds may be found nesting, as on the western side, in May and June. In the hills, and more particularly in the upper ranges, where the nights are cold and frosty in January and February, the nesting-season commences at the end of March or beginning of April, and continues until June and July, corresponding in this respect with the breeding-time in temperate climates. In the north of Ceylon the larger Waders (*Ardeidæ*), and the Water-birds that breed with them, commence to nest in November; but on the south-east coast the season is later, the Heronries not being resorted to as a rule, I think, before January.

Remarks on the plan of the Work. 1st. *Classification.*—The classification followed in this work is totally different from that used by Jerdon, principally taken from Gray, and which continues still in vogue among some Indian ornithologists. This is, I must confess, inconvenient for Indian field-naturalists and collectors; but as, in my opinion, it was not possible to follow the above-mentioned system, and as the main object of this work is to endeavour to inculcate a taste for ornithology among *local students* of the science in Ceylon, it behoved me to adopt that system which appeared to me to accord best with the generally recognized affinities of the various orders into which the Ceylonese ornis divides itself, and at the *same time coincided best with the classification employed by Jerdon*, and which I am aware many who have taken up the study of ornithology in Ceylon are familiar with. The divisions adopted have been Orders (in one case also a Suborder), Families, and Subfamilies, and, in the great Order Passeres, Sections have also been made use of. The Accipitres, or Birds of Prey, have been granted precedence simply as a very favourite and specialized order, and because it has until recently been the practice among English ornithologists to follow Gray and place them first. The Psittaci, or Parrots in the possession of a cere and a very high degree of intelligence, seem to occupy a place not far distant from the Hawks. The interesting order Picariæ, in which the posterior margin of the sternum has a double notch, inasmuch as many of its groups possess zygodactyle feet, comes next the Parrots. The satisfactory arrangement of the vast order Passeres presents great difficulties; and here the system adopted by Mr. Wallace in classifying according to wing-structure has been adopted. The Columbæ (Pigeons) are a highly specialized order, and in preceding the Gallinæ, or Game-birds (aptly called Rasores, or “Scratchers,” by some systematists), must of necessity come next the Passeres. In the arrangement of the remaining orders in the work (*Grallæ*, *Gaviæ*, *Anseres*, *Pygopodes*, *Herodiones*, and *Steganopodes*) I have followed the bent of my own views on the subject, considering these six orders as naturally divisible into two great classes—1st, those with *autophagous* or independent young; 2nd, those with *heterophagous* or dependent young. It is impossible to follow a linear arrangement; but nevertheless there *are* forms in each of the orders composing these two divisions which possess affinities for one another, and

consequently tend to group them in the rotation which they take in this work. The same rule has been followed, as much as possible, in considering the order in which the various families composing these orders should be arranged. It will not be necessary to enter into any discussion in this Introduction on the much-disputed subject of classification, or to explain further my reasons for not following the more modern systems of Professors Parker and Huxley, or, still better, the modification of these systems by Messrs. Sclater and Salvin, as they have been sufficiently set forward in testifying above my desire to adopt a system best suited to the requirements of the local student, at the same time avoiding a total reversal of Gray's classification.

2nd. *Plan of the Articles*.—It has been thought best to define the characters of the various orders, families, subfamilies, genera, and species in accordance with their external characteristics, in order to simplify their comprehension to beginners. Reference is, however, made frequently to the sternum, a generally important, though not in some families (Scolopacidæ, for instance) always a reliable character.

The accompanying woodcut represents the sternum of the Malay Bittern (*Gorsachius melanolophus*), together with the bones attached to it. It has been selected as an example of a sternum with a single notch in the posterior margin. The various parts are named beneath.



st, sternum; *k*, keel of sternum; *no*, notch in posterior margin; *fu*, furculum; *co*, coracoid bones; *sc*, scapula.

In the great division Carinatae, which comprises all living birds but the Ostrich family and its allies, the "carina" or keel is more or less deep so as to hold the powerful pectoral muscles which lie in the angle between it and the body of the sternum. In the latter (Ratitæ), however, the keel is slightly developed only, the sternum being flat, inasmuch as the same development of muscle is not required for non-flying birds. The furculum is in most birds a single bone, but in some Parrots, Pigeons, and Owls consists of two separate clavicles. In some genera of the Steganopodes it is ankylosed to the keel, and this latter is not produced to the posterior edge of the sternum.

The synonymy at the head of the articles is not supposed, by any means, to be complete. Besides local references, only those of a leading nature, as also relating to the recent writings of Indian ornithologists, more particularly contributors to 'Stray Feathers,' have been given, as these

were all that were necessary to the local student. Towards the close of the work I have been obliged to curtail the synonymy, even in its reduced form, and many Indian references have been omitted which did not relate to notes of much interest on the species in question. Mr. Ramsay's distribution list of Australian birds has been of much service to me as regards Australian distribution; but, owing to want of space, I have been unable to quote, except in one or two instances, this important contribution to Australian ornithology. In respect to Ceylon references, I have not quoted my paper on the "Distribution of the Birds in the Asiatic Society's Museum," contained in the local journal for 1874, as it was printed in mistake during my temporary absence from the island, and contained many errors in distribution, which, owing to the result of subsequent experience, I had intended to correct.

In regard to the local names for the birds of the island preference has been given to those used in Asiatic and Malayan countries, and, in the case of Waders and Water-birds, Heuglin's Egyptian names have been quoted. Sinhalese names have been supplied from Layard's catalogue and from a list furnished me by Mr. MacVicar, of the Survey Office, as well as from information obtained myself from the natives. This gentleman also supplied me with a list of Tamil and Ceylon-Portuguese names, which I have used throughout the work.

The measurements of specimens, with regard to which I have been particular, all relate to Ceylonese specimens in the flesh, except when the contrary is stated (as in the case of Waders and sea-birds particularly) in brackets. My system of wing-measurement, it is well to remark, consisted in straightening the metacarpal joint by pressure in the hand, or on the table in the case of large birds, and then measuring on the upperside of the wing. The dimensions attained in this manner exceed those taken of dried specimens, when the metacarpal joint has stiffened in the usual convex form, by from 0.1 to 0.3 of an inch. Contrary to the usage of most writers, I have placed the measurements before the description, simply because it is in accordance with the practice of field-naturalists to measure their specimens first. In the description of the plumage I have endeavoured to follow a uniform system throughout: beginning with the head and back, the wings and tail are then described, thus completing the upper surface; the lores and face are then mentioned, and *ensuite* the under surface, the under wing coming last.

It is hoped that the figure of a bird which has been engraved to show the various portions of the plumage in terms of scientific nomenclature will be of service to those who are not ornithologists, should they have occasion to peruse the description of the plumage of any species in which they may be interested.

The observation (*Obs.*) on each species has been given for the benefit of the *local student*, in order to furnish him with as much information as possible of allied species inhabiting India, and, in fact, the entire Oriental Region. Many of my observations on kindred species and genera may seem superfluous to the ornithologist in England, with numerous libraries at his command; but it is to be hoped that, as far as the naturalist in Ceylon is concerned, they will be of some use. Likewise with a view of assisting the local student, an *outline* of the entire *geographical distribution* of each species has been sketched out; this matter, again, may seem, to European readers, superfluous in a work of local nature.

As the system of spelling has recently been changed, I have followed, to the best of my knowledge, the new method, but which, however, I am bound to remark, is subject to variation* at the hands of those who conform to it. For instance, the names of some places are spelt differently in the road-maps of the Surveyor-General and in that published by the editor of the 'Observer'; for example, the name of a celebrated tank is spelt "Kantalay" in the one and "Kantaleyi" in the other, whereas, after the old spelling "Kandelay" was abolished, the word used to be spelt by some civil servants "Kanthelai," and as such it appears in this work. My readers will therefore, I trust, bear with the somewhat variable orthography of Ceylonese names in the 'Birds of Ceylon.'

In the early part of the work the name of the territorial division "Pattuwa" will be found, in some instances, incorrectly spelt "Pattu;" but in the map, compiled from road-maps of Provinces, kindly furnished me by Col. Fyers, R.E., I have followed in all instances the new method of spelling. The figures indicating the rainfall are taken from tables likewise furnished me by the Surveyor-General.

As regards the *nidification* paragraph, I regret to say, as far as local students are concerned, that I have been compelled largely to quote from Mr. Hume's 'Nests and Eggs,' owing to the difficulty in obtaining information about, or finding one's self, the nests of birds in Ceylon. Yet the admirable notes contained in that work are perhaps better than those which I could have obtained in the island. If, however, the Appendix be consulted much interesting additional information will be found supplied by my valued correspondent Mr. Parker, who has done more in Ceylonese oology than any recent collector.

It now remains for me to return my grateful thanks to the many ornithologists, naturalists, and collectors who have furnished me with assistance and information, and placed their valuable collections at my disposal during the time I have been compiling this work. I am much indebted, first and foremost, to Dr. Günther, Director of the Zoological Department of the British Museum, and to Mr. Bowdler Sharpe, Senior Assistant of the same; for, through the kind permission of the former, the vast collections, both mounted and in the skin, were placed at my disposal for purposes of comparison with my own; while the latter, under whose care these collections are placed, rendered me every assistance in the procuring and examination of the large series of specimens that it was necessary to examine, and was always ready and willing to impart information on difficult points with which his great experience and unexceptionally central position enabled him successfully to deal. Again, to Mr. Seebohm I am highly indebted for having placed at my disposal his large collections, the extensive Chinese series of skins collected by the late Mr. Swinhoe being of great service for purposes of comparison; also to Mr. Howard Saunders, who, as regards his particular group (the Laridæ), furnished me with much assistance. To Messrs. Gurney, Harting, Dresser, Sclater, Salvin, and Godman my thanks are likewise

* Letters sent me from *Mannar*, spelt thus correctly by the writer, are impressed with the post-mark *Manaar*!

due for aid rendered as regards the several groups which they have made their study. I must not forget to acknowledge the assistance rendered to me by Mr. F. H. Waterhouse, Librarian of the Zoological Society, in answering my frequent queries as to references and data from the many scientific works required to be consulted, and which, from time to time, I omitted to collect while prosecuting my studies in London. Mr. Holdsworth's kindness in giving me access to his valuable collection of Ceylon birds, and also benefiting me by his opinion on matters connected with island distribution &c., has been of much service to me. The premature death of the late Marquis of Tweeddale, and the consequent closing to the scientific world for the time being of his collection, was no small loss to the author, who was at the time just entering on the study of the Passerine birds, and reaping the advantage of that correspondence which this distinguished ornithologist was always ready to enter into with his brother naturalists. By this untoward event an anticipated visit to the magnificent collection at Yester, which, on a former trip I had only time to glance at, was also put aside. On his return to England from Afghanistan, Captain Wardlaw Ramsay, into whose possession the collection passed, kindly lent me such specimens connected with the Third Part of the work as I required. To Canon Tristram, also, I am indebted for the loan of eggs and skins of several interesting species. I have likewise to acknowledge, with thanks, the receipt of information on various points from Herr Meyer, of the Royal Museum at Dresden, Herr Von Pelzeln of the Imperial Museum at Vienna, and Mr. Edward Nolan, Secretary of the Academy of Natural Sciences, Philadelphia. From a still more distant region, New Caledonia, I have had the advantage of correspondence with my enthusiastic forerunner in the field of Ceylon ornithology, Edgar Layard, who from time to time supplied me with details of his old experiences in the island.

Last, but not least, I must acknowledge with gratitude the aid I have received from my correspondents in India and Ceylon. Of the former I must mention particularly Mr. Allan Hume, C.B., and likewise not omit the names of Mr. Blanford, F.R.S., President of the Asiatic Society of Bengal, Captain Butler, 83rd Regt., and Dr. Edie, of the Madras Museum. In Ceylon my valued correspondents Messrs. Bligh and Parker, Ceylon Public Works Department, kept me constantly supplied with new material concerning the habits and nidification of many species: the former furnished me with copious notes on hill-birds, while the latter worked hard on the little-known districts of the north-west, and, being a most enthusiastic lover of birds and a close observer of Nature, the information supplied by him has been most valuable. In point of fact the better part of the Appendices is made up of material supplied by this gentleman from the Manaar district, where he has recently gone to be stationed. To Messrs. H. MacVicar, Forbes Laurie, R. Wickham, L. Holden, E. Cobbold, Captain Wade-Dalton, and other gentlemen now or formerly resident in the island, I am indebted for notes on the habits and local distribution of several interesting species. In conclusion, I am constrained to remark that had others among my Subscribers corresponded as vigorously with me during the progress of the work as Messrs. Bligh, Parker, and MacVicar, much more local information would have been contained in it.

W. V. L.

SYSTEMATIC INDEX.

Order ACCIPITRES.

Suborder FALCONES.

Family VULTURIDÆ (1 species).

		Page	App. Page
Subfam. VULTURINÆ.....	<i>Neophron ginginianus, Lath.</i>	2	

Family FALCONIDÆ (30 species—2 doubtfully identified).

Subfam. ACCIPITRINÆ	{	<i>Circus æruginosus, Linn.</i>	5	
		<i>Circus melanoleucus, Forster</i>	9	
		<i>Circus cineraceus, Mont.</i>	12	
		<i>Circus macrurus, S. G. Gmelin</i>	17	1209
		<i>Astur trivirgatus, Temm.</i>	20	
		<i>Astur badius, Gmelin</i>	23	
		<i>Accipiter virgatus, Temm.</i>	26	
	{	<i>Accipiter nisus, Linn.</i>	27	
Subfam. BUTEONINÆ		<i>Buteo plumipes, Hodgson</i>	31	
Subfam. AQUILINÆ	{	<i>Nisaetus fasciatus, Vieill.</i>	36	
		<i>Nisaetus pennatus, Gmelin</i>	40	
		<i>Lophotriorchis kieneri, G. Sparre</i>	43	
		<i>Neopus malayensis, Temm.</i>	47	1209
		<i>Spizaetus kelaarti, Legge</i>	51	1209
		<i>Spizaetus ceylonensis, Gmelin</i>	55	1209
		<i>Spilornis spilogaster, Blyth</i>	61	
		<i>Haliaetus leucogaster, Gm.</i>	67	1209
		<i>Polioaetus ichthyaetus, Horsf.</i>	72	1209
		<i>Haliastur indus, Bodd.</i>	76	
		<i>Milvus govinda, Sykes</i>	80	1209
	{	<i>Elanus caeruleus, Desf.</i>	85	
		<i>Pernis ptilonorhynchus, Temm.</i>	89	

Family FALCONIDÆ (*continued*).

		Page	App. Page
Subfam. FALCONINÆ	{ Baza ceylonensis, <i>Legge</i>	94	1209
	{ Baza lophotes, <i>Temm.</i>	98	1209
	{ Falco peregrinus, <i>Tunstall</i>	101	1209
	{ Falco peregrinator, <i>Sund.</i>	106	1210
	{ Falco severus, <i>Horsf.</i>	110	
	{ Falco chicquera, <i>Daud.</i>	110	
	{ Cerchneis tinnunculus, <i>Linn.</i>	114	
	{ Cerchneis amurensis, <i>Raude</i>	119	

Suborder PANDIONES (**1 species**).

Pandion haliaetus, <i>Linn.</i>	122
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Suborder STRIGES.

Family BUBONIDÆ (**11 species—1 doubtfully occurring**).

Subfam. BUBONINÆ	{ Ketupa ceylonensis, <i>Gm.</i>	127	
	{ Bubo nipalensis, <i>Hodgs.</i>	131	1210
	{ Scops bakkamuna, <i>Forster</i>	135	1210
	{ ? Scops malabaricus, <i>Jerdon</i> .....	..	1210
	{ Scops sunia, <i>Hodgs.</i>	139	
	{ Scops minutus, <i>Legge</i>	142	
	{ Ninox scutulata, <i>Raffl.</i>	145	
	{ Glaucidium castanonotum, <i>Blyth</i>	149	
Subfam. SYRNINÆ	{ Glaucidium radiatum, <i>Tick.</i>	152	
	{ Syrnium indrani, <i>Blyth</i>	155	
	{ Phodilus assimilis, <i>Hume</i>	161	1210

Family STRIGIDÆ (**1 species**).

Strix flammea, <i>Linn.</i>	164
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Order PSITTACI.

Family PSITTACIDÆ (**5 species—1 doubtfully occurring**).

Subfam. PALÆORNINÆ	{ Palæornis eupatrius, <i>Linn.</i>	168	1210
	{ Palæornis torquatus, <i>Bodd.</i>	171	
	{ Palæornis cyanocephalus, <i>Linn.</i>	174	1211
	{ Palæornis calthropæ, <i>Layard</i>	177	1211
	{ ? Palæornis columboides, <i>Vigors</i>	1211

Family TRICHOGLOSSIDÆ (**1 species**).

Loriculus indicus, <i>Gm.</i>	180	1212
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Order **PICARIÆ.**Family PICIDÆ (**10 species—1 doubtfully determined**).

	Page	App. Page
Subfam. PICINÆ	Picus maharattensis, <i>Lath.</i>	184 1212
	Yungipicus gymnophthalmus, <i>Blyth</i>	186 1212
	Chrysocolaptes stricklandi, <i>Layard</i>	188
	Chrysocolaptes festivus, <i>Bodd.</i>	191 1212
Subfam. GECININÆ	Gecinus striolatus, <i>Blyth</i>	194 1212
	<i>Chrysophlegma xanthoderus</i> , <i>Malh.*</i> ..	197 1211
	<i>Chrysophlegma chlorigaster</i> , <i>Jerdon</i> }	.. 1211
	Micropternus gularis, <i>Jerdon</i>	200 1212
	Brachypternus ceylonus, <i>Forster</i>	202 1212
	Brachypternus puncticollis, <i>Malh.</i>	205 1212
	?Brachypternus intermedius †, <i>Legge</i>	205 1212, 1224

Family CAPITONIDÆ (**4 species**).

Subfam. MÆGALÆMINÆ	Megalæma zeylanica, <i>Gm.</i>	208
	Megalæma flavifrons, <i>Cuv.</i>	212 1213
	Xantholæma rubricapilla, <i>Gm.</i>	215
	Xantholæma hæmacephala, <i>Müll.</i>	218

Family CUCULIDÆ (**16 species**).

Subfam. CUCULINÆ	Cuculus canorus, <i>Linn.</i>	221
	Cuculus micropterus, <i>Gould</i>	228
	Cuculus poliocephalus, <i>Lath.</i>	231
	Cuculus sonnerati, <i>Lath.</i>	233
	Cuculus passerinus, <i>Vahl.</i>	235
	Cuculus maculatus, <i>Gm.</i>	238
	Hierococcyx varius, <i>Vahl</i>	240
	Surniculus lugubris, <i>Horsf.</i>	243
	Coccytes jacobinus, <i>Bodd.</i>	246
	Coccytes coromandus, <i>Linn.</i>	249
Subfam. PHÆNICOPHAINÆ	Eudynamys honorata, <i>Linn.</i>	251
	Phœnicophaës pyrrhocephalus, <i>Forster</i> ..	255
	Zanclostomus viridirostris, <i>Jerd.</i>	258 1213
	Centropus rufipennis, <i>Illiger</i>	260 1213
	Centropus chlororhynchus, <i>Blyth</i>	263
	Taccocua leschenaulti, <i>Lesson</i>	266

Family TROGONIDÆ (**1 species**).

Harpactes fasciatus, <i>Forster</i>	269
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* Incorrect title at head of article.

† *Vide* description of "Red Race."

Family BUCEROTIDÆ (2 species).		
	Page	App. Page
Anthracoceros coronatus, <i>Bodd.</i>	272	1224
Tockus gingalensis, <i>Shaw</i>	275	1213, 1224
Family UPUPIDÆ (1 species).		
<i>Upupa nigripennis</i> , <i>Gould</i> * }	278	1213
<i>Upupa ceylonensis</i> , <i>Reich.</i> } . . . . .	..	1213
Family CORACIIDÆ (2 species).		
Subfam. CORACIINÆ	{ <i>Coracias indica</i> , <i>Linn.</i>	281
	{ <i>Eurystomus orientalis</i> , <i>Linn.</i>	285 1213
Family ALCEDINIDÆ (6 species).		
Subfam. ALCEDININÆ	{ <i>Ceryle rudis</i> , <i>Linn.</i>	288
	{ <i>Alcedo bengalensis</i> , <i>Gm.</i>	292
Subfam. HALCYONINÆ	{ <i>Pelargopsis gurial</i> , <i>Pearson</i>	295
	{ <i>Halcyon smyrnensis</i> , <i>Linn.</i>	298
	{ <i>Halcyon pileata</i> , <i>Bodd.</i>	301
	{ <i>Ceyx tridactyla</i> , <i>Pall.</i>	303 1213, 1224
Family MEROPIDÆ (3 species).		
	<i>Merops philippinus</i> , <i>Linn.</i>	306 1213
	<i>Merops viridis</i> , <i>Linn.</i>	309 1213
	<i>Merops swinhoii</i> , <i>Hume</i>	312 1213
Family CYPSELIDÆ (6 species).		
	<i>Chætura gigantea</i> , <i>Temm.</i>	314 1214
	<i>Cypselus melba</i> , <i>Linn.</i>	317
	<i>Cypselus affinis</i> , <i>J. E. Gray</i>	319
	<i>Cypselus batassiensis</i> , <i>Gray</i>	322
	<i>Collocalia francica</i> , <i>Gm.</i>	324 1214
	<i>Dendrochelidon coronatus</i> , <i>Tickell</i>	328 1214, 1224
Family CAPRIMULGIDÆ (4 species).		
Subfam. STEATORNINÆ	<i>Batrachostomus moniliger</i> , <i>Layard</i>	331
Subfam. CAPRIMULGINÆ	{ <i>Caprimulgus kelaarti</i> , <i>Blyth</i>	337
	{ <i>Caprimulgus atripennis</i> , <i>Jerd.</i>	340
	{ <i>Caprimulgus asiaticus</i> , <i>Lath.</i>	343

* Incorrect title at head of article.

Order **PASSERES.**Family CORVIDÆ (**3 species**).

		Page	App. Page
Subfam. CORVINÆ	{ <i>Corone macrorhyncha</i> , <i>Wagler</i>	346	
	{ <i>Corone splendens</i> , <i>Vieill.</i>	349	
	{ <i>Cissa ornata</i> , <i>Wagler</i>	353	

Family ORIOLIDÆ (**2 species**).

<i>Oriolus diffusus</i> , <i>Sharpe</i> * }	355	1214
<i>Oriolus indicus</i> , <i>Jerd.</i> } .....	..	1214
<i>Oriolus melanocephalus</i> , <i>Linn.</i>	357	

Family CAMPOPHAGIDÆ (**4 species**).

<i>Graucalus macii</i> , <i>Lesson</i>	360	1214
<i>Pericrocotus flammeus</i> , <i>Forster</i> ...	363	1224
<i>Pericrocotus peregrinus</i> , <i>Linn.</i>	366	1214, 1224
<i>Lalage sykesi</i> , <i>Strickl.</i>	369	1214

Family PRIONOPIDÆ (**2 species**).

Subfam. PRIONOPINÆ	{ <i>Tephrodornis pondicerianus</i> , <i>Gm.</i>	372	1214, 1225
	{ <i>Hemipus picatus</i> , <i>Sykes</i>	375	

Family LANIIDÆ (**3 species—1 doubtfully occurring**).

<i>Lanius cristatus</i> , <i>Linn.</i>	377	
<i>Lanius lucionensis</i> , <i>Linn.</i>	378	
<i>Lanius caniceps</i> , <i>Blyth</i>	383	1215, 1225

Family DICRURIDÆ (**5 species**).

<i>Buchanga atra</i> , <i>Hermann</i>	386	1215
<i>Buchanga longicaudata</i> , <i>Hay</i>	390	
<i>Buchanga leucopygialis</i> , <i>Blyth</i>	392	1215
<i>Dissemurus lophorhinus</i> , <i>Vieill.</i>	396	
<i>Dissemurus paradiseus</i> , <i>Linn.</i>	399	1215

Family MUSCICAPIDÆ (**11 species—1 doubtfully occurring**).

<i>Terpsiphone paradisi</i> , <i>Linn.</i>	404	1215
<i>Hypothymis ceylonensis</i> , <i>Sharpe</i>	408	
<i>Culicicapa ceylonensis</i> , <i>Swains.</i>	410	

* Incorrect title at head of article.

Family MUSCICAPIDÆ (<i>continued</i>).		Page	App Page
	<i>Rhipidura albifrontata</i> , <i>Frankl.</i>	412	
	<i>Alseonax latirostris</i> , <i>Raffl.</i>	415	
	<i>Alseonax muttui</i> , <i>Layard</i>	417	1215
	<i>Stoparola sordida</i> , <i>Wald.</i>	419	
	<i>Siphia tickellæ</i> , <i>Blyth</i>	421	
	<i>Siphia rubeculoides</i> , <i>Vigors</i>	424	
	<i>Siphia nigrorufa</i> , <i>Jerdon</i>	425	
	<i>Muscicapa hypertythra</i> , <i>Cabanis</i>	428	
Family SAXICOLIDÆ (5 species).			
	<i>Pratincola bicolor</i> , <i>Sykes</i>	430	
	<i>Copsychus saularis</i> , <i>Linn.</i>	433	
	<i>Cittocincla macrura</i> , <i>Gm.</i>	437	
	<i>Thamnobia fucata</i> , <i>Linn.</i>	440	
	<i>Cyanecula suecica</i> , <i>Linn.</i>	443	
Family TURDIDÆ (8 species).			
	<i>Larvivora brunnea</i> , <i>Hodgson</i>	446	1215
	<i>Turdus kinnisi</i> , <i>Kelaart</i>	449	1215, 1225
	<i>Turdus spiloptera</i> , <i>Blyth</i>	451	1215
	<i>Turdus wardi</i> , <i>Jerd.</i>	453	
	<i>Oreocincla imbricata</i> , <i>Layard</i>	455	
	<i>Geocichla citrina</i> , <i>Lath.</i>	457	1216
	<i>Monticola cyana</i> , <i>Linn.</i>	460	
	<i>Myiophoneus blighi</i> , <i>Hodgsw.</i>	463	
Family BRACHYPODIDÆ (10 species).			
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	{ <i>Hypsipetes ganeesa</i> , <i>Sykes</i>	469	
	{ <i>Criniger ictericus</i> , <i>Strickl.</i>	472	
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	{ <i>Rubigula melanictera</i> , <i>Gm.</i>	477	1216
	{ <i>Kelaartia penicillata</i> , <i>Blyth</i>	480	
	{ <i>Pycnonotus hæmorrhous</i> , <i>Gm.</i>	482	1216
	{ <i>Phyllornis jerdoni</i> , <i>Blyth</i>	485	
Subfam. PHYLLORNITHINÆ	{ <i>Phyllornis malabaricus</i> , <i>Gm.</i>	488	
	{ <i>Iora tiphia</i> , <i>Linn.</i>	490	
Family TIMALIIDÆ (17 species—1 doubtfully determined).			
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	{ <i>Garrulax cinereifrons</i> , <i>Blyth</i>	499	
	{ <i>Pomatorhinus melanurus</i> , <i>Blyth</i>	501	
Subfam. TIMALIINÆ	{ <i>Dumetia albogularis</i> , <i>Blyth</i>	505	
	{ <i>Alcippe nigrifrons</i> , <i>Blyth</i>	507	1216
	{ <i>Pellorneum fuscicapillum</i> , <i>Blyth</i>	509	1216
	{ <i>Pyctorhis nasalis</i> , <i>Legge</i>	512	
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* Incorrect title at head of article.

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<i>Limodromus indicus</i> , <i>Gm.</i>	614
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Family GOURIDÆ (**1 species**).

<i>Chalcophaps indica</i> , <i>Linn.</i>	714
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<i>Carpophaga ænea</i> , <i>Linn.</i>	718	1218, 1225
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<i>Osmotreron pompadora</i> , <i>Gm.</i>	728	1218, 1225

Order **GALLINÆ.**Family PHASIANIDÆ (**3 species**).

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<i>Galloperdix bicalcarata</i> , <i>Forster</i>	741	

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<i>Coturnix chinensis</i> , <i>Linn.</i>	755	1218
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<i>Hypotaenidia striata</i> , Linn.	775	
<i>Rallus indicus</i> , Blyth	778	
<i>Gallinula chloropus</i> , Linn.	781	1218
<i>Erythra phœnicura</i> , Forster	786	
<i>Gallicrex cinerea</i> , Gm.	791	
<i>Porphyrio poliocephalus</i> , Lath.	795	

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<i>Rhynchæa capensis</i> , Linn.	800	1218
<i>Scolopax rusticula</i> , Linn.	806	
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<i>Gallinago stenura</i> , Horsf.	816	
<i>Gallinago scolopacina</i> , Linn.	821	1218
<i>Gallinago gallinula</i> , Linn.	828	1219
<i>Limosa ægocephala</i> , Linn.	832	
<i>Terekia cinerea</i> , Gûld.	836	
<i>Totanus glottis</i> , Linn.	840	
<i>Totanus stagnatilis</i> , Bechst.	844	
<i>Totanus fuscus</i> , Linn.	848	
<i>Totanus calidris</i> , Linn.	852	
<i>Totanus glareola</i> , Linn.	857	
<i>Totanus ochropus</i> , Linn.	862	
<i>Tringoides hypoleucus</i> , Linn.	867	
<i>Machetes pugnax</i> , Linn.	873	
<i>Tringa subarquata</i> , Gûld.	879	
<i>Tringa minuta</i> , Leisler.	884	
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<i>Tringa temmincki</i> , Leisler	892	
<i>Limicola platyrhyncha</i> , Temm.	896	
<i>Calidris arenaria</i> , Linn.	1220
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<i>Numenius lineatus</i> , Cuv.	906	
<i>Numenius phæopus</i> , Linn.	910	

Family PARRIDÆ (1 species).

<i>Hydrophasianus chirurgus</i> , Scopoli.	914
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Family CHARADRIIDÆ (12 species).

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Family ŒDICNEMIDÆ (**3 species**).

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Family GLAREOLIDÆ (**2 species**).

Glareola orientalis, <i>Leach</i>	980
Glareola lactea, <i>Temm.</i>	984

Family HÆMATOPODIDÆ (**1 species**).

Hæmatopus ostralegus, <i>Linn.</i>	987
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Family DROMADIDÆ (**1 species**).

Dromas ardeola, <i>Paykull</i>	991
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	{ Hydrochelidon leucoptera, <i>Meisner & Schinz</i>	1000
	{ Sterna seena, <i>Sykes</i>	1003
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	{ Sterna anglica, <i>Montagu</i>	1011
	{ Sterna fluviatilis, <i>Naum.</i>	1015
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	{ Sterna saundersi, <i>Hume</i>	1023
	{ Sterna bergii, <i>Licht.</i>	1026
	{ Sterna media, <i>Horsf.</i>	1030
	{ Sterna dougalli, <i>Mont.</i>	1033
	{ Sterna fuliginosa, <i>Gm.</i>	1036
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Oceanites oceanicus, <i>Kuhl</i>	1056

Order PYGOPODES (**1 species**).

Podiceps fluviatilis, <i>Tunst.</i>	1059	1222
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Order ANSERES.

Family ANATIDÆ (**10 species—1 doubtfully identified**).

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	{ Nettapus coromandelianus, <i>Gm.</i> 1066	1222
	{ Dendrocygna javanica, <i>Horsf.</i> 1069	
	{ Tadorna casarca, <i>Linn.</i> 1070	1222
Subfam. ANATINÆ	{ Anas pœcilorhyncha, <i>Forst.</i> 1073	1222
	{ Anas acuta, <i>Linn.</i> 1076	
	{ Anas circia, <i>Linn.</i> 1080	
	{ Anas crecca, <i>Linn.</i> 1083	
	{ Spatula clypeata, <i>Linn.</i> 1086	
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Family PLATALEIDÆ (**5 species**).

Platalea leucorodia, <i>Linn.</i>	1096	1223
Tantalus leucocephalus, <i>Forst.</i>	1100	
Anastomus oscitans, <i>Bodd.</i>	1103	1223
Ibis melanocephala, <i>Lath.</i>	1106	
Plegadis falcinellus, <i>Linn.</i>	1109	1223

Family CICONIIDÆ (**4 species**).

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<i>Butorides javanica</i> , <i>Horsf.</i>	1153	1223
<i>Ardetta sinensis</i> , <i>Gm.</i>	1156	
<i>Ardeiralla flavicollis</i> , <i>Lath.</i>	1159	
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<i>Nycticorax griseus</i> , <i>Linn.</i>	1165	
<i>Gorsachius melanolophus</i> , <i>Raffl.</i>	1169	

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<i>Phaethon indicus</i> , <i>Hume</i>	1173

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<i>Sula leucogastra</i> , <i>Bodd.</i>	1177	
<i>Sula cyanops</i> , <i>Sund.</i>	1180	
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ERRATA ET CORRIGENDA.

- Page 85, 2nd line of synonymy, for *vociferans* read *vociferus*.
 119, line 21 from bottom, after *cere*, eliminate brackets, and read *cere*, all but the tip of bill.
 174, 2nd line of synonymy, for 1786 read 1788.
 186, at head of article, for GYMNOPIHTHALMOS read GYMNOPTHALMUS.
 224, 5th line of *Nidification*, for it is read they are.
 273, line 8 from bottom, for Nikerawettiya read Nikaweratiya.
 319, in 4th line of *Observation*, the semicolon should precede "in."
 463, at head of article, MYIOPHONTUS should be more correctly MYIOPHONEUS.
 647, line 18, for *H. hypoxanthus* read *P. hypoxanthus*.
 674, line 25 from bottom, for 1856 read 1866.

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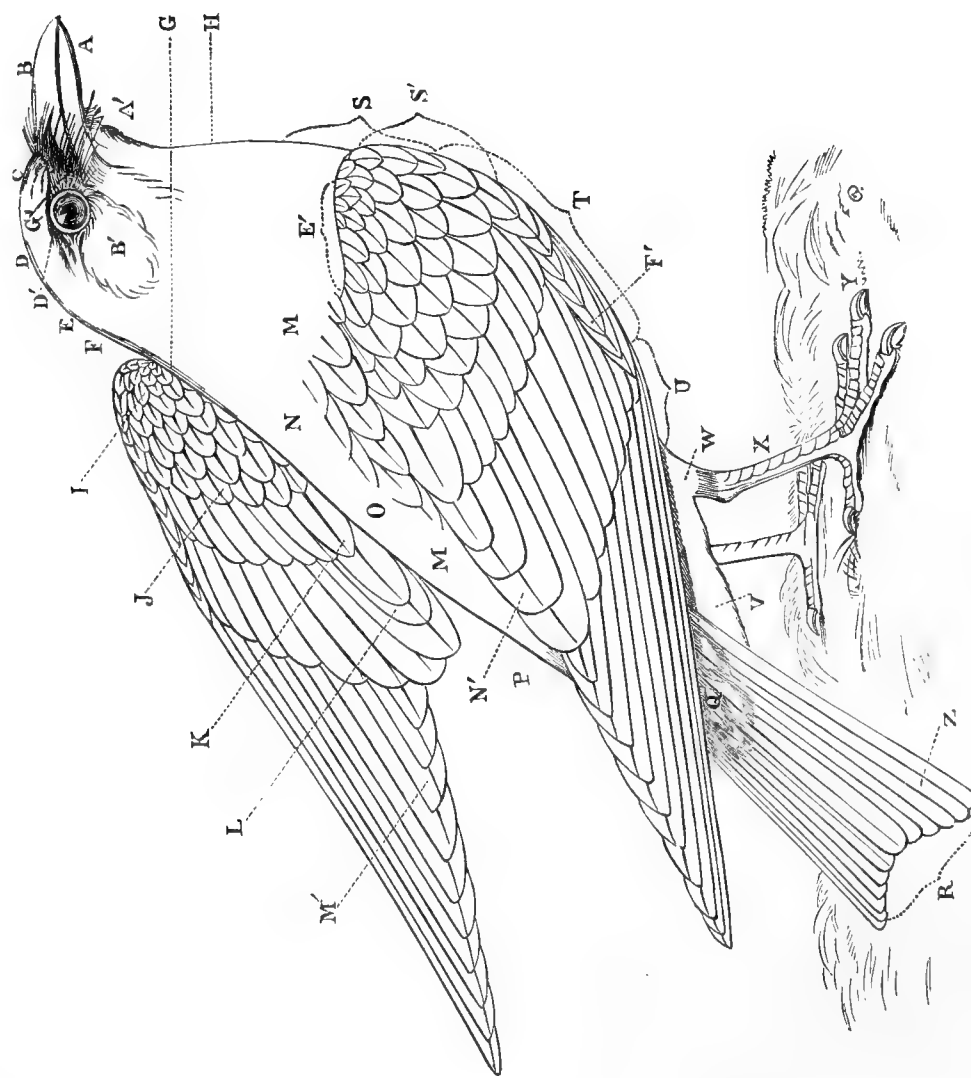
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| D'. Supercilium. | H. Fore neck. | N. Interscapular region. | S'. Metacarpus. | Z. Penultimate rectrix. |

BIRDS OF CEYLON.

Order ACCIPITRES.

Bill short, strong, stout at the base, the upper mandible longer than the lower, the culmen strongly curved, the direction of the tip perpendicular; nostrils placed in a cere or soft membrane. Wings with ten primaries. Feet strong, armed with powerful talons of an elongated conical shape, curved, sharp, and rather smooth. Talons capable of being bent under the feet, the inner one stronger than the others. (*Sundevall* in part.)

Suborder FALCONES.

Eyes placed laterally in the head; no facial disk. Tail generally with twelve feathers, in some with fourteen. Outer toe not reversible; toes bare. Plumage compact.

Fam. VULTURIDÆ.

“Head naked, or clothed with down; no true feathers on crown of head; nostrils not perforated, rounded, perpendicular, or horizontal.” (*Sharpe*, Cat. Birds, i. p. 2.)

ACCIPITRES.

VULTURIDÆ.

VULTURINÆ.

Genus NEOPHRON.

Differs from the other genera of its family in having the bill long and slender, and the tip much curved; in the cere being more than half the length of the bill, with the nostrils placed horizontally in it; the head is bare only to the occiput; the wings much pointed, the 3rd quill being the longest, the tail wedge-shaped, and the membranes uniting the toes ample.

NEOPHRON GINGINIANUS.

(THE LESSER SCAVENGER-VULTURE.)

Vultur ginginianus, Lath. Ind. Orn. i. p. 7 (1790); Daud. Traité, ii. p. 20 (1800).

Neophron percnopterus, Blyth, Ann. Nat. Hist. 1844, xiii. p. 115; Jerdon, B. of Ind. i. p. 12; id. Ibis, 1871, p. 236.

Neophron ginginianus, Gray, Hand-l. of B. i. p. 4; Hume, Rough Notes on Indian Raptores. i. p. 31; id. Nests and Eggs (Rough Draft), i. p. 9; Sharpe, Cat. Birds, i. p. 18; Legge, Str. Feath. 1876, p. 195 (first record from Ceylon); Hume, Str. Feath. i. p. 150.

Gingi Vulture of Latham; *White Scavenger-Vulture*, Jerdon, Birds of India.

"*Pharaoh's Chicken*," "*Pharaoh's Hen*," "*Dirt-bird*," popularly in India and Egypt.

Kal-Murgh, Hind. Shikarees; *Manju-Tiridi*, Tam., lit. "Turmeric-stealer," also *Pittri-gedda*, lit. "Dung-Kite."

Adult male and female. Length to front of cere 21·0 to 23·5 inches; culmen from cere 1·35; wing 18 to 19, reaching to tip of tail; tail 8·5 to 10·5; tarsus 3; mid toe 2·4 to 2·5, its claw (straight) 0·85; bill, gape to tip, 2·4.

Iris brown; naked skin of the head, face, and throat yellow; cere yellow, bill yellowish horny; legs and feet fleshy yellow.

Above, the neck, back, scapulars, wing-coverts, including the lesser primary-coverts, tail, entire under surface with the under wing-coverts white; primaries and winglet green-black, the outer webs of the long quills, from the notch to the base, and the entire web of the shorter quills pervaded with greyish; secondaries dusky greenish black, the outer webs towards the tips silvery whitish; tertials brown, changing into whitish towards the tips.

Young. Birds of the year have the head partly clothed with short rudimentary feathers; a broad blackish stripe passes from the forehead over the centre of the crown, and spreads out on the occiput; the lores are divided by a narrow blackish stripe, running forward to the cere; upper surface blackish brown, deepest on the back and sides of the neck and the chest, and paling into dark brown on the scapulars and wing-coverts; feathers of the back, scapulars, and wing-coverts more or less broadly tipped with fulvous; upper tail-coverts fulvous brown; tail pale brown, tipped with fulvous grey; quills black, as in the adult, but the outer webs washed with brownish grey at the tip:

breast and abdomen brownish, the feathers tipped with fulvous; under tail-coverts fulvous; under wing brown, with fulvous tippings along the edge.

With age the whole of the upper surface pales, the median wing-coverts remaining darker than the rest of the wing and the back; the sides of the neck likewise remain dark, while the rest of the under surface becomes "light brownish;" the upper tail-coverts are paler than the rump during the transition stage. Examples, however, vary in their mode of acquiring the adult plumage, the back of the neck in some being quite blackish, while the back and wing-coverts are almost white.

Obs. This species is distinguished by Mr. Sharpe, in his 'Catalogue of Birds,' from that common to Egypt and the countries surrounding the Mediterranean and Red Seas, on account of its smaller size and yellow bill. Mr. Hume, however, is unable as yet to determine whether there is any constant difference in size or colour of bill to be depended on. He remarks (Str. Feath. i. p. 151) that he has "procured and measured numerous specimens in many different parts of India, both of black- and yellow-billed birds, and with and without more or less of slender white feathers on the throat," and that he is unable to detect any marked distinction as regards size in the two. When a very large series from different localities can be got together, this point may perhaps be satisfactorily determined.

Distribution.—The Scavenger-Vulture of India can only take its place in the avifauna of Ceylon as the veriest straggler. An immature example made its appearance at Nuwara ELLIYA in March 1874, and was shot by Mr. Grinlinton, of the P. W. Department, while roaming about the bazaar in search of food. Its occurrence at that season of the year in the highlands of Ceylon proves it to have been driven to the south by the north-east monsoon, a wind which often brings Indian Raptores, not usually found in such low latitudes, to the island. It is therefore not improbable that, under similar circumstances, it may again find its way to Ceylon.

On the continent the White Scavenger-Vulture, if it be considered distinct from the Egyptian bird, is, according to Jerdon, "abundant throughout the greater part of India, being more rare in Central and Northern India, and unknown in lower Bengal." Subsequent observers record it as being numerous in stated localities, such as the Nilghiris, Northern Guzerat, in Sindh, Rajpootana, Khandala, and even in the subsidiary ranges of the Himalayas, where, according to Mr. Hume, it breeds up to 8500 feet. Mr. Brooks, in a paper on the birds of the Suliman hills, in 'Stray Feathers,' 1876, remarks that he found it more abundant in that locality than anywhere in India, owing probably to the fact of there being no other Vultures there to dispute the territory with it and rob it of its easily-earned and noxious food.

Habits.—This Vulture, which, from its unclean propensities, is perhaps the least interesting of its family, is nevertheless an important support to the somewhat deficient sanitary customs which usually obtain about native villages and bazaars in India. By reason of its weak bill, it is unable to tear the flesh of carrion in company with other Vultures, of which it, moreover, is said to stand in considerable fear, and it therefore subsists by devouring all sorts of offal and other disgusting substances.

It is a denizen of most towns and villages in India, and, in common with the Grey Crow, displays an utter fearlessness of man, frequenting the dirtiest native quarters, or hovering round the abattoirs, where it appeases its ravenous appetite on the refuse thrown out during the night. It does not, however, confine itself to the vicinity of human habitations, being often found about open country, both flat and hilly, and likewise on the borders of such large sheets of water as the Sambhur lake, &c.

Like its near ally, the Egyptian Vulture, which I have seen easily advancing with almost motionless wings against a strong wind, this species has considerable powers of flight. Its usual mode of progression is with heavy and rather measured flappings of the wing; but when collected in flocks near some tempting spot it soars to a considerable height, and takes a quiet survey of the ground beneath it. It passes much of its time on the ground after feeding, and stands with an erect deportment. Jerdon remarks that it walks with ease, lifting its legs very high.

Nidification.—The spots chosen by this bird to nest in are the tops of walls, buildings, temples, &c., and in the upper branches of large trees in the vicinity of houses. The nests are described by various writers as untidy, rather loosely-put-together structures of sticks and large twigs, with but a slight depression in the centre, which is lined with rags, pieces of cloth, wool, and the many suitable substances to be found about

human dwellings. Mr. Hume mentions having found nests entirely lined with human hair, while others had nothing but green leaves to protect the eggs. These are usually two in number, but sometimes three, broad oval in shape, of a greyish-white or reddish ground-colour, and covered with very variable markings. Mr. Hume remarks, in his 'Nests and Eggs,' that "every possible shade of brownish red and reddish brown is met with, and every degree of marking, from a few distinct scattered specks to streaks and blotches, nearly confluent over the greater portion of the egg's surface." They average 2.6 inches in length by 1.98 in breadth.

Fam. FALCONIDÆ.

"Crown of the head always clothed with feathers, though the sides of the face are often more or less bare. Outer toe (except in the *Polyborinæ*) only connected to the middle toe by interdigital membrane." (*Sharpe*, Cat. Birds, i. p. 30.)

Subfam. ACCIPITRINÆ.

"Outer toe connected to middle toe by an interdigital membrane; tibia and tarsus to all intents equal in length, the difference between them not so great as the length of hind claw." (*Sharpe*, Cat. Birds, i. p. 46.)

ACCIPITRES.

FALCONIDÆ.

ACCIPITRINÆ.

Genus CIRCUS.

Bill accipitrine, short, moderately robust, compressed, high at the base, the culmen curved gradually from the base of the cere to the hooked tip; margin slightly festooned. Nostrils large, oval, placed forward in the cere, and protected by the bristles of the lores. Wings long and pointed, the 3rd and 4th quills subequal and longest. Tail long, even or rounded at the tip. Tarsus long, subequal with the tibia, slender, covered in front with transverse, behind with large reticulated scutæ, plumed a little below the knee. Toes slender, the outer and the middle connected at the base by a membrane; the middle toe about half the length of the tarsus; inner toe short; claws much curved and very acute. Lower part of face surrounded by a ruff of thick-set feathers, forming a partial disk.

CIRCUS ÆRUGINOSUS.

(THE MARSH-HARRIER.)

Falco æruginosus, Linn. S. N. i. p. 130 (1766).

Falco rufus, Gm. S. N. i. p. 266; Yarr. Brit. B. i. p. 90.

Circus æruginosus, Savign. Syst. Ois. Egypte, p. 90 (1809); Gray, Gen. B. i. p. 32; Schl. Vog. Nederl. pls. 20-22; Jerdon, B. of Ind. i. p. 99; Gould, B. Gt. Br. pt. xiii.; Hume, Rough Notes, ii. p. 314; Holdsworth, P. Z. S. 1872, p. 414 (first record from Ceylon); Sharpe, Cat. Birds, i. p. 69; Legge, Ibis, 1874, p. 10, 1875, p. 278, 1876, p. 126; Scully, Str. Feath. 1876, p. 126.

Le Busard roux, Brisson, also *Le Busard de Marais*.

Moor-Buzzard, Albin, Birds, i. pl. 3 (1731), also popularly in England; "*Harpy*" of some writers; *Swamp-Hawk*, *Paddy-field Hawk*, Sportsmen in Ceylon.

Mat-chil, Beng., lit. "Meadow-Kite"; *Sufeid Sira* of Mussulmen in Bengal (*apud* Jerdon).

Akbash-Sā, Turkestan, lit. "White-headed Kite."

Kurula-goya, Sinhalese; *Prāndu*, Tam.

Adult male and female. Length to front of cere 20·0 to 21·25 inches; culmen from cere 1·0 to 1·21; wing 15·5 to 16·6; tail 8·5 to 9·5; tarsus 3·2 to 3·9; mid toe 1·9 to 2·0, claw (straight) 0·8 to 0·9; height of bill at cere 0·43 to 0·45.

Obs. There is no constant difference in the size of males and females, some of the former equalling if not exceeding the largest of the latter.

Iris golden yellow, cere yellow; bill black; base of under mandible, legs, and feet yellow; claws black.

Fully matured plumage. Head and nape buff-white, deepening into rufescent buff on the hind neck; the feathers of the head with clear, blackish-brown mesial stripes, increasing in width on the hind neck, on the lower part of which they spread over the feather into the deep glossy brown of the back, scapulars, median wing-coverts, and longer tertials; in some examples, probably the oldest, the head-streaks are reduced to narrow shaft-lines; least wing-coverts above the flexure and along the ulna, in the female, buff, with dark central streaks overcoming the feathers on the lower series; the median wing-coverts and the scapulars margined with indistinct rufous; upper tail-coverts pale grey, often shaded with tawny patches, and the basal portion of the feathers white; greater wing-coverts, secondaries, primaries (with the exception of the four longer quills), their coverts, and the winglet dull silver-grey, with dark shafts; longer primaries black; basal portion of the inner webs of all the quills, edge of the wing, and under wing-coverts pure white; tail paler grey than the wings, with a whitish tip and a brownish hue near it; the shafts white.

Lores and round the eye slaty blackish, with the bases of the feathers white; ear-coverts brownish, edged with tawny; ruff blackish brown, margined broadly with buff; throat, chest, and breast buff; the chin with narrow dark shaft-lines, and the remainder regularly marked with broad, pointed, sepia-brown streaks, paling on the lower parts into dull rufous, and spreading over the feathers, which are often pale-margined, or with buff bases showing here and there on the surface; under surface of tail whitish.

In such fully matured birds the lower parts vary much, the feathers in some being as pale-margined as the breast.

A younger stage, but one in which the bird is adult, and which is more frequently met with than the above, has the head and hind neck rufescent buff, the feathers with broad mesial brown stripes; the forehead is not so pale as the crown, and the ear-coverts are conspicuously brown; the shorter primaries are dusky, or not so grey as the coverts; the fore neck and chest, and sometimes the better part of the breast, are rufous-buff, with rufous-brown stripes, while the whole of the lower parts, including the under tail-coverts, are dark rufous, with dark stripes on the breast; under wing-coverts rufescent.

Young. Iris brown; cere, legs, and feet greenish yellow, the bill sometimes greenish about the base of lower mandible. Whole upper surface, wings, and tail uniform dark brown, while the entire under surface from the throat down is chocolate-brown; the forehead, crown, and chin buff, with narrow brown shaft-stripes; the tail is tipped with buff, and the feathers of the lower parts, in some examples, very finely margined with the same. Occasionally the forehead and crown are both brown and the buff confined to the nape, while very rarely the entire bird is a very dark brown.

Progress with age. The brown iris becomes mottled with yellow, and the cere becomes yellowish above, the legs losing at the same time their greenish hue.

The buff of the head spreads down the hind neck, increases on the throat, and a patch of the same appears on the chest; in females the lesser wing-coverts become rufescent buff, with dark central streaks; the under wing-coverts pale into rufous, but the quills remain as in the nestling plumage. Examples killed at the end of the season in Ceylon are usually in this dress, which is probably acquired by a change in the feather itself.

At the next moult, the buff continues to spread chiefly on the fore neck, uniting in some cases with the pale space on the chest; the lower parts become dark rufous; the primary-coverts, secondaries, and their coverts are pervaded with grey; the upper tail-coverts are rufous, the lower feathers tipped with ashy, and the tail is brownish ashy.

Obs. The amount of yellow on the upper surface varies much in all these adolescent stages, some examples having the feathers of the lower back even broadly margined with it; it varies, in females, on the wing-coverts, and in all males I have ever examined is absent from that part.

Distribution.—This large Harrier (or the Moor-Buzzard, as it is sometimes called in England) arrives in Ceylon on its annual migration southwards through India in November, and remains in the island until the usual month of departure, the following April. It confines itself chiefly to the sea-coast, and is even there somewhat local in its distribution. Although tolerably numerous on the open plains of the Jaffna peninsula and about the vast rush-beds at the lower end of the great Jaffna lagoon, as well as on the coasts of both sides of the island as far as Manaar and the delta of the Mahawelliganga, it is equally so, during some seasons, in the extreme south of the island, and makes its appearance there as early, if not earlier, than in the north.

There can, I think, be no doubt that our seasonal migrants arrive from the north in two separate streams—the one from the north-east driven across the Bay of Bengal from Burmah and the eastward-trending coast to the north of the Godavery; the other making its way down with what is called the “long-shore wind” of October and November from the southernmost point of the Carnatic or the region about Cape Comorin, and landing

its components on the south-western shores of Ceylon. In the case of more species than one, to be hereafter noticed, I have observed migrants in the extreme south at an earlier date than in the very north of the island. The Marsh-Harrier is more numerous some seasons than others; and this irregularity in its numbers was particularly noticeable at Galle in 1871 and 1872, in the first of which years it was so common that it now and then frequented, one or two at a time, the open and public esplanade without the fort walls, coming into the "camp" and sitting on the ground near the barracks; it was at the same time to be found in the marshes all through the district. In the following year, however, I noticed very few examples anywhere in that part of the island. It frequents the paddy-lands and swamps far up the Gindurah, and is likewise found in the interior of the country to the north of Hambantota, as well as in swampy districts along the south-east coast as far as the irrigated plains below the Batticaloa lake, the largest tract of paddy-land in the island and a favourite locality for all marsh-loving birds. I have not unfrequently seen it on the swamps between Colombo and Kotté.

As regards its geographical range, the Marsh-Harrier is one of the most widely diffused of its genus. It may be said to have its permanent headquarters in Europe and Siberia, south of 60° N. lat., and in Western Asia as far as the region immediately north of the Himalayas. In the non-breeding season, however, its wandering propensities carry it over an immense portion of the Old World. It migrates through all India and into China and Japan, spreading southward even into the Philippines. In Africa it spreads over Egypt and Abyssinia, Algiers, and Eastern Morocco, and reaches the Canary Islands, where Professor Newton, in his edition of Yarrell, says that Ledru obtained it in the island of Teneriffe. It occurs likewise in South Africa, where Mr. Ayres procured it in the Transvaal Republic. It is most abundant in the marshy districts of Europe, being very common in Turkey, and swarming, according to Mr. Howard Saunders, in the marshes of the Guadalquivir. Since the draining of the fens and marshes in England, it has become, according to Professor Newton, almost entirely banished.

Habits.—The Marsh-Harrier, as its name implies, is a denizen of swamps, fens, damp moor-land, marshes, wet pasture-lands, and, in the East, of tracts of rice or "paddy" cultivation, which supply it with the same kind of food as the first-named localities. It is a bird of powerful but heavy flight, traversing considerable distances with a few strokes of its long wings, followed by onward sweeps, in the course of which it guides itself along just above the ground, ready to drop on the first prey which it espies. It is by no means a shy bird, either when seated or on the wing, and in the course of its beating round or crossing a piece of ground will fly close to the sportsman.

It is the most predatory of all the Harriers, not contenting itself with living on reptiles, frogs, rats, and other small mammals, but seizing wounded Snipe and other birds without fear of the gun, and capturing fish with as much skill as the Fish-Hawk. I have killed it with a large Lulu*, weighing nearly two pounds, in its talons, and have likewise detected the remains of young Pipits in the stomach of one shot in the marshes of Jaffna. On seizing a lizard or snake, these birds usually devour it there and then, fixing it to the ground with the talons, in the same manner that any ordinary Hawk pins its prey to a branch.

The Moor-Buzzard sometimes soars to a great height, circling round and round above swamps and marshes, and on account of its large size has much the appearance of an Eagle in the distance, until its long tail be observed, this feature at once ensuring its identification. It perches on the ground like its congeners, but not unfrequently rests on dead trees at the borders of marshes, and is the only Harrier I have seen thus perched in Ceylon.

In his interesting paper on the birds of Turkestan, Dr. Scully remarks that besides feeding on frogs, rats, and lizards, the Marsh-Harrier kills the Reedling (*Calamophilus biarmicus*), this little bird no doubt coming constantly beneath its notice as it hovers round the reed-beds of swamps in that country.

Nidification.—This species, it appears, has been known to breed in India, Mr. Hume having received a pair of eggs taken near the Kistna river. The natives of Oudh have also informed that gentleman that it breeds in their province; and as it has been shot in other parts of the country during the breeding-season, it seems certain that a few birds breed within the Indian limits. The nest is said to be placed on the ground, among sedge or reeds, and to be made of sticks, rushes, or coarse grass.

* A common freshwater fish in Ceylon.

Mr. A. B. Brooke, in his notes on the ornithology of Sardinia ('Ibis,' 1873, p. 154), writes as follows concerning a nest in the neighbourhood of Oristano, where these Harriers swarm:—"A nest I found in the end of April was built in the middle of a reedy, marshy lake, placed halfway up the stems of the reeds, *just clear of the water*; the bottom was formed of rough coarse sticks, and the interior of dried matted rushes, in some cases with their roots attached, the egg lying carelessly in the middle." "The eggs are usually three in number, white, with a pale greenish tinge, and sometimes slightly spotted with bright reddish brown. They measure from 2.08 to 1.84 inch in length, by 1.58 to 1.44 inch in breadth"*. Mr. Hume describes some eggs in his collection as having a good number of markings, consisting, in one instance, of specks and spots chiefly at one end, and in another of large blotches and smears of pale brown.

Mr. Hewitson remarks that the eggs are "most commonly white," though they are sometimes spotted. This variation in their character accounts for the difference of opinion expressed by Montagu, Latham, and Selby on the subject. The figure in Mr. Hewitson's plate represents a slightly-marked egg, there being a few small spots of pale reddish scattered pretty evenly over the surface and intermingled with some pale blotches of bluish grey. As many as five eggs are sometimes laid, though four is the usual number.

* Newton's ed. Yarr. Brit. Birds, p. 130.

CIRCUS MELANOLEUCUS.

(THE PIED HARRIER.)

Falco melanoleucus, Forster, Ind. Zool. p. 12, pl. 11 (1781).

Circus melanoleucus, Vieill. N. Dict. d'Hist. Nat. iv. p. 465 (1816); Gray, Gen. Birds, i. p. 32; Kelaart's Prodrömus, Cat. p. 115; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 105; Jerd. B. of Ind. i. p. 98; Hume, Rough Notes, ii. p. 307; Holdsworth, P. Z. S. 1872, p. 414; Sharpe, Cat. Birds, i. p. 61 (1874); Hume, Stray Feath. vol. iii. p. 33; Swinhoe, Ibis, 1874, p. 266, pl. 10; Gurney, Ibis, 1875, pp. 226-7, and 1876, p. 130; Hume, Str. Feath. vol. v. p. 11 (1877).

The Black-and-White Falcon, Pennant, Ind. Zool. p. 33, pl. 2 (1790); Kelaart, Prodrömus.

Pahatai, Hind.; *Ablak Petaha*, Nepalese (*apud* Jerdon).

Kurula-goya, Sinhalese.

Adult male. Length to front of cere 16.5 to 18 inches; culmen from cere 0.75; wing, of 5 examples from different parts of India, 13.7, 13.9, 14.2, 14.2, 14.5; tail 8.2 to 9; tarsus 2.9 to 3.25; mid toe 1.2 to 1.4, claw (straight) 0.55; height of bill at cere 0.35.

Obs. In Mr. Hume's table of measurements of 34 old males (Str. Feath. vol. v. p. 12) the wings range from 13.2 to 14.34 inches, and the tarsi from 2.8 to 3.25.

Iris bright golden yellow; cere varying from grey to greenish yellow; bill black, paling into leaden at the base; legs and feet chrome-yellow.

Entire head, neck, chest, back, upper scapular feathers, and median wing-coverts black, glossy on the upper parts and dull on the fore neck and chest; least and greater wing-coverts, point of the wing, shorter primaries, secondaries, rump, and upper tail-coverts pale silvery grey, the quills brownish at the tips; longer primaries blackish on the terminal half, with the bases of the inner webs white; tertials brownish near the tips, much darker in some examples than in others; tail light sullied grey, paler on the lateral feathers; shafts of all but the latter feathers brownish; beneath from the chest, together with the under wing, pure unmarked white.

Young. Iris "ochreous yellow" (Swinhoe); cere greenish grey or greenish yellow; gape and loreal skin yellowish; bill pale at the base.

I subjoin here the description of Mr. Swinhoe's specimen, figured in 'The Ibis,' 1874, inasmuch as it appears, according to Mr. Gurney's judgment ('Ibis,' 1875, p. 226), to be, in all probability, the first plumage of the bird:—"Upper parts light brown, the feathers on the back dark-stemmed. Crown, nape, and scapulars blackish brown in centre of feathers, with broad yellowish-red margins. Underparts light buff, with yellowish-brown streaks, broad and darker on the breast; tibials and vent chestnut-buff, with darker stems to feathers. Quills brown, tipped light, with lightish stems, and barred across inner webs, more obscurely towards their tips; axillaries reddish cream, with reddish-brown spots; under wing whitish cream, with conspicuous bars. Upper tail-coverts greyish white; tail whitish brown, with three broad bars; a fourth, indistinct bar crosses near base of tail."

Obs. This example appears to be a male, as it has a wing of 13.0 inches only, although it is worthy of remark that in some Harriers immature females are sometimes smaller than the other sex. The plumage of the specimen, as described, is much like that of an adult female to be noticed hereafter; and the presence of three "broad bars" on the tail instead of a greater number of narrow ones, as ought to be the case in a young bird, is singular.

Mr. Gurney remarks, in the same article, that "the progress towards maturity is marked in all cases by the spreading of a conspicuous grey tint over the greater and middle wing-coverts, and over the outer webs of the secondaries and of the upper portion of the primaries." This is doubtless the case up to a certain point in the bird's change of plumage; but it appears evident that the entire adult plumage, as is only to be expected in an attire so marked in

its character, is put on at one final moult. Adult males are always to be found in the perfect pied dress without any intermingling of immature characteristics pointing to a gradual assumption of the black-and-white livery. There is, however, much to be learnt concerning the plumage of this species, particularly in respect to the females, and a thorough knowledge of it can only be attained by means of the acquisition of a large series of carefully sexed and dated specimens.

Adult female. The wing, in 10 examples measured by Mr. Hume, varied from 13·7 to 15·1 inches*, and the tarsus from 3·05 to 3·3.

It is a matter of difficulty to determine in this species which type really represents the fully adult female. The following are the dimensions and description of a female shot by myself near Trincomalie, which I have compared with examples in the British Museum, and which Mr. Sharpe considers to be fully mature :—

a. Length to front of cere 17·8 inches; culmen from cere 0·8; wing 14; tail 9·5; tarsus 3·1; mid toe 1·6, claw (straight) 0·67.

Iris citron-yellow; cere gamboge-yellow; bill dark horn, bluish at the gape and the base beneath; legs and feet gamboge-yellow.

Head and upper surface, with the wing-coverts and tertials, a subdued though glossy sepia-brown; the longer scapulars with a greyish bloom; the crown-feathers margined with rufous, and the hind neck with dull whitish, not extending to the tips; edge of forehead, above the eye, and the face whitish; the lesser coverts, from the shoulder along the flexure of the wing, pure white, with brown mesial stripes, gradually extending over the feathers on the succeeding series; winglet, primary and greater coverts, shorter primaries, and the secondaries silvery grey, barred with brown, the subterminal band broad, and the tips of the feathers dull white; longer primaries darker brown, barred with the hue of the tips, and the interspaces of the outer webs greyish; inner edge of all the quills towards the base white; upper tail-coverts almost unmarked white; tail above greyish, with four dark bars, the subterminal one some distance from the tip, which is pale; the interspaces of the two outer feathers towards the base white, and the bars on that part rufous.

Chin and gorge whitish, striped from the gape round to the ear-coverts with rufous brown; ruff white, with broad brown central stripes; under surface and under wing white, the fore neck and chest with bold dashes of brown, almost confluent on the sides of the neck, and diminishing to mesial stripes of a more rufescent hue on the breast, the lower parts having shaft-lines of the same; lower series of the under wing-coverts with rufescent brown bars, the rest with rufous shaft-lines; lower surface of tail dull whitish, the bars showing indistinctly.

b. An example in the British Museum, from the collection of Capt. Pinwell, is marked as a female and is in the following plumage :—

Mantle glossy dark clove-brown, much deeper than in the above; centres of frontal, occipital, and hind-neck feathers blackish brown, those of the first-named parts edged with rufous, of the latter with a paler or fulvescent hue; the outermost series of greater wing-coverts silvery white, crossed with broad bands of dark clove-brown; secondaries, shorter primaries, and their coverts of the same ground-colour, with blackish bars; 1st, 2nd, and 3rd quills with the terminal portions brown, barred with a darker hue on both webs; internal portion of the inner webs of all the quills white; tail dusky silvery grey, crossed with five clove-brown bars, those on the lateral feathers gradually changing into rufous.

Sides of the throat, together with the posterior part of face and ear-coverts, rufescent, with dark shaft-stripes; ruff whitish, striped with dark brown; chest fulvescent whitish, the feathers with broad rufous-brown centres; beneath, from the chest pure white, the breast with light rufous-brown stripes, decreasing in width to lines on the abdomen, lower flanks, and under tail-coverts.

Obs. This example differs from the Tamblegam bird in being darker as regards the brown plumage, and paler as regards the grey colouring of the wing-coverts; while the rufous edgings of the head and throat-feathers are more brought out, which latter characteristic savours of youth, in spite of the apparently more adult coloration of the back and wing-coverts.

It is in much the same dress as an "adult" female described by Mr. Hume in his excellent and exhaustive article already referred to. Another obtained by Col. Godwin-Austin in Assam, and described by Mr. Gurney (*Ibis*, 1876, p. 130), is darker than either of these—"the entire mantle being blackish brown, increasing in intensity as it approaches the tips of the lower scapulars, which are almost black; the wings show a remarkable approach to the plumage of the adult male, but the band which extends across the wing-coverts, instead of being black, is dark chocolate-brown, varied by some of the brown feathers passing, in part, into a decided black."

It is probable that each of the above examples were sufficiently mature to breed; but it does not follow that the darkest birds were the oldest. My bird had the ova developing, and would have bred in the succeeding June, and

* Colonel Godwin-Austen's bird measures, according to Mr. Gurney, 15·8 (*Ibis*, 1876, p. 131).

was in a paler phase than any of the others. It follows, however, from what has been made known by various writers of late, that, as in other Harriers, the female of this species has no fixed character of adult plumage, but that as the bird gradually grows older it inclines towards the melanistic dress of the male, never actually acquiring it, and always retaining the striped under surface peculiar to the sex. The length of tarsus will likewise serve to distinguish an adult female from an immature brown-plumaged male.

Young. Iris "light brownish yellow; cere slaty greenish grey" (*Armstrong*).
Nestling plumage as in young male.

Distribution.—This handsome Harrier, which, in common with the other three species in our list, is a migrant to Ceylon in the cool season, is undoubtedly a rare species in the island. On the few occasions on which it has occurred it has been a straggler no doubt, from the numbers which visit, during the N.E. monsoon, parts of the eastern coast of India and Burmah. Layard, with his usual good fortune, while investigating the ornithology of the island, shot a specimen on the north-west coast near Mantotte, an excellent district for Harriers; he also mentions having seen a drawing of another example made by Mr. Mitford, District Judge at Ratnapura, from a bird brought to him by a native, and captured near that place. In the early part of 1869, I observed a bird in the black-and-white plumage in the cinnamon-gardens at Colombo, and in March 1875 I shot the female above described on the shores of Tanglegam Bay. It is possible that immature birds, in a dress in which they may be mistaken at a distance for other members of the genus, may visit the northern shores of Ceylon; but the old, pied birds can very rarely do so, for during an interval of more than eight years' collecting, always on the look-out for Raptorial birds of all kinds, and two of which were passed in the north of the island, I never succeeded in detecting but the one adult bird above mentioned.

The Pied Harrier is, during the season of its wanderings, more abundant in Assam and Burmah than elsewhere, and radiates outwards from that region down the eastern parts of the Indian peninsula to Ceylon. Mr. James Inglis records it in 'Stray Feathers' (vol. v. p. 11) as extremely common, from September until April, in North-eastern Cachar. Dr. Jerdon writes that it is found in abundance in districts where rice-cultivation is carried on, "as on the Malabar coast, in parts of the Carnatic, and in Mysore," but that it is rare in the Deccan and Central India, though common in Bengal. To the east it spreads from its head quarters, which are evidently the Mongolian territory to the north of Burmah, into China and the Amoor Land, from which regions Mr. Swinhoe records it.

Habits.—The Pied Harrier is said to prefer grassy jungles to swampy land. I have seen it both in marshy places and low scrubby jungle; and the district in which Layard obtained his specimen is one of open plains, studded here and there with clumps of low bushy growth, or dotted with scattered trees. Jerdon says that, in India, it is common in districts which are cultivated with rice; and it therefore does not appear to confine itself to one particular description of country, but, like its congeners, to traverse such open tracts as abound in the food on which it subsists. Being a bird of slender frame and long wing, its flight is particularly easy and graceful: it glides over wide fields impelled by a few slow, though powerful strokes of its ample pinions; and when hunting for its prey it "quarters" a tract of ground with the greatest regularity; starting at one end, it sweeps across from side to side, backwards and forwards, with a graceful turn at the end of its course, and while rising and falling, so as to skim just above the top of the long grass, it is enabled to drop like a stone on its prey.

Its diet consists of small reptiles, lizards, and no doubt small birds, or young ones taken from the nest when its more favourite food is not procurable. It alights and rests on small eminences on the ground, banks, or stones, and roosts, like its congeners, on *terra firma*, thus falling a prey not unfrequently to nocturnal animals. Mr. Oates writes that near Pongday, in Pegu, it is often found on the large plains of mixed jungle and paddy-land, and that it prefers inundated paddy-land to any other.

Nidification.—Where this Harrier breeds is still a matter of conjecture with Indian writers, and consequently nothing is known of its nidification. The late Mr. Swinhoe could obtain no information concerning its nesting in China; and the inference therefore is, that it retires in the breeding-season to the region between the Himalaya and the east of China. Mr. Hume is of opinion that it breeds in part of this district, namely Assam; and Dr. Jerdon remarks that he saw several birds at Purneah in July, at which time they ought to have been nesting somewhere. In the female I killed in March the ova were commencing to develop largely, and she was evidently about to breed at no great date from that time.

CIRCUS CINERACEUS.

(MONTAGU'S HARRIER.)

Falco cineraceus, Mont. Orn. Dict. vol. i. (1802); Temm. Man. i. p. 76 (1820).

Circus cinerarius, Leach, Syst. Cat. Mamm. &c. Brit. Mus. p. 9 (1816).

Circus montagui, Vieill. N. Dict. xxxi. p. 411 (1819).

Circus cinerascens, Steph. Gen. Zool. xiii. p. 41 (1825); Kelaart, Prodrum, Cat. p. 115;

Layard, Ann. & Mag. N. H. 1853, xii. p. 105; Schlegel, Vog. Nederl. pls. 18, 19 (1854).

Circus cineraceus, Cuv. Règ. An. i. p. 338 (1829); Gould, B. of Europe, i. pl. 35 (1837);

Jerd. B. of Ind. i. p. 97; Gould, B. of Gt. Britain, pt. xii.; Hume, Rough Notes, ii.

p. 303; Newt. ed. Yarr. Brit. B. i. p. 138; Holdsworth, P. Z. S. 1872, p. 413; Shelley,

B. of Egypt, p. 184; Legge, Ibis, 1875, p. 278.

Circus pygargus, Sharpe, Cat. Birds, i. p. 64 (1874).

The Ash-coloured Harrier, Montagu; *The Ashy Falcon* of Kelaart; *Swamp-Hawk*, Sportsmen in Ceylon.

Rétu ülü, Transylvania. *Cenizo*, Spanish.

Pilli-gedda, Tel.; *Puna-Prāndu*, Tam.

Kurula-goya, *Rajaliya*, Sinhalese.

Adult male (from European, Indian, and Ceylonese examples). Length to front of cere 16·5 to 17·5 inches; culmen from cere 0·69 to 0·71; wing 13·6 to 15·5 (sometimes reaching to the tip or even beyond the tip of tail); tail 8·6 to 10; tarsus 2·2 to 2·3; mid toe 1·1, claw (straight) 0·45; height of bill at cere 0·32 to 0·34.

The following are some measurements of old birds from examples in the British Museum exemplifying the above variation:—

	Wing.	Tail.	Tarsus.
	in.	in.	in.
♂. Bengal	14·9	9·9	2·2
♂. N. Bengal	15·5	10·0	2·3
♂. Seville	13·6	8·6	2·2
♂. Seville	14·2	9·1	2·3

N.B. In this species the second primary-covert does not reach within $\frac{3}{4}$ inch of the notch in the second primary, falling short of it, in females, by as much as $2\frac{3}{4}$ inches.

Iris bright yellow; cere, loreal skin, and base of lower mandible yellow, top of cere tinged with greenish; bill blackish at the tip, paling into bluish horn-colour at the base; legs and feet chrome-yellow, claws black.

Head, upper surface, and wing-coverts dark bluish ashen, amalgamating with the paler bluish of the throat, fore neck, and chest, a darkish tint usually prevailing across the back and scapulars; 1st to the 5th primary blackish slate-colour, the rest, together with their coverts, silver greyish with black shafts; secondaries duller silver-grey, crossed by two dark brown bands; upper tail-coverts white, banded broadly with slate-grey; two central tail-feathers slate-grey, the next two paler grey, barred with brown, the remainder with the ground-colour white, more or less tinged with rufous towards the base and barred with dark-edged rufous bands.

Beneath, from the chest, white, striped with narrow streaks of rufous down to the under tail-coverts; axillary plume and under wing-coverts barred with rufous, but not extending to the wing-lining beneath the ulna and carpus. In some examples the ashen hue extends much further down the breast than in others.

Obs. A very remarkable melanistic variety of the adult form exists, some fine examples of which, from Mr. Howard Saunders's collection, are in the British Museum. The whole bird is dark sooty brown, with the cheeks, back,

belly, and lower flanks blackish brown; tail brownish grey; quills and secondaries blackish brown, and the under surface of the tail pale greyish.

Young. The chick is first clothed with white down, which changes in about ten days to fawn-colour on the upper surface; in a fortnight more, according to Mr. H. Saunders's observations, the breast and flanks become clothed with chestnut feathers, and the quills come out blackish brown with a rich rufous border.

Male bird of the year. Wing from 13 to 14 inches; females not exceeding the males at that age.

Iris brownish yellow; cere, bill, and legs much as in the adult.

Above sepia-brown; nape and upper tail-coverts white, the former with the centres of the feathers brown, and the latter with terminal spots and occasionally bars of the same; occiput and hind neck edged with rufous; wing-coverts margined with fulvous; primaries blackish brown, the longer feathers washed on the outer webs with greyish, and the inner webs white towards the base and mottled with brown; tail with the six central feathers brownish grey, barred with brown, the latter becoming broader than the grey ground on the outer of these feathers; the remainder brown, barred with rufescent white.

Cheeks and a broad eye-streak whitish; a gular band of dark rufous-brown, and below it a ruff of paler, dark-centred feathers, *not contrasting*, however, with the band, or *setting it off*, as in *C. macrurus*; chin and gorge rufescent whitish; throat and chest dull brownish rufous, with distinct dark shafts to the feathers, and gradually melting into the yellowish rufous of the breast and lower parts, which are striated with broad stripes of rufous; axillary plume dark rufous, with light marginal spots; median under wing-coverts rufous, with pale margins, the major series brownish.

Obs. The above is a description of *one* example, as presenting a fair type of the young male. The under surface, however, varies much, though it is always darker than that of *C. macrurus*, and differs from that species in the more conspicuously streaked lower parts, as well as in the duller gular band and less conspicuous ruff below it.

Progress towards maturity. The change from this to the adult phase is gradual but *systematic*. The upper surface becomes cinereous brown, the upper tail-coverts sometimes coming out in the adult form (white, with blue-grey bands); the tail becomes grey, the bars vanishing on the central tail-feathers, and the interspaces on the laterals are white in some and rufous-white in others; the chest and fore neck are rufescent, mingled frequently with ashen feathers, and the breast and lower parts pale fulvescent, streaked with rufous stripes; the lower surface of the primaries and the bases of the inner webs are white; under wing-coverts with more white than in the first stage.

After the next moult the lower parts become white with tawny streaks, as in the adult, and the chest is often ashy with cinereous-brown striæ; at the same time the head usually retains its brown dress, and the tail has the lateral feathers as darkly barred and as much tinged with rufous as in the younger stage. The gular band is usually dark brownish, contrasting with the pale whitish ruff assumed at this age.

Young female.* In the first year, females do not exceed males in size, measuring sometimes quite as low in the wing as the smallest of the latter.

Iris, in some brown, in others yellow, mottled with brown; bill, legs, and feet as in male.

Much resembles the male in plumage, but usually not so dark a rufous beneath, and with the striæ not so strongly pronounced; these are, however, variable in extent, being mostly confined to the chest in some, and extending in others to the lower parts; the primaries are barred on both webs with narrow bands of brown, and the secondaries are crossed on their inner webs with broader bars of the same; the wing-coverts vary, being sometimes almost uniform, and occasionally very deeply edged with rufous, the brown hue being confined to the centre of the feather.

In the next stage the rufous ground-colour of the under surface disappears from the edges of the feathers, and the mesial stripes contrast markedly with the lighter hue of the rest of the web; the head continues to be edged with rufous as before, and the margins of the hind-neck feathers are the same as in the yearling plumage; the upper tail-coverts are scantily barred or pointed with rufous, and the quills more pervaded with ashy than in the first plumage.

* The adult plumage in this sex varying so much, I have considered it advisable to commence with the young, and follow the changes to the old bird.

The under surface continues to alter until the bird is fully matured; but the adult dress, after it is acquired, varies not a little in different individuals. The following is a description of an example in the British Museum, which, judging by the regular alteration of character during adolescence, appears to be a fully matured bird.

Adult female. Above sepia-brown, pervaded on the back with greyish; the head margined with rufous, and the hind neck with fulvous, the centres of the feathers being blackish brown; median wing-coverts broadly margined with rufous-buff as in the younger bird; terminal portion of primaries and the secondaries deep brown, with a purple lustre; the outer webs of the longer primaries greyish, and both webs barred with narrow bands of blackish brown; inner webs near the base isabelline grey; upper tail-coverts white, with greyish-brown bars near the tips of the longer feathers; central tail-feathers drab-grey, with four narrow bars and a broad subterminal band of deep brown, the remainder crossed with the same number of wider bands, the interspaces paling to white on the lateral feathers, where the bars are narrower again, and tinged with rufous at the base.

Face and a small space above the ears white; the gular band deep brown, margined with rufous and tinged with ashy; ruff blending with the throat and fore neck, which are rufescent, with broad cinereous-brown stripes; beneath, from the chest downwards, fulvescent whitish, with bold central stripes of rufous-brown on the chest, and of rufous on the lower parts; under wing-coverts rufescent white, boldly dashed with rufous; edge of wing-lining whitish.

Soft parts as in the adult male.

Length* to front of cere 18·5 inches, culmen 0·7; wing 14·0 to 15·3; tail 10·0; tarsus 2·3; mid toe 1·15, claw (straight) 0·58; expanse 43·0.

The following are measurements of several European and Indian examples of adult females, which are all exceeded by those of a male from N. Bengal:—

Wing. in.	Tail. in.	Tarsus. in.
14·3	9·1	2·5
14·3	9·0	2·4
14·6	9·0	2·4
14·6	9·5	2·3

Distribution.—This widely dispersed Harrier is, as might be expected, a winter or cool-weather visitant to India and Ceylon, arriving in the latter place about October and departing again in April. After concentrating itself in considerable force in the Jaffna peninsula, the adjacent isles, and on the coast of the Northern Province, it spreads down both sides of the island, but does not apparently wander into the interior after the manner of the last species. On the west coast it is chiefly confined to such open localities as the cinnamon-gardens of Negombo, Colombo, Morotuwa, &c., and likewise affects the almost impenetrable swamp called the Mutturajawella. In the Galle district it never came under my notice as an identified bird, but may have figured among the many observed on the wing between the port and Baddegama; in the south-east, however, it occurs, but not so frequently as in the north. During a visit, in March 1876, to Jaffna and the neighbourhood, I found it at several islands in Palk's Straits, among which were the twin islets of Erinativoe, on which several were seen in the course of a day's excursion. In the island of Manaar and at Aripu I likewise observed and procured it.

Montagu's Harrier has a very similar geographical range to the next species. In Europe it is perhaps more generally distributed, as it extends in the summer to the British Isles, and is also common in Spain, but chiefly during the winter, whereas the Pale Harrier does not move westward of 8° E. long. It does not confine itself to the south of the continent alone, for it has been recorded from both Heligoland and Sardinia. It is found in Scandinavia, but does not appear to range into Northern Russia, although it inhabits the south of that country. From the Caucasus it extends, like the last bird, through Palestine, to the elevated region of Turkestan, from which Severtzoff records it. It is abundant in India in the cool season; but though Jerdon remarks that he found it in all parts of the empire, the experience of recent observers, as appearing in 'Stray Feathers,' tends to show that it is more local than either the Marsh- or the Pale Harrier. Mr. Hume does not record it from Sindh, and Mr. Ball states that it is not common in Chota Nagpur. In the Deccan, Mr. Fairbank says it is common; and it occurs, but not abundantly, in the Khandala district. It is found in Burmah, and has been obtained as far east as the Yangtze river in China.

* From the flesh in Ceylonese examples.

Habits.—Montagu's Harrier delights in swamps, marshes, and open country, more or less studded with low jungle and copse, over which it sweeps at a considerable height, rising and falling in its rapid progress, and appearing to take in a more extended view of its ground than the Pale Harrier can do in its low-directed flight. I have seen it, however, in the great swamp of Mutturajawella, flying steadily from end to end, with a slow beating of its long wings, keeping just above the tangled vegetation, and now and then dropping out of sight in the sudden manner peculiar to its family. It is crepuscular in its habits, flying about its hunting-grounds so late that it cannot be discerned when a little way off; and sharp indeed must be its eyesight to enable it to capture the small prey that it lives on, among grass and herbage, with so little light. Layard, whose observations tended to show that it fed much upon snakes, has the following well-written description of its flight in the *Ann. & Mag. Nat. Hist.*:—"Nothing can exceed in gracefulness the flight of this bird when beating over the ground in search of its quarry. Its long pointed wings smoothly and silently cut the air; now raised high over its back, as the bird glides along the furrows; now drawn to its sides, as it darts rapidly between the rows of standing paddy; now the wings beat the air with long and even strokes, and now extended, they support their possessor in his survey of the marsh over which he is passing. Suddenly he drops, and after a momentary halt speeds away, with a snake dangling in his talons, to some well-remembered stone or clod of earth, and commences his repast."

I have found the bones of small mammals, probably mice, as well as grasshoppers in this Harrier's stomach; but in Ceylon, according to my experience, its chief food consists of lizards. In countries where reptiles do not abound, such as England and other parts of Europe, it preys to a certain extent on small birds; and Mr. Howard Saunders, in his very interesting account of the nesting of this Harrier in the Isle of Wight, published in the 'Field' of the 2nd September, 1875, found amongst the food brought to the young in the nest, "the remains of several small birds—skylark, titlark, stonechat, and yellow hammer." It will also kill snakes, as appears from the above extract from Layard's writings, and no doubt very frequently preys on them in the fetid swamps of the East. Professor Newton, in his edition of Yarrell, speaks of one "which was observed to hover about a trap, baited with a rabbit, without pouncing, but on a viper being substituted for the rabbit, the bird was immediately caught." The same writer likewise speaks of its swallowing birds' eggs whole.

Montagu's Harrier, like the Moor-Buzzard, seems to prefer perching on level ground to settling on little knolls and elevations. It roosts also on the ground, and is probably often captured in the East by the stealthy jackal, or in northern climes by the still more clever fox. This Harrier does not appear to have strong powers of vision, when they are subjected to the force of the sun's rays. I once observed three birds alight, one after the other, on the bare soil, and stand with erect carriage, all looking in the same direction, after the manner of Gulls; and being between their position and the rays of the setting sun, I appeared not to be noticed by them, for I was enabled to creep steadily forward towards them in the open, and thus secured, from among the trio, one of the finest female specimens in my collection.

I have heard this Harrier make a weak squealing note, but can say nothing further as to its voice; in fact the Harriers, as a group, seem to be among the most silent of raptorial birds, little or nothing concerning their notes having been placed on record by the numerous observers of their otherwise interesting habits. When viewed on a glorious tropical morning, there is something very striking in the noiseless course of this and other Harriers as they glide silently over the misty paddy-swamps of the interior, while the luxuriant forest surrounding these, to the lover of nature, most interesting spots re-echoes with the voice of hundreds of the smaller bird creation.

This species thrives in confinement; and Mr. Saunders, in his article above referred to, records that the young bird in question, when it had acquired the free use of its wings, flew "round the lumber-room in which it had been placed in a buoyant manner, and took great pleasure in a bath, in which it would stand knee deep, enjoying being sprinkled with water, after which it would spread its wings and bask in the sun."

Nidification.—The Ashy Harrier does not breed within the Indian limits, but in northern climes, where it propagates its species, it nests in May and June. In Europe and Great Britain its nest is built, as elsewhere, on the ground, and is made of small sticks, rushes, grass, roots, &c., the latter composing the interior or lining. It is more slightly built, as a rule, than the nests of other Harriers; but its size must necessarily depend on the

situation in which it is placed, for if this should be in damp ground, where the water is liable to rise, instinct teaches the bird to raise the body of the nest until above the level at which its eggs might be destroyed. In 'The Ibis,' 1875, Messrs. Danford and Harvie Brown remark that at Mezöség, in Transylvania, they "found them nesting among reeds, the nest being sometimes considerably above the ground." The nest found by Mr. Saunders in the Isle of Wight was a "mere bottom, lined with dry grass, with an outside border of fine heather-twigs." The eggs are four to six in number, generally white and unspotted, but sometimes bluish white; the specimen figured by Mr. Hewitson is of a very pale blue: they measure 1.72 to 1.51 inch in length by 1.39 to 1.25 in breadth.

While sitting, the female is said by some writers to be attended by the male, who brings food to her; but I note that Mr. Saunders writes that, in the course of many hours' watching at different times, he "never observed the male approach the nest as if to bring food or take his turn at incubation." It is possible, however, that some birds display different propensities to others. I conclude this article with quoting still further from the interesting account of the nesting of this species in the Isle of Wight, as touching one of the most interesting features in a bird's economy, viz. its manner of returning to its nest in order not to betray its whereabouts. The writer remarks as follows:—"It was most interesting to watch the movements of the Harrier when returning to her nest; the wide circles which enabled her to take in the position of any large object on the downs gradually narrowed; then quartering would begin again, to be succeeded by more circles, till every one might be expected to be the last. Then, perhaps, she would change her mind, and go off for another series of wide flights; but when the moment came there was no hesitation or hovering, but a sudden closing of the wings as she swept over the spot, and she was down in so stealthy a manner, that if the eye were taken off her for a second, it was impossible to say whether she had settled or merely gone over the brow of the hill again."

CIRCUS MACRURUS.

(THE PALE HARRIER.)

Accipiter macrourus, S. G. Gmelin, N. Comm. Petrop. xv. p. 439, pls. viii. & ix. (1771).

Circus swainsonii, Smith, S. Afr. Q. Journ. i. p. 384 (1830); Gray, Gen. B. i. p. 32; Kelaart's Prodromus, Cat. p. 114; Layard, Ann. & Mag. N. H. 1853, xii. p. 104; Jerdon, Birds of Ind. i. p. 96; Hume, Rough Notes, ii. p. 298; Holdsworth, P. Z. S. 1872, p. 413; Legge, Ibis, 1874, p. 10, et 1875, p. 278; Dresser, Ibis, 1875, p. 109 (Severtzoff's Fauna of Turkestan).

Falco herbæcola, Tickell, J. A. S. B. 1833, p. 570.

Circus pallidus, Sykes, P. Z. S. 1832, p. 80; Gould, B. of Europe, i. pl. 34; Hume, Stray Feath. i. p. 160.

Circus macrurus, Sharpe, Cat. Birds, i. p. 67 (1874).

The Pallid Harrier of some writers; *Swainson's Harrier* of others.

Pale-chested Harrier in India.

White Hawk, *Paddy-field Hawk*, in Ceylon.

Dastmal, Hind.; *Puna-Prāndu*, Tam., lit. "Cat-Kite;" *Pilli-gedda*, Tel., also "Cat-Kite."

Boz-Sā, Turkestan, lit. "Grey Kite."

Kurula-goya, *Ukussa*, Sinhalese.

Adult male. Length to front of cere 17·0 to 17·8 inches; culmen from cere 0·72; wing 13 to 14, averaging about 13·7; expanse 42; tail 9·0 to 9·5, exceeding the closed wings from 1·5 to 3·0; tarsus 2·5 to 2·8; middle toe 1·2 to 1·3, claw (straight) 0·6 to 0·65; height of bill at cere 0·38.

Female. Wing from 14·2 to 14·9 inches, averaging about 14·6.

Male. Iris golden yellow, very rich in the oldest birds; cere yellow, tinged with green above; gape greenish yellow; bill blackish at top, paling to blue at cere; legs and feet chrome-yellow; claws black.

Head and entire upper surface, including the wing-coverts, bluish ashy, the upper tail-coverts barred with white; in most examples, except the very oldest, there is a brownish wash on the nape and mantle; primaries ashy grey, the 3rd, 4th, and 5th more or less black, according to age, from the notch to the tip, and white from that part along the inner web to the base; secondaries ashy grey, tipped pale, and with their inner edges white; tail pale grey, the three lateral feathers white, and all but the central pair banded with narrow grey bars; forehead and an ill-defined supercilium, chin, throat, under surface of body, and wings pure white; throat, sides of neck, and chest very pale bluish grey, blending into the white of the lower parts, and with the shafts darker than the webs; cheeks faintly striated with grey.

Young male. Wing in the first year varying from 12·8 to 14·0 inches, quite equal to the adult.

Iris greenish, or less bright yellow than in the adult; cere and eyelid greenish yellow; bill blackish horn-colour, bluish near the cere; legs and feet citron-yellow.

Above chocolate-brown, with an angular white nuchal patch, and with the upper tail-coverts white, with terminal rufous-brown spots; the entire upper surface edged with rufous, narrowly on the head, more broadly on the hind neck and lesser wing-coverts, and on the back and scapulars confined chiefly to the tips of the feathers; quills brown, the inner webs barred with darker colour, and the interspaces from the notch upwards buff; a grey wash on the outer webs of the primaries, and the tips, as well as those of the secondaries, pale fulvous; tail drab-brown on the centre feathers, changing on the three laterals to buff, the tip buffy white, and the whole, with the exception

of the outer feather, crossed by 4 or 5 bars of dark brown; a narrow supercilium and a patch below the eye whitish; lores brown; a broad brown gular band succeeded by a fulvous, dark-striped ruff; under surface with the under wing pale uniform rufescent, the shafts of the feathers slightly darker rufous.

Between this and the adult grey stage birds are found in great variety of change to the pale plumage; after the first moult they become ashen brown above, with generally some rufous feathers about the nape; the upper tail-coverts become barred with greyish brown, the central tail-feathers ashy, the three lateral ones whitish, barred with rufous-brown; the quills pale ashy brown at the base; the long primaries black on the terminal half, with their inner edges whitish; the facial markings become very pale, the throat, fore neck, and chest bluish ashy, the ruff with darkish streaks, and the chest striated with pale brown; beneath, very pale bluish ashy in some, quite white in others, many specimens, likewise, having rufous shaft-stripes, while others are completely unmarked: the under tail-coverts pure white. It is in the chest and under surface that the greatest variation takes place.

In an example from the Deccan in the British Museum, in the ashen-brown upper plumage of the second year, the entire under surface from the chin, including the under wing-coverts, is *pure white*, with a few shaft-lines of rufous on the chest and throat: the tail almost as pale as in the oldest specimens; the basal part of the web of the inner primary webs partakes of the same albescent character as the under surface, being quite white.

Young female. Wing in the first year averaging about 13·5 inches, but frequently no longer than that of young males. Differs from the young male in being usually of a deeper brown, the wing-coverts very broadly edged with rufous, the upper tail-coverts with brown mesial *stripes*, and the under surface *much darker, of a rich uniform rufous tawny*; the gular band of a very dark brown, *contrasting strongly* with the whitish cheek-patch. The white nuchal patch varies, but is, I think, stronger, as a rule, than in the young male.

Progress towards maturity. In the next stage, the upper surface loses the conspicuous character of the edgings; the head and hind neck contrast with the back, the latter becoming paler; the cheeks and gular band remain the same; but the under surface undergoes a gradual change, commencing with the fading out of the rufous, particularly on the lower parts, leaving this colour confined to the centre of the feather, the fore neck and chest being heavily streaked, and the lower breast and flanks lightly so.

The lower parts continue to pale with age until, in the oldest birds I have been able to examine in a large series, they become fulvescent white, and are, with the under tail-coverts, unmarked, save with a few light streaks of pale rufescent; the throat is marked with brownish mesial lines in such examples, and the fore neck and chest with dark brownish streaks on a rufescent ground; the ruff is greyish, with darker longitudinal spots; the upper parts are glossy cinereous brown, and the wing-coverts rather darker brown, the broad fulvescent yellow edgings showing more conspicuously even than in young birds; the nape is light, and the feathers of the head and hind neck edged with rufous; the scapulars and tertials are tipped with a paler hue; the central tail-feathers are ashen grey, with six brown bars, the ground-colour of the three lateral feathers remaining buff; the forehead and eye-streak are whitish, and the gular patch greyish brown.

Obs. This species may be distinguished at all ages from *C. cinerarius* by its having the tip of the second primary-covert reaching to, or even overlapping, the notch on the second primary, by its closed wings not reaching within 1·3 inch of the tip of the tail, and sometimes falling short of it by 3 inches, and by its longer middle toe, this latter not exceeding 1·1 inch in the last species. In addition to these characteristics, the young, in which alone mistakes are likely to be made, may be recognized at a glance from *C. cinerarius* by the lighter-coloured ruff contrasting with the dark cheek- and ear-patch.

Distribution.—This handsome Harrier visits Ceylon, on its southward migration through India, about the commencement of October, and spreads in considerable numbers over the whole island, including the mountain-zone to its highest parts. Unlike its congeners, however, it remains behind in the island to a limited extent, those which do not leave being young birds, and they confine themselves in the wet season to the upper regions and the north coasts. Mr. Holdsworth has seen them in Nuwara ELLIYA in July and August, and I have met with specimens shot at the Elephant plains about the same time. I cannot but think, however, that such occurrences are rare exceptions, its remaining in Ceylon at this season being a most remarkable feature in this Harrier's economy. Mr. Holdsworth is an authority for its existence, out of season, in the north, as he observed it at Aripo throughout the year. On the opposite side of the island it is not seen during the S.W. monsoon; and I imagine that it is limited at that time to the north-west coast, on the plains of which, both species, this and the last, abound, attracted thither, no doubt, by the myriads of lizards which overrun these open wastes.

Besides the above locality, in the north, I have found the Pale Harrier numerous in the Jaffna peninsula and adjacent islands, at Manaar in the open pasture-lands and plains, in the great delta of the Mahawelliganga, and on the south bank of the Virgel, along the seaboard of the Eastern Province, and about the salt lakes or "leeways"* of the Hambantota district. In the Western Province it is mostly confined to the paddy-lands and the marshes, round the large brackish lakes on the sea-coast, but in the northern half of the island it is found at all the large tanks of the interior. In the Kandyan Province it frequents the patna-hills and "plains" of the upper ranges, wanders over the open country in the coffee-districts, and is not unfrequently found in Dumbara.

The Pale Harrier is a bird of wide geographical range during the cold season of the northern hemisphere; and though it perhaps does not cover as much ground as its near ally the Hen-Harrier, its southern limits are more extended. It is common in some parts of Europe, and absent from other portions of that continent, not visiting, for instance, the British Isles. Lord Lilford does not seem to have noticed it in Spain, and Messrs. Harvie Brown and Danford found it rare in Transylvania. In the small island of Heligoland Mr. Gätke records its occurrence. From Europe it extends southwards through Egypt and Eastern Africa to Cape Colony, and eastwards through Palestine, where Canon Tristram found it common, to Persia and Turkestan, in which latter highland Mr. Severtzoff and Dr. Scully observed it. Throughout India it is more or less abundant in the cold season, extending into Burmah and thence into China, where it has been procured on the Yangtze river. In the peninsula of India it does not appear to remain in the breeding-season, Messrs. Adam, Butler, Ball, and others recording it only during the cool weather; and this makes its occurrence in Ceylon, the most southerly limit of its range, all the more strange during the south-west monsoon.

Habits.—Swainson's Harrier does not frequent openly-timbered plains or scrubby land, the favourite haunts of the last species, so much as swamps, marshes, rice-fields, and pasture-land, more particularly those in the vicinity of water. It passes most of its time on the wing, and rarely perches on any thing higher than a fence, preferring to rest from its labours on *terra firma*. Few, if any, of the Harriers exceed it in grace and ease of movement, and none are so skilful in sailing along close to the ground, or gliding with motionless wings just above the tops of the reeds or long swamp-grass. On espying its prey it suddenly closes its wings, or makes a quick turn, and drops like a stone upon the ground. By the margin of the extensive salt lakes on the Magam Pattu I have witnessed its powers of flight to great advantage. It would suddenly come into view above the top of the surrounding jungle, and sweep instantly down to the surface of the plain, along which it would skim for several hundred yards without any movement of its wings, and as easily rise over an intervening strip of wood, again to descend with rapid swoop, and glide along the shore of the glistening salt-pan, until, with a sudden but easy turn, it would commence to quarter backwards and forwards in search of food. Its favourite diet consists of the lizards (*Calotes*) which swarm on the open land in Ceylon; but it likewise captures mice in long grass, and frogs or beetles in the marshes which it frequents.

I once shot one at Jaffna in the act of swooping down on a wounded Gull-billed Tern; but its movement was most likely one of curiosity, as it would have had some difficulty in disposing of such large quarry. It must nevertheless frequently have the opportunity of picking up wounded or sickly birds of small size. It roosts on the ground; and Jerdon remarks that it is sometimes surprised at night by a jackal or fox. It has the same silent habit as other Harriers.

Nidification.—It has been clearly ascertained that this species does not breed within the limits of the Indian empire, in which very few specimens are seen after the month of April; and this fact renders its remaining in Ceylon during its regular nesting-season all the more singular. The birds that frequent the Indian region may no doubt breed in Kasgharia or in the steppes of Siberia; but I do not observe any account of its nidification in the writings of those who have visited the Central-Asian region. Its only known breeding-haunts are the steppes of South-eastern Russia, whence Dr. Bree figures two interesting specimens of its eggs in his 'Birds of Europe.' These are:—(1) pure white, unspotted; (2) white, with a few pale reddish blotches of moderate size, some of which are confluent round the small end. They measure 1·75 by 1·3 inch, and 1·8 by 1·35 inch. The nest is placed most likely on the ground among bushes and the stunted growth dotting the barren Russian steppes.

* Shallow lagoons in which the annual salt formations take place.

ACCIPITRES.

FALCONIDÆ.

ACCIPITRINÆ.

Genus ASTUR.

Bill stouter than in the last genus, with the culmen not descending so suddenly from the base; festoon tolerably pronounced; cere large; nostrils oval, unprotected by bristles; lores scantily plumed. Wings short and rounded, the 4th and 5th quills subequal and longest, the first a little longer than half the fifth. Tarsus short, moderately stout, covered in front and behind with large transverse scutæ, or with a smooth plate in front as in the subgenus *Scelopizias*. Toes short, the inner toe reaching to the last joint of the middle one, the outer one slightly longer; claws well curved and acute.

ASTUR TRIVIRGATUS.

(THE CRESTED GOSHAWK.)

Falco trivirgatus, Temm. Pl. Col. i. pl. 303 (1824).

Astur trivirgatus, Cuv. Règ. An. i. p. 332 (1829); Gray, Gen. B. i. p. 27; Kelaart's Prodrömus, Cat. p. 105; Layard, Ann. & Mag. N. H. 1853, xii. p. 104; Jerdon, B. of Ind. i. p. 47; Schl. Mus. P.-B. *Astures*, p. 22; id. Vog. Nederl. Ind., Valkv. pp. 18, 57, pl. 10; Holdsworth, P. Z. S. 1872, p. 410; Sharpe, Cat. Birds, i. p. 105 (1874).

Astur palumbarius, Jerd. Madr. Journ. x. p. 85 (1839).

Lophospiza trivirgatus, Hume, Rough Notes, i. p. 116; Gurney, Ibis, 1875, p. 35.

Lophospiza trivirgata, David & Oustalet, Ois. de la Chine, p. 22 (1877).

Sparrow-Hawk, Europeans in Ceylon.

Three-streaked Kestrel, Kelaart.

Gor-Besra, H., lit. "Mountain Besra;" *Kokila dega*, Tel., lit. "Cuckoo Hawk" (*apud* Jerdon).

Ukussa, Sinhalese.

Adult male. Length to front of cere 14.25 to 14.8 inches; culmen from cere 0.7 to 0.78; wing 7.5 to 8.3; tail 6.25 to 7.0; tarsus 2.0 to 2.2; mid toe 1.1 to 1.2, its claw (straight) 0.5 to 0.58; hind claw (straight) 0.77; height of bill at cere 0.45.

Adult female. Length to front of cere 14.8 to 15.0 inches; culmen from cere 0.8; wing 8.0 to 8.5; tail 6.5 to 7.2; tarsus 2.2 to 2.4; mid toe 1.35, claw (straight) 0.6; hind claw 0.85.

Obs. The above measurements are from a series of Ceylonese and Indian birds, including several examples from Malacca. Some birds from Malaya (Borneo, for instance) have the wing more than 9 inches in the female.

Iris golden yellow, in some examples beautifully pencilled with brown at the exterior edge; cere, gape, and eyelid greenish yellow, in some yellow; bill dark bluish brown, pale at the base, and with the tip blackish; legs and feet sickly or, sometimes, gamboge-yellow.

Hind neck, back, and wings glossy brown, in some old specimens with an ashen hue pervading these parts; forehead, crown, nape, crest, and face cinereous brown, generally with an ashen hue, particularly above and behind the eye; the crest, which is usually from $1\frac{1}{2}$ to $1\frac{1}{2}$ inch in length, springs from the nape; upper tail-coverts deep brown, with the longer feathers broadly tipped with white; primaries and secondaries barred with dark brown, the under surface of the brown interspaces whitish; tail light drab-brown above and pale grey below, with a pale tip and four dark-brown bars; in the female there is usually a fifth bar concealed beneath the coverts.

Chin, throat, and under surface, from the chest downwards, white; a bold dark-brown chin-stripe, and the lower edge of the cheeks equally dark, generally forming a gular stripe; chest brownish rufous, the centres of many of the feathers darker than the edges; breast and flanks rather closely barred with deep brown; the thighs more closely barred with narrower bands of the same; under tail-coverts, in the female, with a few terminal bars of brown; under wing-coverts white, spotted with brown.

In a younger but still mature phase (in which I have found birds paired) the feathers of the lower part of the throat and centre of chest have broad white edges and bold central drops of dark brown, which pale off into rufous towards the sides of the chest, and there spread over the entire feather; the breast and flanks openly barred with broad bands of sepia-brown, and the thighs narrowly barred, generally, with a darker hue. This appears to be the commonest phase of what may be called the mature dress, the uniform-chested birds being rarely met with.

Young. Iris greenish yellow, sometimes mottled with brown; cere and eyelid greener than in the adult; legs and feet greenish yellow.

The nestling in first plumage is light smoky brown above, the bases and edges of the feathers very pale; head and crest very dark, the bases of the feathers tawny; quills barred much as in the adult, but the inner edges and interspaces white, shaded with tawny grey; tips of the secondaries and their coverts and those of the upper tail-coverts pale; tail light drab-brown, with either three or four visible bars across the centre, and an additional one at the base of the two lateral feathers; beneath white (some examples are much coloured with a rufous hue), the fore neck and chest boldly streaked with dark brown, and the rest marked with oval, lighter brown spots; thigh-coverts barred with darker brown than the breast-spots.

The change towards the adult dress takes place by the darkening of the upper surface and the tips of the upper tail-coverts gradually becoming whiter; the sides of the chest at the same time become uniform rufous-brown, this colour spreading by degrees over the entire feather, except at the inner edge; the breast and flank-markings turn into bars, at first broad and far between, and then narrower, darker, and closer together.

Obs. The larger Nepal race, originally described as *Spizaetus rufigitinctus* by McClelland, has the wing varying, according to Mr. Hume, from 9.3 to 10.6 inches, while Jerdon gives that of a female as 11.5. Several examples I have measured in the British Museum exceed 10, and differ in the character of their plumage as well. Mr. Sharpe now considers this a good species, and Mr. Hume has always accepted it as such. Above, these birds are a more ruddy brown than the smaller species; there is no ashy tint; the upper tail-coverts and tail are tipped with a more subdued colour; the neck and chest are marked with very broad rufescent brown drops on a buff-white ground, and the markings of the under surface have a more rufescent character than in the small bird. Some Malayan specimens of the latter race which I have examined exhibit a marked similitude to these Himalayan birds in their coloration; and on the whole the South-Indian and Ceylonese races are the darkest, and more nearly resemble each other than those from any other two localities. The Formosan bird is evidently a larger race than ours, as Mr. Swinhoe records a female with a wing of 9.0 (Ibis, 1866, p. 395).

Distribution.—The Crested Goshawk is widely dispersed through the low country, inhabiting those parts which are covered with forest or heavy jungle. It is found pretty generally all through the jungles to the north of the Deduru Oya; but I do not think it occurs in the Jaffna peninsula. In the wilds of the Eastern Province, and the thickly wooded country to the south of Haputale, it is tolerably frequent, but difficult of observation on account of its sylvan propensities. It is liable to be met with in most of the isolated forests or reserves in the Western Province, such as the Ambepussa Hills, the Ikkade Barawe forest near Hanwella, but chiefly, according to my own observations, during the north-east monsoon; the same may be said of the south-western corner of the island, where, from November until May, I have known it to occur about Amblangoda, Baddegama, and as near Galle as the Government reserve at Kottowe. Further inland, in

the jungles of the Pasdun Korale and the district of Saffragam, it is doubtless resident and breeds. In the Peak Forests it is likewise not uncommon. As regards its range into the mountain-zone I do not know of its having been found above 3500 feet. About the neighbourhood of Kandy, and at Nilambe and Deltota, it is frequently shot, there being in general one or two examples in Messrs. Whyte and Co.'s establishment.

The *Gor-Besra*, as it is called in India, is spread over the peninsular portion of the empire, inhabiting the Nilghiris perhaps more commonly than other wooded regions. It does not appear to be an abundant species, as but few instances of its occurrence are recorded in 'Stray Feathers,' whereas frequent mention is made of its northern ally from the Himalayas, Nepal, Kumaon, and Assam. Our bird appears to be found in Pegu, as it is included in Mr. Oates's list, and to the south-east of Burmah it seems to have a very extended range, inhabiting Malacca, Java, Sumatra, portions of Borneo and the Philippine Islands, together with Formosa. From the island of Sumatra it seems to have been first known, Cuvier giving that island as its sole habitat. It does not extend eastwards from Burmah towards China, which is a singular feature in its distribution, seeing that it has such an extensive south-easterly range. Père David did not meet with it anywhere in the latter country; nor did Mr. Swinhoe in all his experience on the coast of the Celestial Empire.

Habits.—This bold bird is almost entirely a denizen of the forest, in the tallest trees of which I have usually met with it, giving out its shrill monosyllabic scream (or, more properly speaking, whistle) as a call-note, perhaps, to its mate, or in defiance of the group of small birds which very frequently are found haranguing it at a respectful distance. In this latter respect it much resembles its smaller cousin, the Besra (*Accipiter virgatus*); for I have more than once found it surrounded by a host of angry White-eyebrowed and Forest Bulbuls*, accompanied by one or two equally energetic Kingfishers, darting and flying round in the highest state of excitement, while the Goshawk, with an air of injured innocence, sat stolidly on the capacious limb of some enormous Koombook tree, screaming at its tormentors to the utmost of its powers. This habit of the small birds, I must here state, carries with it some amount of injustice; for though this hawk is frequently given a bad character for not respecting the life of his feathered friends, and appropriating for his larder sundry small chickens, pigeons, and that ilk, I have invariably found his food to consist of lizards, to none of which is he so partial as to the Green Calotes (*Calotes viridis*). I have shot him in the forests of the Vanni, screaming with delight over a brilliantly green Lizard which hung, pinned by his talons, to a branch, while his stomach was crammed with just such another. Layard, in his 'Notes on Ceylon Ornithology,' says that it swoops down to the poultry-yard from "some towering tree or butting rock, and, despite the fury and resistance of the faithful mother, rendered fiercer by despair, the foe generally carries off one, if not two, of her family."

Jerdon also remarks, in the 'Birds of India,' that "it is not very rare in the Neilgherries, and occasionally commits depredations on pigeons and chickens, making a pounce on them from a considerable height. It generally keeps to the woods or their skirts, dashing on birds sometimes from a perch on a tree, but generally circling over the woods, and making a sudden pounce on any suitable prey that offers itself."

Layard says that they are used by native falconers in Ceylon for hunting, and mentions that he saw one at Anaradjapura, which had been hoodwinked by having its eyelids sewn up, "the thread running through them so as to draw the edges together at pleasure." I have seldom seen it fly any distance, nor observed it far away from the outskirts of woods; but its progression from point to point in the forest is swift and performed with quick beatings of the wings.

It was formerly, according to Jerdon, used for falconry in India, and was taught to strike Partridges.

Nidification.—The nest of the Crested Goshawk does not appear to have ever been found. Mr. Hume has not succeeded in eliciting any information from his numerous correspondents concerning its nidification; and all we know concerning its breeding is what Layard tells us—that it nests in the "holes and crevices of precipitous rocks."

* *Ixus luteolus* and *Crimiger ictericus*.

ASTUR BADIUS.

(THE INDIAN GOSHAWK.)

Falco badius, Gm. S. N. i. p. 280 (1788).

Accipiter dukhunensis, Sykes, P. Z. S. 1832, p. 79.

Accipiter badius, Strickl. Ann. N. H. xiii. p. 33 (1844); Kelaart's Prodrömus, Cat. p. 115; Layard, Ann. & Mag. N. H. 1853, xii. p. 104.

Micronisus badius, Bp. Consp. i. p. 33; Jerdon, B. of Ind. i. p. 48; Hume, Rough Notes, i. p. 117; Holdsworth, P. Z. S. 1872, p. 411; Hume, Nests and Eggs, i. p. 24; Legge, Ibis, 1875, p. 276.

Astur badius, Sharpe, Cat. Birds, i. p. 109 (1874); David and Oustalet, Ois. de la Chine, p. 24.

Scelopizias badius, Gurney, Ibis, 1875, p. 360.

The Brown Hawk, Brown, Ill. Zool. p. 6, pl. 3 (1776).

The Shikra, Jerdon. *Indian Sparrow-Hawk*, popularly in India.

Shikra (female), *Chipka* (male), Hind.; *Chinna-Wallur*, Tam. (*apud* Jerdon).

Brown's Sparrow-Hawk, Kelaart.

Ukussa, Sinhalese south of Ceylon; *Kurula-goya* in north.

Adult male. Length to front of cere 11.5 to 12.8 inches; culmen from cere 0.6 to 0.63; wing 6.9 to 7.9; tail 5.5 to 6.2; tarsus 1.75 to 1.9; middle toe 1.0 to 1.12, its claw (straight) 0.4 to 0.45; hind toe 0.6, its claw (straight) 0.6; height of bill at cere 0.34 to 0.36.

The largest examples do not equal those from Northern India; the average length of wing of Ceylonese birds is about 7.3. Iris usually light crimson or orange-red, in very old examples fine crimson; cere and orbital skin greenish yellow, the top of the generally greenish bill bluish, darkening at the tip; tarsi and feet yellow, the front of the tarsus streaked with greenish.

Above bluish ashy, palest on the rump and upper tail-coverts; top of the head and the nape shaded with brownish, and a ruddy tinge generally on the hind neck; quills ashy brown, the inner webs for two thirds of their length from the base edged and barred with white, the brown interspaces being darker than the rest of the feather; beyond the notch there are indications of darkish bars; tertials and scapulars with a large concealed white patch down their centres; tail bluish grey, tipped with whitish; central feathers unbarred, but slightly darker towards the tip; the outer feathers with faint brown bars towards the base of the inner web, the next with five bars on the same web; the two adjacent with four, which sometimes extend to the outer web; the barring of the outer tail-feathers varies in extent even in birds which are similarly pale throughout their plumage; lores greyish; chin and gorge white; cheeks, ear-coverts, and a narrow chin-stripe cinereous grey; chest, breast, and flanks pale sienna-colour, narrowly barred with white, which in no two specimens is alike*, being in some open and in others very close, particularly on the chest; belly, thighs, and under tail-coverts, with the sides of the upper coverts, white, the bars gradually fading out on the lower breast; under wing and lower surface of quills rufescent white. In a slightly younger stage of the adult plumage the upper surface is darker and pervaded with a cinereous hue; the bars on the inner web of the outer tail-feather extend nearly to the tip, and on the adjacent one there are as many as in the young bird.

Adult female. Length to front of cere 12.6 to 13.8; culmen from cere 0.63 to 0.65; wing 7.7 to 8.2; tail 6.5 to 6.8; tarsus 2.0 to 2.2; mid toe 1.25.

Females, except perhaps those that are very old, are browner on the upper surface than males; the barring of the under

* In one remarkable specimen from Uva the entire under surface, from the throat to the lower breast, is openly barred, the width of the white bands being the same throughout.

surface is bolder, and the brown bands have a more perceptible dark edging; they are also variable in hue, and are continued more to the lower parts than in the other sex, some examples having the thigh-coverts barred like the flanks; the outer tail-feathers, as demonstrated by Ceylonese examples at any rate, are seldom without very narrow bars on the inner webs.

Obs. A very marked difference exists between fully-aged birds and those that have just assumed the barred phase; in the latter the upper surface is very brown, and the bands of the lower surface are far apart and conspicuously edged with brown, giving the whole an umber rather than a sienna appearance. In this stage Ceylonese examples of this Hawk resemble, on their under surface, the race characterized by Mr. Hume, in 'Stray Feathers' (vol. ii. p. 325), under the name of *Micronisus poliopsis*, and to which he contends the Pegu birds belong. The diagnosis of this species is, "Very similar to *M. badius*, Gmel., but larger, the adult males a paler and purer grey, wanting the nuchal rufescent collar and the central throat-stripe, and with the cheeks and ear-coverts unicolorous with the crown." The young birds are also described as having no more than four bands on the central tail-feathers, instead of five or six as in *M. badius*, and "in both sexes the barring of the lower surface seems on the whole broader and more strongly marked than in any specimens of true *badius*." As regards the latter feature Mr. Sharpe remarks (Cat. Birds, i. p. 110) that it is "banded with broader and brighter vinous bands than its near ally." The absence of the throat-stripe and the few caudal bars are valuable characteristics in differentiating it from Ceylonese *M. badius*, but not so the vinous bands; in this respect *M. badius* appears to vary to a considerable extent, particularly as regards birds not fully aged; and this inclined Mr. Gurney to consider the Ceylonese example spoken of (*l.c.*) to belong to the *poliopsis* race. I have, however, shown him specimens in my collection exhibiting this peculiarity, and he now considers it to be of no specific value.

Young. These attain the full dimensions in the first year.

Iris, at first greenish yellow, changing to saffron-yellow with age, and passing then through various shades of orange to the red hue of old birds; cere and orbitar skin greenish, changing to yellow; legs and feet greenish yellow, the feet changing first to the adult yellow, and then the posterior part of the tarsus; bill dark brown, with the base only bluish.

Head, upper surface, with the wing-coverts rich brown, pervaded with an ashy hue, and conspicuously edged with brownish rufous, which, on the scapulars and tertials, is fulvescent, and across the hind neck often pales into whitish; the basal portion of the feathers is white, which shows more on the latter part than elsewhere; forehead, face, and above the eye buff-white, striated with brown, which coalesces on the ear-coverts with the rufous-brown of the sides of the head; quills brown, crossed by narrow dark bars (faint towards the tips), which show as blackish brown on the buff under-wing. Tail brownish grey, crossed on both webs of all but the lateral feathers with brown bars; these are usually five in number on the central feathers in the male, and six in the female, the basal bar lying beneath the coverts; on the remaining feathers the number varies, the penultimate in some examples having no more than the central feather, while others have six or seven according to sex.

Throat, fore neck, and under surface buff-white, the first-named part with a brown centre-stripe, and the rest of the feathers down to the belly with large umber-brown "drops" and dark shafts; these vary much in individuals—pale and narrow in some, dark and heavy in others, particularly on the chest; on the thighs and lower parts they narrow almost into stripes; under tail-coverts, in pale examples pure white, in dark, heavily-marked birds with narrow mesial stripes of brown.

In the younger stages the drops have a constant tendency to turn into bars, these latter being most prevalent on the flanks; many birds, I believe, have a tendency to the bar-like form of marking from the first, although this does not lead to any quicker or more gradual assumption of the sienna barring, peculiar to the adult plumage; for this is put on by a moult at once throughout the whole under surface, which takes place in some birds while the upper surface is still in the immature dress, and is sometimes mingled with the chest-drops and bold dark bars of the flanks. At this first moult to the adult dress the cheeks are generally streaked with brown on a pale ground.

Distribution.—The Shikra is distributed throughout the island, extending into and resident in most parts of the Kandyan Province. On the Nuwara ELLIYA plateau I have not observed it; but it is no doubt a visitant to that elevated region during the dry season. It is not uncommon on the Fort MacDONALD patnas, and I have procured it on NAMOONI-KULI Mountain, near Badulla, which has an elevation of more than 6000 feet; it is also met with in Dimbulla and the Knuckles district, so that it may be said generally to affect the mountain-zone. In the interior of the lowlands it is resident; and during the north-east monsoon it is common in the cultivated districts round the sea-coast, taking up its abode in the vicinity of human habitations. It is fond of establishing itself on cliffs, such as those at Trincomalie, and is frequently seen about the ramparts at Galle and

Jaffna. In the early part of May it retires into the interior to breed, and is not seen about its maritime haunts until October. In spite of this local migration to the sea-coast, the Shikra may be found throughout the year, in spots suitable to its habits, in most of the inland districts. In the Eastern Province I found it tolerably frequent in October, but scarcely met with it at all during two trips to the south-eastern forest districts. In the Western Province it is an inhabitant of the cocoa-nut districts bordering the sea-coast, retiring for the most part into the interior, as is the case on the east coast, during the south-west monsoon.

The Shikra is found pretty well all over the plains of India from the extreme south to the Himalayas, into which it ascends to an elevation of 5000 feet. It is a bird of local distribution, notwithstanding its extensive habitat. Mr. Hume speaks of it in Sindh as being not uncommon in the cultivated portions, but not found in the "desert or rocky tracts." Mr. V. Ball, again, says that it has a somewhat local distribution "in the large district of Chota Nagpur." It extends into Burmah and Malayana, and thence, according to Pèrre David, into China, that is, if all the birds found in these regions belong to the true *badius* race; westward of Sindh it is found as far as Afghanistan; but this, I believe, is its furthest limit.

Habits.—This interesting little Hawk may be observed in every variety of situation but heavy forest. Cliffs on the sea-coast, rocky eminences in the interior, isolated groves of trees, cocoa-nut compounds surrounding native villages, the borders of paddy-fields and cinnamon-plantations dotted with large trees, are among the localities which it frequents. In the wilder parts of the country it is partial to "cheenas"* and new clearings in the forest, where it may be seen flying rapidly from tree to tree, or seated on a blackened stump discussing the remains of some lusty lizard. It affects coffee-plantations in the hills and bushy patnas, and is often seen in the vicinity of the bungalows, on the look-out, perhaps, for stray chickens. Its favourite diet is the ubiquitous lizard (*Calotes*), the remains of which I have found in every example dissected. It feeds also on mice and large beetles; and I once shot one on the Fort-MacDonald patnas in the act of darting at a Bulbul. It no doubt captures birds when pressed with hunger, but small reptiles and insects form the better part of its sustenance. It is commonly trained in India, and is taught to catch small game-birds; but its courageous disposition prompts it to attack (according to Jerdon) even "young Pea-fowl and small Herons." It is a persistent tormentor of both the Common and the Carrion-Crow in Ceylon, and may be often seen pursuing them high in the air, darting at them from above and beneath, much to the discomfiture of the "Corbies," who usually escape by a sudden swoop into the trees below. Its flight is a steady, straight-on-end movement, performed with quick beatings of the wings; but it sometimes soars to a considerable height, making quick circles, and then suddenly swoops down, alighting in an adjacent tree. It is a very noisy bird, making its shrill two-note whistle or scream heard for some distance, and furnishing a capital sound for the clever imitative powers of the Green Bulbul (*Phyllornis jerdoni*).

Mr. Ball remarks of it, in his avifauna of Chota Nagpur ('Stray Feathers,' 1874), "that at the season of the jungle-fires numbers of these birds assemble to hunt the grasshoppers and other orthopterous insects which are compelled to take flight before the advancing flames." Another writer, Mr. Thompson, says that they are very fond of frogs.

Nidification.—I have never succeeded in getting the eggs of this Hawk in Ceylon, though it must breed freely in the interior and not very far from the sea-coast. The nesting-season, I have ascertained from dissection of many examples, is from April to June; and it retires to sequestered jungles to rear its young, as I have met with it in the wilds of the interior at this season in a state of breeding. In India it breeds in April and May, and, in some parts, in June. The nest, writes Mr. Hume, "is usually placed in a fork high up and near the top of the tree. It is but loosely built of twigs and smaller sticks, lined with fine grass-roots, and averages about 10 inches in diameter." As architects he does not attribute to them much talent, remarking that they take "a full month in preparing their nest, only putting in two or three twigs a day, which they place and replace as if they were very particular and had a great eye for a handsome nest; whereas, after all their fuss and bother, the nest is a loose ragged-looking affair, that no respectable crow would condescend to lay in!" The eggs are usually three, but sometimes four; they are oval in shape and smooth in texture; they are delicate, pale bluish white, either devoid of markings or sprinkled openly throughout with faint greyish specks and spots. They average 1.55 by 1.22 inch.

* Land cleared by the natives for the purposes of cultivation.

ACCIPITRES.

FALCONIDÆ.

ACCIPITRINÆ.

Genus ACCIPITER.

Bill slightly shorter and more feeble than in *Astur*; festoon equally prominent. Nostrils large, oval, protected by the loreal plumes. Wings similar to *Astur*, but the first quill longer; tail longer. Tarsi long, slender, the scutæ less pronounced; middle toe long, the inner reaching only to the first joint. Structurally of slender form.

ACCIPITER VIRGATUS.

(THE JUNGLE SPARROW-HAWK.)

Falco virgatus, Temm. Pl. Col. i. pl. 109 (1823).

Accipiter virgatus, Vig. Zool. Journ. i. p. 338 (1824); Blyth, Cat. B. Mus. A. S. B. p. 22 (1849); Jerdon, B. of Ind. i. p. 52; Hume, Rough Notes, i. p. 132; Jerd. Ibis, 1871, p. 243; Holdsworth, P. Z. S. 1872, p. 411 (first record from Ceylon); Hume, Stray Feathers, 1874, p. 141; Legge, Ibis, 1874, p. 10, and 1875, p. 276; Sharpe, Cat. Birds, i. p. 150; Gurney, Ibis, 1875, pp. 480-83; David and Oustalet, Ois. de la Chine, p. 26 (1877).

Nisus virgatus, Less. Man. d'Orn. i. p. 97 (1828); Schlegel, Vog. Nederl. Ind., Valkv. pp. 20, 59, pl. 12. figs. 1-4 (1866).

Accipiter stevensoni, Gurney, Ibis, 1863, p. 447, pl. xi.

Accipiter besra, Jerd. Madr. Journal, x. p. 84 (1839); id. Ill. Ind. Orn. pl. 4 (1847).

The Besra Sparrow-Hawk, Jerdon; *Besra*, popularly in India.

Besra (female), *Dhoti* (male), Hind. (*apud* Jerdon).

Jungle-Hawk, Europeans in Ceylon.

Yao, Chinese at Pekin (Père David).

Ukussa, Sinhalese.

Adult male (Ceylon). Length to front of cere 10.0 to 10.3; culmen from cere 0.5; wing 6.0 to 6.4; tail 4.6 to 5.0; tarsus 1.9 to 2.05; middle toe 1.2 to 1.25, its claw (straight) 0.35 to 0.4; height of bill at cere 0.27.

Iris yellow; cere, loreal skin, and eyelid yellow; the top of the cere sometimes greenish; bill dark horn, base and near the gape bluish; front of tarsus greenish yellow; posterior part with the sides of the toes and the soles lemon-yellow.

In the fully aged bird the head, hind neck, back, and wings are very dark ashen, the head deeper than the rest and concolorous with the cheeks and ear-coverts; frequently a brownish wash is perceptible on the back; the hind neck

often with a rufous hue; quills brown, with a series of faint lighter bars, which show whitish beneath on the terminal half and buff towards the base; secondaries and tertials barred near the inner edge with white; tail brownish ashy above, tipped pale and crossed with four dark bands, the terminal one at the tip, and the basal sometimes concealed beneath the coverts; on the inner web of the lateral feathers there are five indistinct bands, which fade out entirely in very old birds.

Chin and throat buff-white, with a broad central stripe of dark slate-colour; chest, sides of breast, and flanks uniform rufous, or sometimes with a few white streaks, caused by the edges of underlying brown-centred feathers; centre of the breast and the belly barred with rufous on a white ground; thighs rufous, barred slightly with pale grey; under tail-coverts pure white; lower surface of the tail grey; under wing-coverts buff-white, spotted with brown.

Obs. The under surface varies considerably in birds which have not quite reached the above fully-matured dress; these have usually an ashen hue on the sides of chest, the edges of centre chest-feathers white, and the middle of the lower breast and belly plainly barred with rufous ashen. Other examples have the white barring continued across the whole breast to the flanks, and in these the thighs are boldly barred.

Adult female. Length to front of cere 13.0 to 13.3; culmen from cere 0.52; wing 7.5 to 8.0; tail 6.0 to 6.5; tarsus 2.2 to 2.4; extent of wing 24.0 to 25.5.

Ceylon females do not often exceed 7.6 in the wing, the above limit applying to a fine specimen from Northern India in the British Museum.

Iris yellow, in some orange-yellow, with a dark outer rim occasionally; bill, legs, and feet as in male.

Hind neck, back, and wings smoky brown, but the head and nape similar to those of the male; the cheeks and ear-coverts paler than the crown; the light portions of the tail have the same smoky hue instead of being ashy as in the male; throat, fore neck, and centre of the chest white, the latter part boldly dashed with dark brown, running into the broad chin-stripe above; sides of the fore neck and chest rufous, the latter, together with the breast, flanks, and lower parts, boldly barred with white, the interspaces being rufous on the upper parts, and rufous ashen on the belly and thighs; under tail-coverts white, in some with terminal streaks of brown; under wing-coverts as in the male.

The female appears never to acquire the uniform rufous breast of the male; and the above description represents, I

ACCIPITER NISUS.

(THE SPARROW-HAWK.)

Falco nisus, Linn. S. N. i. p. 130 (1766).

Accipiter nisus, Pall. Zoogr. Rosso-As. i. p. 370; Gray, Gen. Birds, i. p. 29, pl. 10. fig. 4; Kelaart's Prodrömus, Cat. p. 115; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 104; Jerd. B. of Ind. i. p. 51; Hume, Rough Notes, i. p. 124; Sharpe and Dresser, B. of Europe, pt. ix.; Sharpe, Cat. Birds, i. p. 132 (1874).

Basha (female), *Bashin* (male), Hind., *apud* Jerdon; *Karghai*, Turki (Scully).

Adult female (India). Length to front of cere 14.0 to 16.0 inches; culmen 0.55; wing 8.0 to 10.0; tail 7.5 to 8.0; tarsus 2.3 to 2.5; middle toe 1.6 to 1.8, claw (straight) 0.5; height of bill at cere 0.3.

Adult male (India). Length to front of cere 11.8 to 12.2; culmen from cere 0.5; wing 8.0 to 8.3; tail 6.0 to 6.4; tarsus 2.2 to 2.3; middle toe 1.35.

Iris varying from saffron-yellow to orange-yellow; cere yellow; bill dark horn, bluish at the base; legs and feet gamboge-yellow; claws black.

Male. Above dusky slate-colour, darkest on the head, and more so on the upper back than on the rump; the feathers at the sides of the hind neck edged with rufous, and those at the back with white bases; quills ashy brown, the terminal portions of the primary outer webs greyish, the inner webs barred widely with brown and white internally towards the base; tail greyish brown, with four or five brown bars, the subterminal one the broadest.

A lightish space just above the lores; cheeks and ear-coverts more or less rufous; throat whitish, washed with rufous

think, the limit of this coloration. It is taken from a bird shot near Trincomalie, containing an egg ready for expulsion; and Mr. Sharpe, with his wide experience of the Accipitrinae, remarked of this specimen that it was one of the oldest he had ever seen.

Young. Iris greenish yellow, sometimes mottled with brown specks; cere dull brownish green or greenish yellow; eyelid yellowish green; legs and feet greener in front than in adults; bill duskier.

The bird of the year has the head and nape deep brown, tinged with ashen; a whitish eye-stripe or supercilium; the bases of the nape-feathers white, showing on the surface more or less; the upper surface is chocolate-brown, edged with brownish rufous, brightest on the hind neck (and deeper throughout in the female); tips of the secondaries and tertials paler than those of the back feathers; quills barred with dark brown, the interspaces whitish at the inner edges; tail pale smoky, crossed by four bands, as broad as the interspaces, the terminal one at the tip; the inner web of the lateral feathers with 5 or 6 narrow light bars.

Throat and entire under surface buff-white, the chest and upper breast-feathers edged with rufescent buff or yellowish buff (in the female); a broad throat-stripe and long oval drops on the neck and chest of sepia-brown; the sides of the latter part brownish rufous; the lower parts with rounder spots of a lighter hue; flanks barred with rufous-brown; thighs with bold spots of brown; under tail-coverts narrowly streaked with the same; under wing-coverts buff, handsomely spotted with dark brown.

Obs. In this species a great variety of coloration in the plumage of the male is met with between the youngest phase and that noticed above of moderately mature birds, but notwithstanding the rufous character of the chest commences directly to assert itself, and serves to distinguish it from the opposite sex. By a change of feather in the first year the sides of the chest become rufous, the centre of the breast assumes a bar-like form of marking, while the flanks and thigh-coverts become regularly banded with rufous-brown. After the next moult the white centre of the chest becomes dashed with rufous and ashen streaks, and the flanks and sides of the breast assume their rufous covering, and present the appearance described above in not fully matured males; this is accompanied by the assumption of the cinereous upper surface and the consequent disappearance of the rufous edgings. In some birds of the second year the chest is striped with rufous, and the surrounding white portions of the feathers washed with the same. Malabar specimens are identical in size and character with Ceylonese; and an example from Chefoo in the British Museum corresponds as regards size with birds from Ceylon.

Distribution.—The Besra was first recorded as a Ceylonese bird by Mr. Holdsworth (*l. c.*). It is, however, a common species in the island, and, as Mr. Holdsworth remarks, may have been the bird referred to by

and with the shafts dusky; chest, breast, flanks, and lower parts whitish, barred somewhat narrowly with rufous-brown bars edged with rufous; on the sides of the chest the bars are broadest, and on the abdomen they are wide apart; thighs narrowly barred, the insides more or less tinged with rufous, and a patch of the same on the lower part of each flank; under tail-coverts whitish or rufescent white, banded with narrow pointed bars of brown. Examples with marked rufous cheeks have the rufous portions of the lower parts and the under wing-coverts of a corresponding intensity.

Female. Less ashy above, the head and hind neck dark as in the male, and the latter part much edged with rufous in some examples; tail with an additional bar, there being always five on the central feathers; the markings of the under surface are browner, the darker hue predominating on the bars, which are only edged with rufous, and which are likewise more pointed than in the male; the chin and throat fulvous, with dark shafts to the feathers; under wing-coverts white, barred with dark brown.

Young (nestling). "Clothed with white down; the feathers of the back deep sepia-brown, with rufous margins; breast fulvous fawn, the chest longitudinally streaked with brown, inclining to arrow-head markings on the abdomen and to bars on the flanks." (*Sharpe, Cat. Birds.*)

Bird of the year. Iris paler yellow than in the adult; bill paler and yellowish at the base beneath.

Above brown, the feathers edged with rufous, and the nape marked with white, arising from the exposed basal portions of the webs; crown darker than the hind neck; quills rufescent white on the inner webs from the notch to base, both webs conspicuously barred with dark brown; tail brown, with five or six broadish bands of a darker hue, the lateral feathers with an additional bar and the inner webs pale.

Cheeks and ear-coverts brown, striated with whitish; throat white, with broad mesial brownish stripes; under surface

Kelaart as the European Sparrow-Hawk. It is possible, nevertheless, that the Doctor's identification may have been correct; and in support of the idea that the European Sparrow-Hawk may have occurred in Ceylon, I would here remark that I have lately received a specimen of the European Hobby from Ramisserum, auguring favourably for the occurrence of other northern Hawks in the latitude of Ceylon. As to the present species it is widely distributed in the low country and a frequent bird on the hills, ranging into the jungles of the main range, whence I possess an example killed at Nuwara Eliya. It is not uncommon in the northern forests, in the Eastern Province, and in the south-western hill district. I have obtained it at Baddegama and in Saffragam, and have met with it in other forests on the west side of the island. It is frequently obtained in the Kandy district and in the surrounding ranges, whence it figures now and then in the collections of Messrs. Whyte and Co., of Kandy.

This species is, according to Jerdon, found in all the large forests of India, inhabiting the Nilghiris, the Eastern Ghats in places, the Malabar and Central-Indian forests, and the slopes of the Himalayas. It is likewise an inhabitant of Burmah, the Malaccan peninsula, the Andaman Islands, Java, Borneo, Timor, and the Philippine Islands, and to the eastward of Burmah extends into China, Siberia, and Japan, if the birds from the latter country do not all belong to Mr. Gurney's larger, short-legged race *A. stevensoni*. It is not a very common bird in India, for most of the writers in 'Stray Feathers' speak of it as being local in the regions they treat of. Captain Feilden appears to be the only one who has procured it of late years in Burmah; and in the north-east of India, in the Mount Aboo district, but few specimens have been obtained.

In China, however, Père David says it arrives in the spring at Pekin in great numbers, and breeds in the mountains of the provinces.

Habits.—This little Sparrow-Hawk is a denizen of the jungle, rarely coming into the open country at any distance from its sylvan haunts. I have frequently met with it in pairs, both old and young, and have always found it a noisy bird, haranguing its feathered companions of the woods, who oftentimes collect in excited mobs and annoy it with their incessant chatterings. It generally perches on the large limbs of trees and flies from one to another, uttering its loud and shrill squeal, which somewhat resembles that of the little Goshawk (*Astur badius*). Its cries must often lead to its discovery in the jungles which it frequents, as on all occasions on which I have either met with it or shot it I have traced it by its note, which can be heard at some distance in the stillness of the primeval forest. It is shy, as a rule; but on one occasion, finding three immature birds

white, boldly banded with spear-shaped broadish bands of brown and rufous, the latter hue mostly confined to the centre of the bar; the markings of the flanks darker than the rest; thighs barred with brown; under wing-coverts buff, with arrow-headed spots of brown; under tail-coverts whitish, unmarked.

Obs. This plumage is acquired by the dissolving of the longitudinal streaks of brown into the bold bar-shaped markings; this is well shown in the series of feathers given by Mr. Sharpe in an article on the subject (P. Z. S. 1873, pl. 39), and from which it can be observed that the longitudinal "drop" in the process of its dissolution expands at various points into bars, the white portion of the web advancing as an interspace to the shaft, leaving, however, at this first stage, pointed projections at the lower side of the bar, these being in reality the remains of the stripe.

Note.—I can neither include this, nor one or two other species to be noticed further on, as undoubted Ceylonese birds, as their occurrence in the island is, as in the present case, matter of uncertainty, or has been accepted from mere visual testimony. It appears advisable, however, to include them in footnotes, in order that sufficient information may be given to enable my Ceylon readers to identify the species should they occur hereafter in the island.

Distribution.—The evidence as to the occurrence of this species in Ceylon is summed up in the following sentence (Kelaart, Prodrumus, p. 96):—"Accipiter nisus is very rare; we have only seen one *live* specimen." It is possible, as I have remarked in my article on *Accipiter virgatus*, that Kelaart may have been correct in his identification; but it must be remembered that, though a naturalist, he did not make ornithology his study, and those birds which were collected for him (he never used a gun himself) were identified by others, chiefly by Blyth, I believe. In the case of this bird, the specimen was a living one, so that I incline to the belief that it was a Jungle Sparrow-Hawk and not the European species. The latter is a cold-weather visitant to India, and is spread during that season, sparingly, over the whole of the empire. It is always to be found in the Nilghiris, on the Eastern Ghats, and other hilly portions of Central India. It

together, I shot one, and the others were so tame as to fly out of the tree and immediately return to it again, one of them thereby following his companion into my collection. The diet of the Besra consists of small reptiles, coleoptera, and other large insects, the lizard (*Calotes*) being its favourite food in Ceylon. In India it is, says Jerdon, highly esteemed among native falconers, and is caught by means of a trap called there "Do Guz." This is a small, dark-coloured net, fixed to two thin bamboos lightly stuck in the ground, and which give way on the bird striking the net while it is dashing at a decoy picketed in front of it. On this happening the meshes instantly fold round the hawk and effectually prevent its escape. It is flown at partridges, snipes, and doves, and "is particularly active and clever in the jungle." The male is, however, according to the same writer, rarely trained. I do not think it is in the habit of soaring as much as its European ally. I have on one occasion seen it taking a few small circles in the air; but they were quickly over, and it again dashed off to its sylvan haunts.

Nidification.—In Ceylon this Hawk breeds about the month of May, during which I once procured a female containing an egg almost ready for expulsion, but which was unfortunately broken by my shot. It was of a pale green colour and unspotted, but would have most likely received some markings had the bird lived to lay it. In India nothing seems to be known concerning its nidification, and I never heard of its nest being found in Ceylon.

is common on the southern slopes of the Himalayas, where also Mr. Hume's larger race (*A. melanochistus*) has its home. It is doubtfully recorded from Tenasserim; and in 1876 Mr. Hume received a specimen from the Andamans, which is its most south-easterly limit.

Dr. Jerdon remarks that "it comes in very regularly about the beginning of October, and leaves again about the end of February or March according to the locality."

It is spread over the whole of Europe, including Great Britain, and extends through Central Asia to China, and southwards from the Mediterranean into Algeria and north-east Africa.

Habits.—The Sparrow-Hawk frequents wooded country, and preys on small birds and quadrupeds. It is a bird of powerful flight, but not so active as its Indian congener, the Besra; but it is nevertheless trained for falconry in some parts of India. It is a bird of predatory disposition, and consequently it is under a ban in a game-preserving country like England. It is described in Yarrell's 'British Birds' as being so "daring during the season in which its own nestlings require to be provided with food as frequently to venture among the out-buildings of the farmhouse, where it has been observed to rapidly skim over the poultry-yard, snatch up a chick, and get off with it in an instant."

Nidification.—This species breeds sparingly in the Himalayas up to 8000 feet, building, as it does in Europe, in trees. In England it often takes possession of the nest of a crow, and repairs the lining for the reception of its own eggs. These are four or five in number, of a bluish-white or greenish-white ground, handsomely blotched and spotted with rich reddish brown or brownish crimson, the markings being sometimes collected in a zone near one end. Dimensions 1.7 by 1.3 inch. The beautiful specimens figured by Mr. Hewitson (plate vii. figs. 2 & 3) represent in a very interesting manner the variety in the eggs of the Sparrow-Hawk. The first is openly and handsomely blotched throughout with rich sepia, softened at the edges over other markings of light brownish, while the second has the obtuse end covered with confluent clouds of sepia-brown, overlying rather small and somewhat lineated blots, which are scattered rather thickly over the entire surface.

ACCIPITRES.

FALCONIDÆ.

BUTEONINÆ.

Bill weak, the festoon usually less developed than in the last subfamily; wings longer; tail moderate; tibia longer in proportion to the tarsus than in *Accipitrinæ*, the difference being "more than the length of the hind claw"*; outer and middle toe connected at the base as in *Accipitrinæ*.

Genus BUTEO.

Bill small and short, sloping from the base, the cere considerably advanced, and the comisure nearly straight, the festoon being only slightly developed. Wings long, pointed, the 4th quill the longest, or subequal with the 3rd. Tail compact, moderate in length, the feathers rigid; tip reaching beyond the closed wings and cuneate in shape. Tarsus moderately stout, the upper portion plumed more or less below the knee, the rest protected by broad transverse scales in front and *behind*. Toes shortish, the inner reaching to the last joint of the middle; claws short and moderately curved.

BUTEO PLUMIPES.

(THE INDIAN BUZZARD.)

Circus plumipes, Hodgson, Gray's Zool. Misc. p. 81 (1844).

Buteo plumipes, Hodgs. P. Z. S. 1845, p. 37; Jerd. B. of Ind. i. p. 91; Hume, Rough Notes, ii. p. 285; Jerdon, Ibis, 1871, p. 340; Hume, Str. Feath. vol. iii. p. 358, et vol. v. p. 347; Gurney, Str. Feath. vol. v. p. 65; Sharpe, Cat. Birds, i. p. 180, pl. vii. fig. 1 (1874).

Buteo vulgaris japonicus, Temm. and Schlegel, Faun. Jap. pls. vi. & vi. B.

Buteo japonicus, Bp. Consp. i. p. 18 (1850); Schl. Mus. P.-B. *Buteones*, p. 7 (1862); Blakist. Ibis, 1862, p. 314; Swinhoe, Ibis, 1870, p. 87; Jerdon, Ibis, 1871, p. 337; David and Oustalet, Ois. de la Chine, p. 19 (1877).

Buteo desertorum, Jerdon, Ibis, 1871, p. 338.

La Buse commune du Japon, Schl. Faun. Jap. p. 16.

The Harrier-Buzzard, Jerdon, B. of Ind.

Kara-Sā (in common with other Buzzards), Turkestan (Dr. Scully).

Kurula-goya, Sinhalese.

* Sharpe, Cat. Birds, i. p. 158.

Adult female. Length to front of cere 18.5 to 19.0 inches; culmen from cere 0.85; wing 15.0 to 16.5; tail 7.5 to 9.0; tarsus 2.6 to 3.2, bare front of tarsus 0.9 to 1.35; mid toe 1.5, its claw (straight) 0.7; height of bill at cere 0.4.

Adult male. Length to front of cere 18.0 to 18.5 inches; wing 13.5 to 15.6; tarsus 2.7 to 2.9, bare front of tarsus 0.9 to 1.5.

Obs. In the series from which the latter measurements are taken is included what appears to be an immature though not a very young bird in my own collection, from the south of Ceylon. Its detailed dimensions are:—Length to tip of bill 18.25 inches; wing 13.5; tail 7.25; tarsus 3.0, bare portion of front of tarsus 1.5; mid toe 1.5.

Iris dull yellowish mingled with brown or light hazel; cere varying from greenish yellow to yellow; gape yellow; bill blackish; legs and feet citron-yellow, claws black.

Above sepia-brown, dark and uniform on the forehead and back, and pale on the hind neck and greater wing-coverts, the feathers more or less margined with rufous mostly on the hind neck, scapulars, and wing-coverts, on the first of which the white bases of the feathers show considerably, and there is a dark nuchal patch; primaries and their coverts dark brown, the outer webs of the longer quills washed with greyish, the inner webs white internally and crossed with narrow bars of brown; secondaries paler, dark near the tips and with both webs barred, the white portions of the inner webs washed, in some, with rufous; the lateral feathers of the upper tail-coverts broadly margined with rufous and some barred with the same; tail rufous or brownish rufous, more or less shaded with brown, and washed at the margins of the rectrices with greyish, tipped with dull buff, and with a softened subterminal band and a number of narrow bars (incomplete in old birds towards the base) of brown; lateral feathers white internally.

Lores and a superciliary line blackish, a postorbital and moustachial streak dark brown, the feathers, as on the ear-coverts, pale-edged; throat whitish striped with brown; sides of the neck and chest rufous, in some brown, the shafts dark, and the margins of the feathers indented with rufescent whitish, which in some examples is conspicuous on the centre of the chest; breast and belly whitish or rufescent white, the feathers dark-shafted and barred with brown, in some on the lower breast, while other examples have the breast crossed with a wash of dark brown; lower flanks cinereous brown, greyish in old birds; thighs rufous, more or less cross-marked with brown; under tail-coverts fulvous, barred with rufous-brown; under wing whitish, painted down the centre with rufous and barred with brown.

Obs. The above description is taken from a number of examples in the British Museum, and is intended to embody as much as possible the characteristics of the very variable plumage in this species. Scarcely any two specimens are alike on the under surface; the older the bird the more covered with rufous-brown are the lower parts, and the less conspicuously barred is the tail. Many individuals exhibit a fuliginous phase, which is thought to be the result of old age, and which I will notice here as such, remarking, first of all, that such an example formed the type of Hodgson's species, which has been figured in Mr. Sharpe's admirable catalogue of the Accipitres.

Dark phase in old bird. In this the head, hind neck, and back, together with the wings, are uniform brown; tail dark brown, with the bands crossing the feathers completely, the subterminal one much marked; beneath, almost uniform brown, the centre of the breast alone being crossed with paler bands. In an example from Etawah the under surface is very dark, but the feathers have paler lateral margins, and the under tail-coverts are brownish buff, banded like ordinary adult birds, showing thus a remnant of the usual mature plumage, and demonstrating the fact that the fuliginous coloration has been a further advance beyond that stage and is the result of old age.

Young. Similar to mature birds described above, although scarcely any two specimens are alike. The primaries are paler brown, and have not the outer webs washed with ashy; the ground-colour of the upper tail-coverts not so pervaded with ashy; tail very variable, sandy brown, brownish grey, or greyish rufous, plainly barred on the central feathers with rather wavy bands of brown, uniting with the darker margins of the feathers, and the inner webs of the lateral feathers not so white as in adults.

Edge of forehead whitish; cheeks whitish striped with brown, the moustachial stripe streaked with white; throat and all beneath white or whitish buff; the chest and fore neck more or less broadly striped with brown, the markings coalescing down the sides of the fore neck in some; sides of the lower breast generally brown, uniting with the dark flanks; thighs fulvous, with brownish-rufous markings, in some showing indications of bars; abdomen and under tail-coverts buff, spotted with rufous; under wing whiter than in the adult, and the primary under-coverts with less brown on the terminal portions; basal half of primaries beneath pure white.

With age the thighs and flanks commence first to darken and the central rectrices lose their plainly defined bars, the brown hue gradually diminishing at the edge of the feather.

The following is a description of the Southern Ceylon example above alluded to:—

Head, hind neck, back, and wings sepia-brown; the mantle, wing-coverts, and rump with moderately deep rufous margins; the concealed edges of the scapulars and wing-coverts indented with whitish bars; the margins of the head and hind-neck feathers fulvescent whitish; the nuchal feathers dark brown at the tips, elongated as a rudimentary crest and showing much white at the base; primaries very dark brown, washed with grey on the outer webs, particularly about the notch; the inner webs almost entirely white from the notch upwards; secondaries paler brown, the internal portions white, crossed with narrow incomplete bars of dark brown; lateral upper tail-coverts rufous at the edges, and the concealed portions barred with rufescent white; general hue of tail rufous ashy, crossed with numerous narrow bars of dark brown, tipped with fulvous, the subterminal bar broader than the rest, the internal portions of all the lateral feathers white; inner webs of the central pair paling into white near the shaft.

Loral plumes dark with white bases; a narrow blackish line beneath the eye and a brownish postorbital stripe, beneath which the ear-coverts are whitish, narrowly lineated with rufous-brown; chin and throat buff-white, openly striated with narrow lines of brown and bounded on either side by a plainly marked brown moustachial streak; chest and under surface whitish buff, the former with large rufous-brown terminal patches almost covering the feather; the breast with smaller and indented central patches of the same; lower flanks well covered with brown, and the sides of the abdomen marked with pointed bars of rufous-brown; thighs in front and at the sides brown, with indistinct bars of rufous; interiorly fulvous, patched with brown; under tail-coverts with a few terminal spots of brown; under wing-coverts rufous, tipped paler and centred with brown; greater series uniform dark brown.

Obs. The African Buzzard (*Buteo desertorum*), with which Indian examples of the present species have until lately been confounded, is a smaller bird, the limit of the length of wing in the male being, according to Mr. Gurney's investigations, 13.5 to 15.4 inches, and in the female 14.3 to 15.85 inches. In their plumage, however, some specimens of this species so closely resemble the Indian bird that it is difficult to define the differences which exist by a mere description. It is not my province here to go into this matter, as the African bird is not likely to find its way to Ceylon. I will remark, however, that the dimensions of my bird from Southern Ceylon are low enough to relegate it to the ranks of the African species; but the locality in which it was shot, coupled with the fact of Lord Tweeddale possessing an unmistakable example from Ceylon, makes it necessary to refer my bird (in spite of its diminutive size and comparative large amount of bare tarsi) to the Asiatic form. Mr. Gurney, who carefully examined the specimen, supports this view, and informs me that he has never heard of a true *B. desertorum* having been procured to the eastward of Erzerum. Furthermore Mr. Hume, in his exhaustive notice of the various Indian Buzzards ('Stray Feathers,' vol. iii. p. 58), removes *B. desertorum* from the Indian avifauna, assigning the specimens from the Nilghiris, formerly referred by him to this species, to the subject of the present article.

Distribution.—This interesting Buzzard, the Asiatic representative of the European *B. vulgaris*, is a very rare visitor to Ceylon, which island forms the most southerly limit of its wanderings in the cool season. Not more than two instances of its capture are known to me—the first of which is that of a large female in the museum of the Marquis of Tweeddale, and the second that of the example above alluded to in my own collection. The former was procured about the year 1865 by Mr. Spencer Chapman, but from what exact locality his Lordship is unable to inform me. I understand that the major portion of Mr. Chapman's collections was made in the west and north-west of the island, in one of which districts the Buzzard was probably met with in its passage from the Malabar coast to Ceylon. The specimen in my possession was shot in October 1871 at Maha Modera, a few miles to the north of the port of Galle, by Mr. Wylde, a gentleman for some time resident at the latter place. It had been haunting the vicinity of the bungalow for several days, having made its appearance there after the prevalence of high northerly winds, which usually bring down many of the Ceylonese migrants from the coast of India*.

Dr. Jerdon ('Ibis,' 1871, p. 338) writes, under the head of *Buteo desertorum*, that this species has been sent from Ceylon; but he probably refers to the specimen above mentioned as procured by Mr. Chapman, and which Mr. Holdsworth alludes to in his catalogue (*loc. cit.*).

* This bird was referred to by me ('Stray Feathers,' vol. i. p. 488) as *Butastur teesa*: this, however, was a mistake, as the latter is a much smaller bird, and is now removed to a different subfamily, chiefly on account of the character of the scales on the hinder part of the tarsus.

In the south of the Indian peninsula the Harrier-Buzzard is found, during the cool season, in the Travancore and Nilghiri hills.

With regard to the former locality, Mr. Bourdillon, as quoted by Mr. Hume in his "First List of the Birds from the Travancore Hills" ('Stray Feathers,' 1876), says:—"This bird, a winter visitor, seems not to be uncommon during December, January, and February." From the Nilghiris Mr. Hume himself records it.

In the north of India it is found in Nepal, whence Mr. Hodgson's original specimen of *Buteo plumipes* came, along the southern slopes of the Himalayas to Sikhim, and thence into British Burmah, where Captain Feilden procured it in the province of Upper Pegu. On the north of the Snowy range it is found as a winter visitor in Kashgar, though Dr. Stoliczka, during his excursion to that remote region, met with it but rarely. Another observer, however, Dr. Scully, in his valuable "Contribution to the Ornithology of Eastern Turkestan" ('Stray Feathers,' 1876), mentions, at p. 125, the shooting of three examples at Yarkand in January, and this locality appears to form the westernmost limit of its range. He further remarks that it is common there during the winter, but was never met with in the plains after that season was fairly over, having moved away northwards about the 20th of April.

It is remarkable that when a movement of these birds *does* take place southwards in winter so many remain in the great upland of Turkestan, which, one would think, must possess quite as rigid a climate as the more northerly lower-lying regions, where they no doubt breed, and which may very likely be the mountainous country bounding the vast Mongolian empire on the north. Jerdon, however, in his note on *B. japonicus* ('Ibis,' 1871, p. 337), writes that he procured it "at Darjeeling, in Kumaon, and in Kashmir in *summer*, at a height of from 9000 to 10,000 feet," which savours much of its breeding in the higher parts of the outlying Himalayas.

The vast territory lying between the Himalayas and Eastern China has been but little explored, and therefore this Buzzard has not yet been recorded from it, though it doubtless inhabits, at one season or other of the year, the whole of this region. Père David, in his work on the 'Birds of China,' says that, although it is found in winter in the provinces of the S.E. of China, it penetrates rarely into the interior, and that he only got one example in the neighbourhood of Pekin. He remarks that Middendorf and Dybowski found it in East Siberia; so that its range would seem to lie in a more northerly track from Turkestan, probably through the north of Mongolia to Siberia and Japan, in which latter country it is the common Buzzard, and styled as such in the 'Fauna Japonica.' In the winter it moves in a southerly direction down the coast of China, where Mr. Swinhoe found it as far south as the island of Hainan. Captain Blakiston procured it in the island of Yesso, the most northerly of the Japanese group, and Col. Prejevalsky observed it during a voyage from Kiachta to Pekin.

Habits.—This species seems to prefer open country to forests and jungle, in which it exhibits much of the nature of a Harrier, hunting for its food over marshes and bare land with a steady flight. My specimen, Mr. Wylde informed me, took up its quarters in the cocoa-nut compounds and paddy-fields near his bungalow, about which it appeared to prowl as if intent on the capture of some of the poultry. When dissected, however, its stomach contained the remains of lizards. Its manners, however, on this occasion were evidently those of a new arrival by no means at home in its quarters; and after a few days it would evidently have betaken itself to some open upland district in the interior.

Captain Feilden remarks ('Stray Feathers,' 1875, p. 30):—"I found this bird at the edge of the parade-ground in tolerably thick tree-jungle with partially cleared underwood."

In Turkestan, Dr. Scully observed it, in company with *Buteo vulgaris* and *B. ferox*, hunting everywhere over the rush-grown frozen marshes, these birds being "so intent on the work they had in hand that they often seemed to disregard one's presence and approached so close as to be easily shot."

Further testimony as to its Harrier-like habits is afforded by Mr. Bourdillon's observations of it in the Travancore hills, "where two or three might be seen steadily quartering the ground, and occasionally pouncing on some mouse or lizard," and were noticed "to perch both on trees and on stones, and beat backwards and forwards over a field of young coffee."

Mr. Swinhoe writes:—"I fell in with this bird on the island of Naochow. He was resting at noon, after a meal off *Passer montanus*, in one of the bushy trees of a small grove. My appearance disturbed him, and he flew across heavily, when I secured him." ('Ibis,' 1870, p. 87.)

The testimony of various observers therefore goes to prove that this Buzzard is a bird of solitary habit, straying about alone, and usually so intent on securing the various prey on which it exists, that it is any thing but a shy bird.

Nidification.—I am unable to give my readers any information on the breeding of this Buzzard. In these days of ornithological research the day is doubtless not far distant when it will be discovered nesting in the Himalayas, or its breeding-haunts in the comparatively unknown regions of Central Asia penetrated by some adventurous explorer.

Subfam. AQUILINÆ.

Bill variable, usually lengthened and straight at the base; but in some (smaller genera) more curved and shorter, the margin festooned. Wings generally long; the 4th quill usually the longest, in some the 3rd and 4th, and in others the 4th and 5th. Tarsus less than the tibia by more than the length of the hind claw, but more than half its length; in some feathered entirely to the toes, in others partially, with the *hinder portion* always *reticulate*.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus NISAETUS.

Bill strong, moderately lengthened, but not so much so as in *Aquila*, the culmen curving from the cere, its length not exceeding the hind toe; tip much hooked; the margin prominently festooned. Nostrils large, oval, and directed downwards. Wings with the 5th quill the longest, of moderate length, shorter than in *Aquila*. Tail moderate, even at the tip. Tarsus shorter than the tibia, stout, clothed with feathers to the toes, which are large and covered with three large scales at the tip. Claws large, much curved, the inner claw much larger than the middle.

NISAETUS FASCIATUS.

(BONELLI'S EAGLE.)

Aquila fasciata, Vieill. Mém. Linn. Soc. Paris, 1822, p. 152.

Falco bonellii, Temm. Pl. Col. i. pl. 288 (1824).

Aquila bonellii, Less. Man. Orn. i. p. 83 (1828); Gould, B. of Europe, i. pl. 7 (1837); Kelaart, Prodromus, Cat. p. 114 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 98; Tristram, Ibis, 1865, p. 252; Shelley, B. of Egypt, p. 206.

Eutolmaetus bonellii, Blyth, J. A. S. B. xiv. p. 74 (1845); Hume, Rough Notes, i. p. 189.

Nisaetus grandis, Jerd. Ill. Ind. Orn. pl. 1 (1847).

Pseudaetus bonellii, Hume, Nests and Eggs, i. p. 33.

Nisaetus bonellii, Jerd. B. of Ind. i. p. 67 (1862); Holdsw. P. Z. S. 1872, p. 411.

Nisaetus fasciatus, Sharpe, Cat. of Birds, i. p. 250 (1874); Dresser, B. Eur. part xxxiv. (1874).

The Crestless Hawk-Eagle, Jerdon; *The Genoese Eagle*, Kelaart.

Perdicero; *Aquila blanca*, Spanish.

Mhorungi, lit. "Peacock-killer," Hind.; *Rajali*, Tam. (*apud* Jerdon).

Adult male. Length to front of cere 25·0 to 26·5 inches; culmen from cere 1·6; wing 18·5 to 19·5, expanse 62·0; tail 11·5; tarsus 3·5 to 3·7; mid toe 2·3 to 2·5, claw (straight) 1·2; hind toe 1·5 to 1·6, claw (straight) 1·6; height of bill at cere 0·7.

Female. Length to front of cere 26·0 to 27·0; culmen from cere 1·6 to 1·7; wing 18·6 to 20·3; tail 11·2 to 12·0; tarsus 3·6 to 4·0; mid toe 2·6, claw (straight) 1·3; hind toe 1·6.

Obs. Some adult females are quite as small as males. In Hume's 'Rough Notes' the dimensions of the wings of three females are given at 20·0, 19·63, and 19·65, and the expanse of the largest 67·0.

Iris bright yellow, in some brownish yellow; cere yellowish; bill blackish brown, paling into bluish horn about the cere, the gape yellowish; feet yellowish or whitish brown.

Above deep brown, very dark on the rump; the feathers of the head, neck, upper back, and wing-coverts with pale margins, and the concealed portions white; longer scapular feathers almost black near the tips; feathers of the nape elongated; edge of the wing from the flexure to the front white; median coverts paler brown than lesser, with a dark patch near the tips and the bases mottled; primaries and secondaries black-brown, the outer webs of the longer quills washed with grey, the inner webs of all whitish towards the base and crossed by narrow bars; inner webs of secondaries mottled with white; upper tail-coverts tipped with greyish white; tail brownish grey or cinereous brown, with a *broad terminal band* of blackish brown, and the basal part of the central feathers marked transversely near the shaft with wavy brown rays, which, on the more lateral feathers, develop into narrow irregular bars.

Loral plumes blackish; a blackish-brown moustachial patch; ear-coverts and the sides of the neck below them tawny brown, striped with a darker hue, and the space above them at the posterior corner of the eye whitish; under surface from the chin to the belly white; the throat with fine mesial lines, and the fore neck, chest, and breast with blackish-brown central stripes, generally broadest at the sides of the breast and flanks, and in some specimens very wide on the chest; thighs variable, in some specimens dark brown with pale indentations, in others much paler, but with the same character of marking; abdomen and under tail-coverts lighter brown than the thighs, barred with whitish; axillary plumes brown, spotted with white; under wing-coverts blackish brown, much marked with white along the edge; tarsal feathers pale brownish.

Obs. Some examples incline from their youth to be darker on the thighs and abdomen than others, and consequently a considerable variation exists in these parts in adults. As a rule the older the bird (a sure characteristic being the tail) the narrower are the stripes of the under surface.

Occasionally it would appear that the tawny hue, to be noticed presently, continues to remain on the under surface, the stripes and the dark colouring of the underparts being as in the normally white birds. There is a beautiful example in this plumage in the British Museum, from Mr. Howard Saunders's Spanish collection.

Young. The bird of the year has the upper surface and wing-coverts of a medium or sandy brown, the feathers with dark shafts; the head and hind neck tawny, with the feathers dark-centred; primaries lighter than in the adult, and the outer webs similarly pervaded with grey; the bars of the inner webs more extensive; secondaries broadly tipped with dull white; these and the greater coverts have in some examples a strong purplish lustre; upper tail-coverts brownish, paling into white at the tips, and with dark shafts; tail light sandy brown, mottled on the central feathers, and with a deep pale tip, the whole crossed with seven or eight narrow wavy bars of dark brown, without any broad terminal band; in many examples the bars are undefined, and run into the mottlings of the interspaces; *no broad band* at the tip.

Face, ear-coverts, and sides of head concolorous with the adjacent brown parts; the ear-coverts striated with a darker hue; throat and entire under surface uniform brownish rufous, paler on the chin and with clearly defined shaft-lines, diminishing towards the lower parts; abdomen, thigh-coverts, and under tail-coverts unstriated, but with the centres of the concealed portions of the feathers brown, showing the tendency of these parts to become dark with age; under wing-coverts rufescent like the breast and striped with brown, the lower series dark brown.

With age the rufous of the under surface becomes white, the mesial lines expand at the tip into "drops," and thence into broadish stripes; the thighs and legs become brown with darker stripes, while the belly and under tail-coverts are heavily dashed with the same; the under wing-coverts become blackish brown at the same time.

Distribution.—This powerful Eagle, the finest of the short, curved-billed genus *Nisaetus*, and so well known in Southern Europe and Northern India, has been once procured in Ceylon. It can therefore only be looked upon as a straggler to the island, and takes its place in our lists as such, in common with the Scavenger-Vulture and the Amurian Kestrel.

Layard writes, in his notes on Ceylon ornithology (*l. c.*):—"This Eagle was procured by R. Templeton, Esq., R.A., several years ago, and I do not know from what part of the island it was obtained. It has not fallen under my notice*, nor has Dr. Kelaart enumerated it amongst his acquisitions at Nuwara ELLIYA." Many

* There, notwithstanding, is a faded specimen of this Eagle in the Poole collection. It has the wing 19·5, tail 10·0, tarsus 4·0 inches; the peculiar brown coloration of the exterior of the thighs is still visible, although the head and all the under surface are bleached. Mr. Layard writes me that he does not remember any thing about this specimen, and its presence, evidently as a Ceylon bird, in this collection is somewhat puzzling. Can it be that this is Dr. Templeton's specimen, afterwards presented to the collection while at Sir Ivor Guest's.

years have elapsed since this occurrence, which was prior to 1858; and since then I am unable to find any record of its having been met with in Ceylon. The specimen referred to was identified by Mr. Blyth, when he was Curator of the Calcutta Museum, so that there is no chance of the species having been mistaken for any other Eagle.

Bonelli's Eagle is, as far as the Indian peninsula is concerned, chiefly confined to the northern part of it. It is not uncommon in portions of Bengal, but not so in the lower districts of the Province.

In Madras and the south generally, it is rarer; and I notice that it is not included in the "First List of Birds from the Travancore Hills" ('Stray Feathers,' vol. iv.) even as a rare visitor. Dr. Jerdon, however, records it from the Nilghiris, whence it no doubt visited Ceylon when procured by Templeton.

It is an inhabitant of the slopes of the Himalayas; Mr. Brooks records it among the birds he observed between Mussoori and Gangaotri. In the north-east of India it is more common than elsewhere; for in Sindh, Mr. Hume says, "one, two, or more pairs are to be met with about every large lake, making terrible havoc amongst the smaller water-birds, and carrying off wounded fowl before one's eyes with the greatest impudence." In Southern Europe, Bonelli's Eagle is a well-known bird. Lord Lilford and Mr. Howard Saunders speak of its common occurrence in Spain, and on the northern coasts of Africa it is also pretty freely distributed.

Mr. Brooke has met with it in Sardinia; and Canon Tristram remarks that it is more common in Palestine than the next species, being generally found in the wooded hills about Carmel, Tabor, and the Lake of Galilee.

Habits.—Rocky wooded hills, mountainous jungles, and forests in the vicinity of high land are the habitat of this bold and daring Eagle. Jerdon says that "it is much on the wing, sailing at a great height, and making its appearance at certain spots, in the districts it frequents, always about the same hour." The latter propensity is noticeable in other birds of prey, for I have remarked it in the Sea-Eagle and Crested Hawk-Eagle of Ceylon. The present species is very powerful in the legs and feet, and is known to kill the smaller kinds of game and hares with ease. It is, however, so strong and active on the wing that it preys largely on various birds, such as Jungle-fowl, Partridges, Ducks, and Herons, and, according to Jerdon "even Peafowl."

It is very destructive among Fowls and Pigeons; and it is recorded, in the 'Birds of India,' that a pair committed great devastation among several pigeon-houses in the Nilghiris.

The following interesting account of the manner in which these robbers captured the Pigeons is given by Jerdon at page 69 of his first volume:—"On the Pigeons taking flight, one of the Eagles pounced down from a vast height on the flock, but directing its swoop rather under the Pigeons than directly at them. Its mate, watching the moment when, alarmed by the first swoop, the Pigeons rose in confusion, pounced unerringly on one of them and carried it off; and the other Eagle, having risen again, also made another and, this time, a fatal stoop." Such a bird as this would do much damage in the poultry-yards of many a pretty bungalow in the Kandyan province.

Concerning its economy in Palestine, Canon Tristram remarks as follows:—"It perches on some conspicuous point of rock looking out for its prey, and after a short circling excursion will again and again return to the same post of observation. I take it to be more truly a game-killing Raptor than any of the preceding Eagles" (the Golden, Imperial, Tawny, and Booted), "and less addicted to carrion-feeding than any of its congeners. The Rock-Pigeons are its favourite quarry in the winter, and it preys much on the Turtle-Doves in the Ghor and the plain of Gennesaret. I have also seen it pursue Kites, apparently with the intent of robbing them."

Its fondness for Pigeons was noticed by Mr. Hume, who killed the male of the pair which form the subject of his interesting article in 'Rough Notes,' returning to the nest with a Little Brown Dove (*Turtur cambayensis*) in its talons. This Eagle has a singular habit of packing in large flocks, one of which very unaquiline assemblies was witnessed by Lord Lilford in Spain, he being informed that such flights were not unfrequently seen. This was in May, during the breeding-season of the species; and, as is remarked, the bird being a permanent resident in the country, it is a difficult matter to account for such an assemblage. The note of this Hawk-Eagle is described as being a "shrill croaking cry."

Nidification.—In the plains of India Bonelli's Eagle breeds in December and January, and in the Himalayas and the district of Kumaon much later, commencing in April and continuing until June. In the

Nilghiris it breeds as early as December. The nest is usually placed in the ledge of a cliff, but it has been found fixed in the branches of large trees. It is a huge platform of sticks, containing in the centre a circle or layer of fresh green leaves, on which the eggs are laid, and which the bird covers them with on leaving the nest, in the same manner that I have myself seen the Grey-backed Sea-Eagle do.

Mr. Hume, in his interesting account of the taking of this Eagle's nest, given in 'The Ibis' for 1869 (p. 143), speaks of one nest visited as being five feet in diameter. The situation of this nest is thus described:—"About a mile above the confluence of the clear blue waters of the Chambal and the muddy stream of the Jumna, in a range of bold perpendicular clay cliffs that rise more than 100 feet above the cold-weather level of the former, I took my first nest of Bonelli's Eagle. In the rainy season, water trickling from above had (in a way trickling water often does) worn a deep recess into the face of the cliff, about a third of the way down. Above and below it had merely grooved the surface broadly, but here (finding a softer bed, I suppose) it had worn in a recess some 5 feet high and 3 feet deep and broad. The bottom of this recess sloped downwards; but the birds, by using branches with large twiggy extremities, had built up a level platform that projected some 2 feet beyond the face of the cliff. It was a great mass of sticks fully half a ton in weight, and on this platform (with only her head visible from where we stood at the water's edge) an old female Eagle sat in state."

The eggs are usually two in number; but some nests have been found with only one. They are described by Mr. Hume as "moderately broad ovals, varying slightly in size." They are whitish in colour, sometimes quite unmarked, but usually are faintly blotched with pale yellowish or reddish brown. The markings in others, as given by Mr. Brooks, are darker, or "bright reddish brown, sparingly intermixed with light reddish grey." They average in size 2·78 by 2·1 inches.

In the Holy Land, Canon Tristram found it nesting on the cliffs of the deep gorges characteristic of that country. He writes, in 'The Ibis,' 1865, p. 253:—"It does not appear to lay till the end of March, and then generally a single egg. These are either white or with the faintest russet spots. One nest, which contained two eggs both fairly coloured, baffled all our attempts at its capture. It was comfortably placed under an overhanging piece of rock near the top of the cliffs of Wady Hamam, in such a position that no rope could be thrown over to let down an adventurous climber; and yet from another point, which projected nearly parallel to it, we could look into the nest with longing eyes. The old birds seemed perfectly aware of the impregnability of their fortress."

NISAETUS PENNATUS.

(THE BOOTED EAGLE.)

Falco pennatus, Gm. S. N. i. p. 272 (1788); Temm. Pl. Col. i. pl. 33 (1824).

Aquila pennata, Vig. Zool. Journ. i. p. 337 (1824); Gould, B. of Europe, i. pl. 9 (1837); Fritsch, Vög. Eur. tab. 5. figs. 3, 4, 5 (1858); Kelaart's Prodrömus, Cat. p. 114 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 98; Jaub. et Barth. Rich. Orn. p. 36, pl. 3 (1859); Jerdon, B. of Ind. i. p. 63; Holdsworth, P. Z. S. 1872, p. 411; Shelley, B. of Egypt, p. 207 (1872); Legge, Str. Feath. vol. iv. p. 249; Dresser, B. Eur. pt. xxxii. (1874).

Butaetus pennatus, Blyth, Journ. Asiat. Soc. Beng. xiv. p. 174 (1845).

Hieraetus pennatus, Blyth, Journ. Asiat. Soc. Beng. xv. p. 7 (1846); Hume, Rough Notes, i. p. 182 (1869).

Nisaetus pennatus, Sharpe, Cat. Birds, i. p. 253 (1874).

Le Faucon patu, Briss. Orn. vi. App. p. 22, pl. 1 (1760).

The Dwarf Eagle, Sportsmen in India.

Bagati Jumiz, Hind., lit. "Garden Eagle;" also *Gilheri-mar*, lit. "Squirrel-killer;" *Oodatal Gedda*, Tel., lit. "Squirrel Kite" (*apud* Jerdon).

Punja-Prāndu, Tam., lit. "Field-Kite."

Rajaliya, Sinhalese.

Adult male. Length to front of cere 19.5 to 21.0 inches; culmen from cere 1.02 to 1.2; wing 14.5 to 15.5; tail 8.2 to 8.5; tarsus 2.3 to 2.4; mid toe 1.5 to 1.7, claw (straight) 0.75 to 0.8.

Adult female. Wing 15.0 to 16.4; tail 8.5 to 9.5; tarsus 2.3 to 2.5; mid toe 1.5 to 1.7; culmen from cere 1.15 to 1.3.

This limit of wing is from a series of Bengal, Turkish, and Spanish examples. Mr. MacVicar's specimen, referred to below, which was a female and an Indian-bred bird, measured 15.7 in the wing; a male, in my own collection, purchased from Messrs. Whyte and Co., 15.2.

Iris varying from pale brown to chestnut-brown; cere yellow; bill black at the tip, paling into leaden or bluish at the base, and with the gape yellow; feet yellow; claws black.

Head and hind neck brownish tawny, darkest on the forehead and crown (in some paler or fulvous tawny), the shafts of the feathers dark and their margins pale; back, rump, scapulars, lesser and greater secondary wing-coverts dark earth-brown, with the edges of the feathers slightly paler; median wing-coverts, uppermost tertials, and some of the scapular feathers pale brownish, darkening towards the shaft of the feather; primaries and secondaries blackish brown, with obsolete bars on the light portions of the inner webs and the extreme tips whitish; upper tail-coverts sandy fulvous; tail blackish brown, lighter than the tips of the quills; traces of obsolete transverse marks exist in many specimens; the inner webs of the lateral feathers mottled with whitish.

Plumes of the lores and round the eye black; cheeks, ear-coverts, and a space below them dark tawny, with a narrow blackish-brown moustachial stripe; throat and fore neck buff, paling slightly on the whole under surface and under wing into buff-white, the throat marked with central stripes concolorous with the ear-coverts; these become narrower on the chest, and gradually change into shaft-lines on the breast and flanks and secondary under wing-coverts; primary under coverts spotted with dark brown. The amount of striation on the under surface varies much, and some examples have the stripes confluent across the throat.

Dark form. The plumage above has the same character as the foregoing, but is much darker throughout both as regards body and the wings and tail; the light portions of the wing-coverts and tail are very much darker than in the

pale bird; the forehead and crown are well covered with black feathers, and the hind neck rufous instead of pale fulvous; the upper tail-coverts are darker than in the pale bird; the chin and cheeks are boldly dashed with blackish brown; and the entire under surface uniform wood-brown, the centres of the feathers black, blending with the ground-colour.

Young. The nestling has the iris brown, and the legs and feet yellow, like the adult.

Obs. In the splendid series possessed by the British Museum, many of which were collected by Mr. Howard Saunders in Spain, are two nestlings obtained from the nest, with the parents, by that gentleman. One is a light bird, and the other a very dark one, demonstrating the fact that *light and dark* birds exist from the very nest, and are the offspring of the same parents. This fact solves the problem as to the light and dark birds of both sexes, which has so long engaged the attention of naturalists. Mons. Bureau, in his paper on this Eagle, published in the 'Proceedings' of the Association Française pour l'avancement des Sciences, Nantes, goes very fully into this singular feature in the economy of the Booted Eagle, proving by his observations that sometimes birds of the light and dark type pair together, the union of similar-plumaged birds being of course the commoner; and he remarks, with reference to the progeny, "De l'une ou l'autre de ces unions naissent habituellement des jeunes d'un seul type; plus rarement on trouve dans une même nichée des jeunes de l'une ou de l'autre race." This conclusion is substantiated in the case of the two young birds now alluded to, the parents of whom belonged to the two phases. In the 'Birds of Europe,' Mr. Dresser cites several instances of light and dark birds breeding together in Russia and producing young of both descriptions. The description of the above-mentioned nestlings is as follows:—

Pale form. Head and hind neck light but rich sienna, the feathers of the crown with dark shafts; back, lesser secondary wing-coverts, and longer scapulars deep wood-brown, with a purplish lustre; the tail broadly tipped with whitish; scapulars, tertials and major wing-coverts, primaries, and secondaries blackish brown, the latter paling at the tips into the hue of the coverts; upper tail-coverts light fawn-brown with dark shafts; under surface very pale fawn, richest on the chest, where the feathers have dark shaft-stripes.

Dark form. Head and hind neck rich tawny, the forehead blackish, and the crown with dark shaft-lines; dark portions of the upper surface much the same as the pale bird, but the scapulars and wing-coverts darker; cheeks, fore neck, and entire under surface dark brown, quite as intense as in the full-grown dark bird.

With its advance towards maturity, the pale bird becomes lighter on the head and under surface. The head and hind neck are rich tawny, with the shaft-stripes narrower than in the adult, and the crown not so dark; the ear-coverts and sides of the neck are rich tawny brown, this part blending evenly into the paler fawn-colour of the chest; the moustachial streak is dark and unites with the surrounding tints; the wing-coverts and scapulars have a greater extent of pale tipping, which extends to the least coverts along the front of the wing; the upper tail-coverts are very pale, and the light tip of the tail deeper than in the adult; the entire under surface is pale fawn, blending into the darker hue of the chest, which is handsomely striated as in the adult, but the streaks not contrasting so much with the feather.

With age, in the dark form, the tawny hue of the head and hind neck gradually changes to the darker coloration of the adult; the crown and forehead become more uniformly brown, and the light edgings of the back feathers less conspicuous, finally darkening into the ground-colour.

Distribution.—This bold little Eagle, so well known in Southern Europe and India, appears to pay occasional visits to Ceylon, and has been obtained both in the maritime and moderately elevated hill-districts. It was first killed by Edgar Layard near Pt. Pedro, during his official residence at that place. The season of the year was that in which Asiatic Raptors usually visit the island, and at the same time, during the prevalence of the north-east monsoon in 1875–6, two additional examples were collected. The first, a fine female, was killed by Mr. H. MacVicar, of the Survey Department, in the cinnamon-gardens close to Colombo, and was presented by that gentleman to the Colonial Museum; the second was shot in the district of Dumbara, near Kandy, was preserved by Messrs. Whyte and Co., of that town, and afterwards passed into my hands.

I am under the impression that I have seen this species myself in the north-eastern part of the island; but I can no more speak with certainty concerning it than I can satisfy myself as to the identity of several Hawks not in our lists, which I have met with in the forests of Ceylon and failed to shoot.

In India this Eagle is pretty fairly distributed as far as the plains are concerned; but its numbers are greater in the north than in the south. It is not found at any elevation in the mountains, and does not inhabit

Burmah in any quantity. It is recorded as being comparatively rare in Pegu, neither Mr. Oates nor Captain Feilden having procured many examples of it in that region.

From the west of India its range extends through Persia to Palestine, south-eastern, southern, and central Europe; whereas on the south of the Mediterranean it inhabits Egypt and Algeria, and thence extends, probably by way of the east coast, to the south of the continent, having been procured in Damara Land by Mr. Andersson. Lord Lilford found it common in Spain near Seville, and remarks that it inhabits many other parts of the Peninsula. Mons. L. Bureau records it as an inhabitant of the west of France, and Count Wodzicki of the Carpathians, while other naturalists, as quoted in Mr. Dresser's 'Birds of Europe,' have met with it in Central Germany and many parts of Russia. In Palestine Canon Tristram believes it to be confined to the north, and only observed it between the months of October and March.

Habits.—The Booted Eagle frequents hilly, wooded country, as well as open plains, cultivated land, and ground covered sparsely with small timber and scrub, where it finds an abundance of food in birds, small vermin, and perhaps some kinds of reptiles. It is partial to districts where woods and clumps of forest are intermingled with low jungle. It is a bold and daring bird and very active on the wing, in testimony of which Mr. Hume, in his 'Rough Notes,' quotes from the letters of Mr. R. Thompson, who observed one of these Eagles dash into a tree, and seize a bird out of a flock of Parakeets, while on another occasion he witnessed the attempted capture of a rat on the ground. Layard, in writing of the specimen he shot at Pt. Pedro, after narrating that he had mistaken it in the twilight of the morning for a Brahminy Kite, remarks, "it suddenly pounced upon a Bulbul roosting in an oleander bush: this at once undeceived me; and as it rose with its victim in its claws, I fired and brought it to the ground. It fought with determined spirit and kept a small terrier at bay, till I killed it with the butt-end of my gun."

Jerdon, in his 'Birds of India,' notes its destructive habits, and says that it pounces on doves, pigeons, and chickens, and that it forages about villages in company with Kites, who are often unjustly blamed for the depredations in reality committed by the "Dwarf Eagle." Although fierce in its nature it is at times sociably inclined, even towards other members of its order; for Mr. Brooks has seen it, several at a time, seated on the ground in company with the Common Kite. The note of the Booted Eagle is a wild scream, which is said to be different from that of most other Eagles. It was observed by Capt. Feilden in Burmah to perch much in thickly foliated trees, a somewhat abnormal habit for the Eagle family.

In Spain it appears, says Lord Lilford, "to prefer open country and isolated groups of trees to large extents of forest," and is, according to the natives, "the scourge of the Quails in Andalucia." It arrives in the country in April, breeds there, and departs in October.

Nidification.—The Dwarf Eagle does not breed commonly within the Indian limits. Mr. Hume records, in 'Nests and Eggs,' a nest found at Hurroor, near Salem. It was built in the branch of a high banyan tree, about 50 feet from the ground, and consisted of dry twigs, being a circular platform in shape, with a slight depression in the centre and devoid of lining. The eggs were two in number, of a dead white ground-colour, and one of them blotched and streaked with reddish brown. The egg measured 2.13 by 1.78 inch. In Spain, Lord Lilford, who found many nests, chiefly built in pine-groves, says that they are invariably lined with green leaves, which is a common practice with the Eagle tribe. These nests, when built in pines, were situated at the junction of a large lower branch with the trunk, and all, as well as others found by him, contained two eggs. The figures on pl. x. of 'The Ibis' for 1866 show the variation in the colouring, the one being dull white with a few faint reddish blotches about the centre, and the other clouded and dashed with two or more shades of light reddish. The lighter of the two measures 2.04 by 1.73 inch, and the larger and more handsomely coloured 2.26 by 1.83 inch.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus LOPHOTRIORCHIS.

Bill curved more suddenly from the base than in *Nisaetus*, less stout, and with the tip not so prolonged; margin not prominently festooned. Nostrils circular, rather small, and placed near the edge of the cere. Wings moderate, reaching, when closed, beyond the middle of the tail; the 4th and 5th quills subequal and longest, or the 5th shorter than the 4th. Tail moderate, broad at the base, rounded at the tip. Tarsus as in *Nisaetus*; middle toe long, with the claw rather short; lateral toes nearly equal, but with the inner claw nearly as long as the hind one. Head crested; the feathers short, broad at the base, and pointed at the tip, forming a wedge-shaped crest, which originates above the occiput.

LOPHOTRIORCHIS KIENERI.

(THE RUFOUS-BELLIED HAWK-EAGLE.)

Astur kieneri, G. S. *, Mag. Zool. 1835 (Aves), pl. 35.

Spizaetus albogularis, Tickell, J. A. S. B. xi. p. 456 (1842).

Limnaetus kieneri, Strickland, Ann. N. H. xiii. p. 33 (1844); Jerdon, B. of Ind. i. p. 74; Bligh, J. A. S. (C. B.) p. 64 (first record from Ceylon); Legge, Str. Feath. 1875, p. 198; Gurney, Ibis, 1877, p. 433.

Spizaetus kieneri, Gray, Gen. B. i. p. 33 (1845); Schl. Mus. P.-B. *Astures*, p. 11; Wall. Ibis, 1868, p. 14; Hume, Rough Notes, i. p. 216; Hume, Str. Feath. i. p. 310 (1873).

Nisaetus kieneri, Jerd. Ill. Ind. Orn. p. 5 (1847).

Lophotriorchis kieneri, Sharpe, Cat. Birds, i. p. 255 (1874).

Adult male. Length to front of cere 19·5 to 20·5 inches; culmen from cere 1·0 to 1·1; wing 14·2 to 15·5; tail 8·2 to 9·0; tarsus 2·7 to 3·0; mid toe 2·0 to 2·15, its claw (straight) 0·85 to 1·1; inner claw (straight) 1·3; height of bill at cere 0·5 to 0·55. Expanse (of one with wing of 14·5) 45·0; weight of the same 1½ lb.

A great disparity in size exists between the sexes in this species, but males also differ much *inter se* in this respect.

The above dimensions are taken from a fair series of Indian, Ceylonese, and Malaccan examples. The wings of four Ceylonese males examined measure 14·2, 14·5, 13·5, and 15·0.

Adult female. From Mr. Hume's Darjiling specimens ('Stray Feathers,' vol. i. p. 311). Length 24·0 to 29·0 inches;

* The article here referred to merely has these initials appended to it, and some doubt exists as to whether they refer to G. Sparre or Geoffroy St.-Hilaire. Mr. Sharpe has adopted the latter in his 'Catalogue of the Accipitres.' I observe that, throughout the 'Mag. Zool.,' St.-Hilaire either signs his name in full or uses the abbreviation "Geoffroy St.-H.;" and I think there is no reason to infer that had he been the author of the two descriptive articles (*Astur kieneri* and *Pica mystacalis*) in the volume for 1835, which are signed "G. S.," he would have used these initials instead of his usual signature. In the Roy. Soc. Catalogue, vol. v., these two identical articles are referred to as written by G. Sparre; and, in all probability, this is the correct determination of their authorship.

culmen 1.2; wing 17.0 to 17.5; tail 10.0 to 12.5; tarsus 3.0; mid toe 2.3, its claw (straight) 1.18; inner claw 1.5; height of bill at cere 0.65. Expanse 50.0.

An example from Sarawak in the British Museum, marked ♀, has the wing 13.0 and the tail 7.5.

Iris dark brown; cere yellow, in some greenish yellow; bill black, plumbeous at base; feet yellow; eyelid greenish yellow.

Lores, head, crest, back and sides of neck, upper surface, and wings dark blackish brown, almost black; crest of three or four stiffish, ovate feathers from 2.2 to 2.5 inches in length; inner webs of primaries (in the longer ones to the notch) whitish, crossed with narrow blackish bars; inner webs of secondaries more dusky, similarly barred; tail blackish brown, crossed with six or seven narrow smoky-brown but indistinct bars; in some examples the bars on the central feathers are nearly obsolete.

Chin, throat, and chest white, changing on the upper breast into the deep ferruginous of the lower parts, including the legs and under tail-coverts, and striped everywhere but on the chin and throat with lanceolate black shaft-streaks; under surface of tail greyish; under surface of primaries white, from the notch to the tip greyish, showing narrow black bars; lesser under wing-coverts pale rufous with black mesial stripes; greater secondary series and the primary row black, with white tips and fulvous edges.

Obs. In very old specimens the rufous colouring is very deep, and spreads upwards to the throat, the feathers being either tipped with it or washed with a paler hue than that of the breast. The extent of the shaft-streaks on the upper parts varies, the throat and chest having them in old birds. Mr. Bligh's male example (the first procured in Ceylon, and now in the Norwich Museum) has the rufous colouring extending no higher than the breast, and therefore represents a mature, but not an aged bird.

Young. I have not had an opportunity of examining this Eagle in its nestling plumage, and I therefore transcribe here the description given by Mr. Sharpe at page 458 of the 'Catalogue of Accipitres,' from a young bird in Lord Tweeddale's collection, which is evidently in its first dress:—"Above dark brown, the feathers lighter on their margins; wing-coverts coloured like the back, but the greater series with narrow white margins; hind neck paler than back, rufous-brown, with dark brown longitudinal centres, causing a slightly streaked appearance; quills blackish, with whitish brown shafts; the secondaries paler brown, like the scapularies, all the quills narrowly banded with black, nearly obsolete on the primaries, but more distinct on the secondaries, especially underneath, where the lining of the wing is whitish; tail dark brown, whitish at tip, and crossed with seven or eight rather narrow bands of black.

"Crown of head dark brown, with tiny cream-coloured tips to the feathers; the occipital crest black, and 1.9 inch long; forehead and eyebrow very broad, rich creamy buff; cheeks and entire underparts creamy white, as also the tarsal feathers and under wing- and tail-coverts, the greater under wing-coverts with a few indistinct blackish bars."

Wing 13.3 inches.

The tippings of the head-feathers, margins of the wing-coverts, and creamy colour of the under surface testify to this bird being in nestling plumage.

An immature bird, apparently of the second year, in my collection is in the following plumage:—Head and upper surface very dark brown, the terminal portions of the feathers being blackish, but the basal parts paler brown than the centres; forehead at the edge of the cere, a narrow streak above the eye, and the basal portions of the head and nuchal feathers whitish; crest fully developed; lesser coverts on the point of the wing and along its edge with pale terminal margins; primary and greater secondary coverts and also the secondaries pale tipped, the former most clearly so; inner webs of the quills much as in the adult, but with the ground less white, being mottled between the bars; tail smoky brown, tipped pale, with narrower bars than in the adult, the subterminal one scarcely broader than the rest.

Chin, face, ear-coverts, and entire under surface with the under wing white; ear-coverts and sides of neck below them with terminal dark shaft-stripes; feathers at the sides of the breast and one or two on the chest with lanceolate dark brown shaft-stripes, surrounded by a wash of rufous; longer feathers of the flank-plumes dark brown, forming a prominent dark patch; thighs, tarsi, and under tail-coverts with rufescent feathers here and there; major under wing-coverts with blackish terminal patches. The rufous hue on the under tail-coverts is taking place by a change of feather; but there are some new feathers on the thighs of a darker hue. Wing 15.0 inches.

In the Norwich Museum are two young examples from "Java" and "Bathian" in this stage of plumage.

With age the darkening of the lower parts and the gradual advance of the rufous up towards the chest is very perceptible. An example from Malacca, in the British Museum, in the next stage to the above has the throat, chest,

and most of the breast white, the rufous hue appearing on the lower breast and extending downwards, while the shaft-stripes do not extend above the breast.

Obs. This interesting genus of Eagles, though comprising very few species, is widely diffused, taking both the Old and the New Worlds into its range. Until lately but two were known, the present and the large *L. isidorii* from Columbia, South America; recently, however, a third, *L. lucani* (Sharpe and Bouvier), has been added from the Congo river, S.W. Africa.

Distribution.—This rare and handsome Eagle has only lately been discovered in Ceylon; and the gentleman who has the merit of adding it to the avifauna of the island is Mr. S. Bligh, of Lemastota. The first Ceylonese example was procured by him in Kotmalie, a district at the base of the Nuwara ELLIYA ranges, lying at an altitude of about 3500 feet. It was shot on the 20th of October, 1873, and was a male in adult plumage. The next example was killed near Kandy at the latter end of 1875, and taken to Messrs. Whyte and Co.'s establishment, whence it passed into the Colonial Museum at Colombo; about the same time a young bird (above described) was shot near Peradeniya by a native, and procured from him by Mr. Whyte. Mr. Bligh met with another, which was seen close to his bungalow, on the 6th of June 1875, but evaded his pursuit; and in January 1876 I was equally unsuccessful in procuring another at Nalanda, a district to the north of the Matale hills, which are celebrated for the variety of Raptors found in their vicinity.

It has as yet, therefore, proved quite a hill species, which is in accordance with its habits in the Himalayas and elsewhere in the hills of Borneo and Malacca.

This Eagle is an inhabitant of the northern parts of India; but has not yet been detected in the south, which is the more strange when viewed in conjunction with its not unfrequent occurrence of late years in Ceylon; this, however, only substantiates the theory of the strong affinities of the Ceylonese avifauna with that of Malayana, in which region this Eagle is rather widely distributed.

According to Jerdon it is found in Central India, and Tickell obtained it near Chaibassa; but it has not been procured from there of late years; and Mr. Hume doubts if these specimens really belonged to the true *kieneri*, which was described originally from the Himalayas by Sparre, from a specimen at that time in Prince Essling's collection.

Along the southern slopes of the Himalayas it has been occasionally met with, particularly in Darjiling, Sikhim, and the eastern portions of the range; and in the collections made by Mr. Inglis for Mr. Hume in Cachar one example is noted. It is, however, rare in that district as everywhere else. Mr. Inglis writes ('Stray Feathers,' vol. v. p. 9):—"I was lucky enough to secure the only specimen of this handsome bird that I ever met with; I got it while on a fishing excursion on the Cheerie, close to the Cacharee Degoon Ponjee, at an elevation of 2000 feet."

From North-east India it extends southwards into Malacca, and thence into the islands of the archipelago. It has been procured in Java and Borneo, in the latter by Mr. Wallace, and from the former it has been sent to the Norwich Museum. From the island of Batchian, one of the Moluccas, there is likewise a specimen at Norwich, this locality (which is in lat. $0^{\circ} 40'$ S. and long. 127° E.) being at present the furthest known limit of its range into the Malay islands.

Habits.—The Rufous-bellied Hawk-Eagle inhabits forest-clad hills, frequenting, in search of its prey, open glades, valleys, clearings, and patnas. In Ceylon, it is therefore found about the coffee-estates, which are bordered by wood and studded with dead trees, the latter furnishing it with an advantageous post of observation. It is a bird of truly predatory disposition, and is as bold and courageous as it is handsome.

Mr. Bligh remarks, in his note on the capture of his bird, contained in the 'Journal of the Ceylon Asiatic Society' for 1874, that it was "sailing just above the trees in circles in a very buoyant and graceful manner, rarely flapping its wings. My little terrier," he says, "was frisking about some thirty yards off, and on arriving over the spot, the bold bird at once altered its flight, hovering in small circles with a heavy flapping of the wings, evidently with a view of examining the dog." He further remarks that when brought to the ground with a broken wing, "it put itself in an attitude of defence at once; and a formidable bird it looked, with beak open, head thrown back, wings spread, and talons ready for action, and its beautiful brown eyes looking so fierce."

Mr. Inglis, in his note on the shooting of a specimen on the hills of Cachar, bears the same testimony to its plucky nature, and says that it fought most fiercely while it was being secured. As observed by myself its flight was buoyant, but not very swift, resembling somewhat that of the Ceylon Crested Eagle (*Spizaetus ceylonensis*) ; its white chest, contrasted with the dark lower parts, is a conspicuous characteristic when the bird is flying overhead. This Eagle preys on birds and small mammals, being capable, however, of capturing an animal of no diminutive size, so strong are its talons and so bold its disposition.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus NEOPUS.

Bill longer than in *Lophotriorchis*, more suddenly hooked at the tip, the festoon less pronounced; cere large, the nostrils oval and partially covered by the loral bristles. Wings very long and exceeding the tail when closed; the terminal portions of the longer primaries very concave beneath; 4th, 5th, and 6th quills subequal and longest. Tarsus slender, feathered to the toes, which are short, the inner nearly as long as the middle, the outer very short. Claws slightly curved; *the inner claw very long*, exceeding the hind; outer claw very short, not reaching to the tip of the middle toe.

NEOPUS MALAYENSIS.

(THE BLACK KITE-EAGLE.)

Falco malayensis, Temm. Pl. Col. i. pl. 117 (1824).

Aquila malayensis, Vig. Zool. Journ. i. p. 337 (1824); Schlegel, Vog. Nederl. Ind., Valkv. pp. 8, 49, pl. 3. figs. 1, 2 (1866).

Aquila malayana, Less. Traité, p. 39 (1831).

Ictinaetus malayensis, Blyth, J. A. S. B. xv. p. 7 (1846); Kelaart's Prodrömus, Cat. p. 114; Layard, Ann. & Mag. N. H. 1853, xii. p. 99.

Neopus malayensis, Jerd. B. of Ind. i. p. 65 (1862); Hume, Rough Notes, i. p. 187; Wald. Tr. Z. S. viii. p. 34; Holdsworth, P. Z. S. 1872, p. 411; Legge, Ibis, 1874, p. 8; Sharpe, Cat. Birds, i. p. 257; Bourdillon, Str. Feath. 1876, p. 355.

Heteropus malayensis, Hume, Nests and Eggs, i. p. 32.

The Black Eagle, Kite-Eagle, in India.

Heugong, Bhot.; *Adavi nalla gedda*, Tel., lit. "Jungle Black Kite" (*apud* Jerdon).

Kalu-Rajaliya, lit. "Black Eagle," Sinhalese.

Adult male. Length to front of cere 25·0 to 27·2 inches; culmen from cere 1·35; wing 20·6 to 21·75, expanse 63·0 to 64·0; tail 12·2 to 13·5; tarsus 3·2; mid toe 1·6 to 1·7, its claw (straight) 1·1 to 1·2; inner claw (straight) 1·6, hind claw (straight) 1·45; height of bill at cere 0·55.

Adult female. Length to front of cere 28·0 to 29·5 inches; culmen from cere 1·37; wing 23·0 to 25·0, expanse 75·0; tail 13·5 to 14·5; tarsus 3·5 to 3·8; inner claw (straight) 1·7 to 1·9; height of bill at cere 0·6. Weight 3½ lb.

Obs. The chief distinguishing characteristic of this peculiar Eagle is its remarkable foot and straight claws, the inner of which is the longest, exceeding the hind by about 0.1 inch, which latter is just twice the length of the outer.

Iris hazel-brown; bill brownish horn-colour, paling into greenish at the cere; cere, gape, and base of lower mandible citron-yellow; feet gamboge-yellow.

Head and entire upper surface sooty black, darkest on the head, lesser wing-coverts, and scapulars, and paling into brown on the upper tail-coverts; entire under surface and legs blackish brown, blending into the black of the cheeks and hind neck; feathers of the head with spinous glossy shafts, bases of the loral plumes and a small space above them white; scapulars and outer webs of quills with a green lustre; bases of the inner webs of the longer primaries barred with white; on the remainder and those of the secondaries there are indications of bars slightly lighter than the ground-colour; concealed portions of the upper tail-coverts crossed with narrow incomplete white bars; tail with four or five interrupted bars, slightly paler than the ground-colour, the terminal one about $2\frac{1}{4}$ inches from the tip; on the under surface these bars show whitish, and mostly so on the lateral feathers, where they increase to seven; under wing-coverts uniform brownish black.

The amount of white about the lores varies in individuals, and a specimen from Ceylon in my collection has a small tuft of white feathers below the cheeks.

Young. In the nestling-plumage, as figured by Schlegel (*loc. cit.*), the head, neck, and entire under surface are fulvescent buff, each feather with a central stripe of brown, the pale ground-colour darkening on the back and wings into blackish brown, and having the margins of the feathers buff.

Immature bird. Wing of an example in the British Museum 18.5 inches.

In this plumage the back, wings, and tail are but little paler than in the adult; crown almost uniform black, the feathers tipped with fulvous, which on the nape, hind neck, and behind the ears increases in extent, and gives those parts a striated appearance; the forehead and lores whiter than in the adult; lesser and median wing-coverts tipped pale; primaries as black as in the adult, the inner webs with narrow mottled bars of white as far out as the notch; bars of the tail-feathers narrower, closer together, and more numerous than in the adult, the terminal one nearer the tip; upper tail-coverts as in the adult; throat and fore neck deep brown, the feathers tipped with fulvous; breast, flanks, and thighs mingled with rufous and streaked and mottled with the brown of the fore neck; lower part of tarsi streaked and mottled with fulvous; under tail-coverts barred with the same; under wing-coverts buff, closely barred with irregular marks of blackish brown.

With age, as the pale striations and tippings of the upper surface disappear, the bars on the inner webs of the primaries diminish near the tips; the tail-bars likewise alter in character; but they are always perceptible on the central feathers in the oldest birds, and the bases of the primaries are never, as far as I have been able to examine specimens, without a few white bars. Mr. Sharpe observes, in his 'Catalogue,' that while the change to the adult plumage on the upper surface takes place by a partial moult, the alteration on the lower parts is acquired by the brown edgings of the feathers gradually occupying the whole of the web.

Distribution.—The Black Eagle is found both in the lowlands of Ceylon and the mountain-zone up to the highest elevations. In the low country it confines itself chiefly to tracts of forest and retired valleys in the vicinity of some rocky eminence, on which, in all probability, it breeds. I have seen it on several occasions in the Kurunegala district and about the Ambepussa hills; further south, in the more wooded portions of the Pasdun Korale and Saffragam, it is more plentiful, and in the hilly jungle-clad country between Galle and the southern mountain-range I have often seen it soaring round the forest-covered hills on the southern bank of the Gindurah, or gliding over the secluded valleys at the base of the Morowak Korale coffee-districts. In these latter it is not uncommon too. The endless jungles of the eastern side of the island, teeming with bird-life, form a grand refuge for these sable robbers; and I have observed them from the base of the Ouvah hills to the Friar's Hood forests, between which latter and the sea, at about an hour's walk from the Batticaloa Lake, I once shot a fine specimen. In the northern half of the island I have met with it as far up as the neighbourhood of Haboreenna, near which the lofty cliffs of Rittagalla and the precipitous rock of Sigiri no doubt furnish it with a permanent residence.

In the Central Province it is tolerably common, confining itself to the higher peaks in the Kandy district and the high ranges surrounding the Nuwara-Elliya plateau. I have seen it at Horton Plains and at Kandapolla, near the sanatorium; but it is oftener met with on the Uva side between Nuwara Elliya and Madulsima than anywhere else in the hills.

The Black Eagle is found in most of the hilly wooded districts of India, but appears to visit certain localities for a time and then depart again, reappearing the following year. In the south it is found in the Travancore district and in the Malabar region generally, following the west coast to the district of Surat.

Mr. Fairbank says it is rare at Mahabaleshwar, and in the Deccan he has not observed it. In the Himalayas it ascends generally to an elevation of seven or eight thousand feet, and is more common there from September till April than during the hot season. Col. Irby states that he has procured it as high as 10,000 feet. Mr. Ball does not include it in his avifauna of Chota Nagpur, nor does it appear in the "First List of the Birds of Upper Pegu" ('Stray Feathers,' 1875). Mr. Brooks records it as rare above Mussoorie.

To the south-east of the Himalayas its numbers commence to diminish; it finds no place among the birds collected in North-east Cachar by Mr. James Inglis ('Stray Feathers,' 1877); and though it is recorded by Jerdon and other naturalists from Burmah proper, it does not appear to be common there. According to Schlegel it is found in Malacca, and Wallace notes its occurrence in Java, Sumatra, and Celebes; but in these islands it appears to be far from numerous.

Habits.—This fine, long-winged Eagle is, on account of the singular structure of its feet and its curious habits, one of the most interesting, but at the same time perhaps the most destructive of Raptors to bird-life in Ceylon. It subsists, as far as can be observed, entirely by bird-nesting, and is not content with the eggs and young birds which its keen sight espies among the branches of the forest-trees, but seizes the nest in its talons, decamps with it, and (as Mr. Bourdillon, in his article on the Travancore birds in 'Stray Feathers,' observes) often examines the contents as it sails lazily along. Furthermore, Mr. S. Bligh informs me that he once found the best part of a bird's nest in the stomach of one of these Eagles which he shot in the Central Province! Its flight is most easy and graceful. In the early morning it passes much of its time soaring round the high peaks or cliffs on which it has passed the night, and about 9 or 10 o'clock starts off on its daily foraging expedition; it launches itself with motionless wings from some dizzy precipice, and proceeding in a straight line till over some inviting-looking patna-woods, it quickly descends, with one or two rather sharp gyrations, through perhaps a thousand feet, and is in another moment gliding stealthily along, just above the tops of the trees: in and out among these, along the side of the wood, backwards and forwards over the top of the narrow strip, it quarters, its long wings outstretched and the tips of its pinions wide apart, with apparently no exertion; and luckless indeed is the Bulbul, Oriole, or Mountain-Finch whose carefully-built nest is discovered by the soaring robber.

Mr. Frank Bourdillon, in his "Notes on the Birds of the Travancore Hills" ('Stray Feathers,' 1875, p. 358), in which district this Eagle is not uncommon above 500 feet, remarks, "I have never seen it make any attempt to seize a full-grown bird, but have once or twice seen one carry off a nest in its claws, and examine the contents as it sailed lazily along. It is a very silent bird, and may be seen steadily quartering backwards and forwards along the side of a hill and in and out among the tree-tops."

It is, I think, worthy of remark that the long inner claws of this bird seem especially adapted for the work of carrying off loose and fragile masses, such as the nests of small birds, as they would naturally form its chief means of grasp when such an object was being held by both feet during the process of flight.

Concerning its habits in India, Jerdon writes the following account, which is confirmatory of what I have above stated:—"I never saw it perch, except for the purpose of feeding or on being wounded; and the Lepchas of Darjiling, when I saw this Eagle, said, 'This bird never sits down.' It lives almost exclusively, I believe, by robbing birds' nests, devouring both the eggs and the young ones. I dare say if it saw a young or sickly bird it might seize it; but it has neither the ability nor dash to enable it to seize a strong Pheasant on the wing, or even, I believe, a Partridge; and Hodgson, I fancy, must have trusted to a native partially ignorant of its habits, when he says 'that it preys on the Pheasants of the regions it frequents as well as their eggs.'

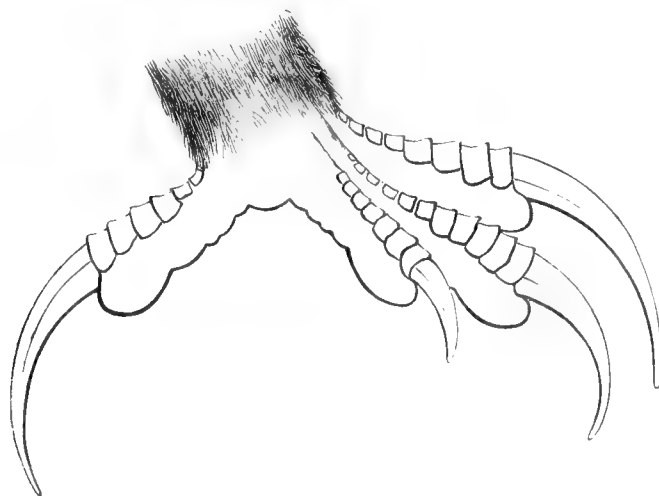
"I have examined several birds shot by myself, and invariably found that eggs and nestling birds had been alone their food. In these cases I found the eggs of the Hill-Quail (*Coturnix erythrorhyncha*), of *Malacocircus malabaricus*, and of some Doves (*Turtur*), with nestlings and the remains of some eggs that I did not know. I have seen it also, after circling several times over a small tree, alight on it and carry off the contents of a dove's nest. In India, doves, and perhaps some other birds, breed at all times in the year; and it may,

perhaps, obtain eggs or nestlings at all seasons, by shifting its quarters and varying the elevations; if not, it probably may eat reptiles; but of this I cannot speak from observation."

I have been assured by several gentlemen in the planting-districts that it attacks fowls, and carries them off from the poultry-yards; and Mr. Northway, of Deltota, has a fine pair stuffed by Messrs. Whyte and Co., which were killed in so doing. It is the opinion of some naturalists that it does not attack large birds; but this fact is conclusive, though it may only carry off poultry when much pressed by hunger. The voice of this species is a shrill, very long-drawn scream, resembling the cry of the Serpent-Eagle somewhat, but much more powerful, and when heard in the deep gorges of the mountain forests in the upper ranges is a wild and stirring note.

Nidification.—It is extremely difficult to obtain information about the breeding-habits of a species frequenting such wild haunts as the Black Eagle. My endeavours to trace even the whereabouts of an eyrie were futile, although, during the last year I was in Ceylon, I learnt that a pair were thought to nest in the high cliff above the Nuwara ELLIYA and Kandapolla road. In 1872 a pair frequented a ravine near the Galle and Akkuresse road; and I believe they were breeding in the neighbourhood, but I was unable to discover their nest.

Mr. Hume has received eggs from two nests, with their parent birds, and has no doubt that they were rightly identified. These eggs were taken in January in India, and, in all probability, our birds breed about the same time. The nests were situated on ledges on the face of cliffs, and contained respectively one and three eggs. They were nearly perfect ovals, devoid of gloss and rough in texture, and of a greyish-white ground; and the single egg was richly blotched and mottled with brownish red, while the other three contained only a few brownish specks at one end. They varied "from 2.5 to 2.68 inches in length, and from 1.88 to 2.02 inches in breadth."



Foot of *Neopus malayensis*.



ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus SPIZAETUS.

Bill stouter, slightly shorter, and deeper than in *Neopus*; culmen curved much as in that genus, the festoon more pronounced; cere small. Nostrils large, oval, and directed obliquely upwards, and protected by the long loreal bristles. Wings short and rounded; the 5th quill the longest, the 1st the shortest of all; tips of the secondaries falling short of those of the primaries by less than the length of tarsus. Tail long, rounded at the tip, exceeding the closed wings by more than the length of the tarsus. Tarsus long, but less than the tibia, feathered in some to the base of the toes, in others partly on the middle toe. Toes moderate, furnished at the tip with three transverse scales, the lateral toes subequal and slightly exceeding the hind toe; inner claw shorter than the hind. Head usually furnished with an elongated crest.

SPIZAETUS KELAARTI.

(THE CEYLON MOUNTAIN HAWK-EAGLE.)

(Peculiar to Ceylon.)

Spizaetus nipalensis (Blyth), Kelaart, Prodrum F. Zeyl. p. 96, and Cat. p. 114 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 98; Blyth, Comm. Jerd. B. of Ind. Ibis, 1866, p. 242 (in part); Sharpe, Cat. Birds, i. p. 267 (1874) (in part).

Limnaetus nipalensis, Hodgson, Jerdon, B. of Ind. i. p. 73 (1862, pt.); Holdsworth, P. Z. S. 1872, p. 411.

Spizaetus kelaarti, Legge, Ibis, 1878, p. 201.

The Beautiful Crested Eagle, Kelaart, Prodrum.

Rajaliya, Sinhalese, Central Province.

Ad. similis S. nipalensi, sed pileo minus nigricante, strigâ gulari et fasciis mystacalibus valdè angustioribus, pedibus robustioribus et unguibus validissimis, sed præcipuè corpore subtus pallidiore brunneo et fasciis transversalibus omnino albis, rachide quoque albâ distinguendus.

Adult female. Length to front of cere 29.5 to 31.0 inches; culmen from cere 2.0; wing 18.0 to 20.0; tail 12.0 to 13.0; tarsus 4.4 to 4.6; mid toe 2.7 to 2.8, its claw (straight) 1.3; inner claw (straight) 1.7; hind toe 2.0, its claw (straight) 2.05 to 2.1, circumference 1.4 to 1.5; height of bill at cere 0.81. Weight 6 lb.

Iris yellow; cere blackish; bill black, paling to blackish leaden at the base; feet citron-yellow, claws black.

Mature female. Back, scapulars, lesser wing-coverts, rump, and upper tail-coverts blackish brown, the scapulars and upper tail-coverts tipped with white; forehead, crown, crest, and ovate centres to the feathers at the sides of the occiput and hind neck black, the latter very broadly margined with light sienna, diminishing gradually towards the lower part of the hind neck; crest of 5 or 6 feathers, $3\frac{1}{2}$ inches in length and tipped with white; median and greater wing-coverts pale brown, darker near the tips, which are finely edged with whitish, except those of the inner feathers of the latter, which are rather deeply so; primaries and secondaries black, the latter tipped with white, and the whole crossed with obscure smoky-brown bars, which are white towards the base at their inner edges; tail blackish, tipped pale, with three pale smoky-brownish bands, and a fourth beneath the coverts, the subterminal one about 2 inches from the tip and about $1\frac{1}{2}$ inch in width.

Chin, throat, and fore neck creamy white, with a very broad, mesial, black stripe, and with two others, less clearly defined, passing from the gape down the sides of the throat, and spreading out over its lower part; cheeks and ear-coverts boldly striped with black, the edges of the feathers concolorous with the sides and back of neck; chest, breast, flanks, and all the lower parts, including the legs and under tail-coverts, sienna-brown, darkest on the flanks, thighs, and under tail-coverts; the feathers of the chest with wide and deep marginal indentations of white, and the breast, flanks, thighs, abdomen, and under tail-coverts barred with straight, complete bands of white, the *shaft* being of the same colour; bars on the thighs narrow, but everywhere else broad, the brown interspaces on the sides of the breast and on the under tail-coverts with their lower edges darker than the rest; tarsi pale brown, with whitish tips to the feathers; lesser and median under wing-coverts concolorous with the chest and narrowly barred with white; the greater series white, crossed with blackish-brown bars; under surface of the light portions of the quills and tail-feathers greyish white.

Obs. The above description is combined from the examination of several fully-sized females, exhibiting each a different amount of intensity in the colour of the crown and hind neck, but none of them possessing the extremely dark features characteristic of adult Nepaul birds, or any inclination to the very broad chin-stripe of these latter, though this character is variable in that species. The older the Ceylonese birds become, no doubt the darker would be the head, and the bolder the chin and moustachial stripes, although I do not think they would ever acquire the same degree of melanism as the Indian species (*Spizaetus nipalensis*).

I have unfortunately no data of the dimensions of any *ascertained* adult males; but the following of an immature bird, shot by Mr. Bligh, and the subject of the background figure in my Plate, will give some idea of the size attained by that sex.

Young male, apparently at the outset of the 2nd year:—Wing 16·3 inches; tail 11·75; tarsus 4·5; mid toe 2·3, its claw (straight) 1·4; hind claw 1·7. (Two presumed males, in the British Museum, of *Spizaetus nipalensis*, have the wings 17·0 and 17·3 respectively; and an ascertained male, recorded at p. 213 of 'Rough Notes,' measures 17·8, which, in view of the respective sizes of the females in the two races, will fairly represent that of adult males of *Spizaetus kelaarti*.)

Above brown, the back, scapulars, and wing-coverts conspicuously margined with white as in the smaller species (*Spizaetus ceylonensis*); crown with the centres of the feathers dark brown, paling into fulvous at the margins; rest of the head and hind neck paler, the edges of the feathers pale fulvescent; crest well developed, the feathers black, deeply tipped with white; greater wing-coverts pale brown, with much white on the inner webs and at the tips; primaries and secondaries blackish brown, with paler smoky-brown bars than in the adult; the inner webs white towards the base; tail blackish brown, crossed with four pale brownish bands; the black interspaces and terminal band narrower than in the adult; tip whitish.

Chin, throat, and fore neck white; the chin unstriped, a few blackish-brown drop-shaped marks on the throat, spreading laterally over the fore neck; chest-feathers pale sienna-brown, indented at the sides with bar-like spots of white; breast, flanks, abdomen, and under tail-coverts pale brownish, barred with complete white bands, wider than the brown interspaces, which are darker on the flanks than on the centre of the breast; thighs barred more narrowly than the breast, the brown hue concolorous with that of the sides; tarsi pale brownish, the feathers tipped with whitish; under wing-coverts white, spotted with sepia-brown.

Obs. I discriminated (*loc. cit.*) this Hawk-Eagle from the Indian species (*Spizaetus nipalensis*), having made a careful examination of all the examples to hand in the British, Indian, and Norwich Museums, to aid me in my conclusions; and the diagnosis of the distinctive characteristics of the two species, given in my article, will, I think, be sufficient to establish the Ceylonese bird as a good *subspecies* or local race, which I have named after Dr. Kelaart, who first brought to notice the existence of the species in Ceylon. For the benefit of my Ceylon readers and others who have not seen my remarks in 'The Ibis,' I now recapitulate in substance the remarks I there made.

The Ceylonese bird differs from the Indian in the peculiar barring of the entire under surface from the throat downwards, and in its very large feet and claws, the latter of which are especially noteworthy. Furthermore, it does not appear to acquire the black head and cheeks and the very broad black throat-stripe which are characteristic of *Spizaetus nipalensis*. In this latter bird the chest is usually dark brown, the centres of the feathers consisting of a broad dark brown "drop" or stripe, which pales off into an unbroken fulvous-brown margin, while in others the whole feather is sepia-brown, with slight marginal indentations of white; this coloration is continued in most examples down to the breast, about the middle or upper half of which the barred feathers commence, and in which the white band is more or less irregular and interrupted at the shaft by the brown hue of the feather, the division varying from an exceedingly fine margin on each side of the *dark shaft* to a broad space of about $\frac{3}{10}$ inch. In many birds these bars do not even correspond or oppose one another on each side of the shaft, amounting in reality to nothing more than deep indentations of white. The thighs and under tail-coverts in the Nepaul bird

are, however, barred in the same complete manner as the breast and flanks of the Ceylonese, but the perfect bar never seems to go any higher than the tibials.

In the young of the Indian species the breast is marked with drop-shaped streaks, the bars being *confined to the flanks* and under tail-coverts; the markings are very dark as a rule, particularly on the chest and upper breast. It is, I may here remark, a very variable bird in its plumage, old birds differing *inter se* as much as young ones; and out of a score I have examined, no two were exactly alike. Five adult Ceylonese examples, which I have had the opportunity of examining, exhibited precisely the same character of barring over the whole under surface.

Lastly, as regards the massive foot and immense claws, which are characteristic of *S. kelaarti*, I have been unable (as will appear by a glance at my table of measurements, in 'The Ibis,' of seventeen examples of *S. nipalensis*) to find any Indian example of this latter species with the hind claw exceeding 1.9 inch; whereas in the Ceylonese bird it attains the great size of 2.1 inches, this measurement being taken, in accordance with my usual custom, across the arc from the tip to the exterior edge of the base.

Distribution.—This magnificent Eagle, the noblest representative of its tribe which Ceylon possesses, is peculiar to the island, and was first recorded by Dr. Kelaart from a bird procured by him near Badulla, mention of which is made at page 96 of his 'Prodromus,' as follows:—"This elegant crested Eagle is occasionally seen in the highest mountains. The only specimen we succeeded in procuring was shot on a mountain 4000 feet high, near Badulla." From that time until comparatively recently it does not appear to have been noticed by naturalists in the island; and so late as the year 1872, Mr. Holdsworth was unable to record any further instances of its capture since that of Kelaart's bird, although, doubtless, in the course of opening up the forests of the Central Province for the planting of coffee, the species may have been killed not unfrequently, and not recognized by its captors as any thing valuable.

It is entirely a mountain species, having its headquarters in the wild and little-trodden forests of the main range and other isolated lofty jungles, such as Haputale and the Knuckles, whence it descends to the neighbouring coffee-estates in pursuit or search of its quarry. In so doing it has lately been shot so frequently that it can no longer be considered one of our very rare Eagles. Not many years after the establishment of Messrs. Whyte and Co.'s business as naturalists and collectors, specimens began to find their way to them, and in 1875 I had the opportunity of examining two examples preserved in their collection. In March, 1876, a magnificent bird was shot by Mr. Bligh on the Catton Estate, Lemastota, and in the same year five examples were procured by Messrs. Whyte and Co., belonging to gentlemen in the surrounding planting districts. Three of the finest of these were obtained as follows:—(1) by Mr. A. Thom, on Oudasgeria Estate, Matale; (2) by Mr. E. Nicol, Kitlamoola Estate, Deltota; (3) by Mr. Gould, Maturata—all at elevations ranging from 2000 to 4500 feet. About the same time a sixth specimen was shot by Mr. Thurston near Nuwara Eliya, but unfortunately was not preserved.

Habits.—This fine Eagle frequents the retired recesses and forests of mountainous country, above an elevation of 3000 feet or thereabouts, probably not dwelling permanently or breeding below 4000 feet, although it may frequently be met with considerably beneath these altitudes when in search of food. Though bold and courageous in its disposition as a Raptor, it is very shy and wary of man, rarely coming beneath his notice, except when caught in the act of making a raid on the poultry-yards of the planters or seizing a hare on the mountain patnas. The first-named habit has on nearly all occasions led to its capture of late years in the planting districts. One of the finest examples above noticed was shot by Mr. Nicol after it had missed its mark at a fowl and settled on a tree near his bungalow; and Mr. Bligh informs me that the magnificent example which he shot at Catton had its talons covered with the fur of a newly slaughtered hare.

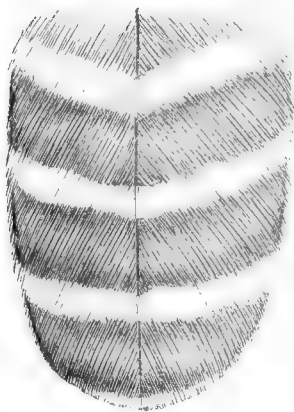
It is occasionally seen about Nuwara Eliya, where the existence of isolated cottages and houses, with their accustomed live stock, is a weighty attraction for it; it is quite powerful enough to be capable of carrying off the largest inmate of the poultry-yard, and, indeed, could make quick work with a moderately-sized lamb, were such to be found among the possessions of the fortunate owners of the many pretty bungalows which dot the plain of Nuwara Eliya. Its powers of flight and skill in catching game must be quite equal to those of its Himalayan relative, of whom Captain Hutton, as quoted by Mr. Hume in 'Rough Notes,' says, "it is most destructive to pigeons, fowls, and game." Mr. Thompson likewise writes of this bird:—"It feeds much on Pheasants, Hares, Black Partridge, Monaul and Cheer Pheasants, and sometimes on young deer."

Our bird may now and then be seen perched on the dead trees which stand in new coffee-plantations or upon the half-leafless ones peculiar to some of the higher patnas in the main range. Its flight is similar to that of the smaller low-country bird; and I have seen it quietly beating round the edges of the woods on the Horton Plains, probably on the look-out for the large black Squirrel (*Sciurus tennanti*), the "Kaloo Dandoleyna" of the Sinhalese, and which animal, I have no doubt, is often preyed upon by it. The note of this species is a loud scream, somewhat resembling that of *S. ceylonensis*.

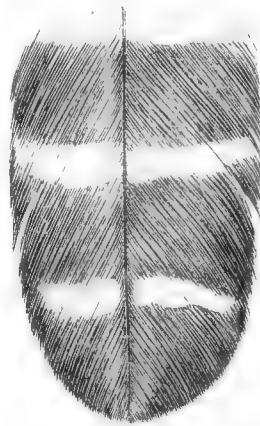
[Since this article was sent to the press, I have received the following interesting note on this species from Mr. Bligh. Writing from Haputale, where the bird seems to be tolerably common, he says, "I often see the bird on the wing: now I know the species well, and I believe it to be nearly as common as *S. ceylonensis*; but they do not hawk for their prey so low down as the latter, which often skims through a valley of coffee within gun-shot of the ground, indeed often flies from one high stump to another, whereas the other would boldly sweep through the valley at a much greater elevation, and now and then, if really looking for prey, take a large sweeping circle. Lately I had the pleasure of seeing a pair of these birds on the wing together with a *S. ceylonensis*. I could easily distinguish the species; the small one, for some reason, kept above the others, and eventually soared away out of sight, as if he did not relish the neighbourhood of his powerful relations."

Nidification.—The nest of this species has never yet, to my knowledge, been found. The large tracts of forest which still clothe portions of the Nuwara-Elliya plateau, and stretch from the Horton Plains to the Peak, furnish it with a secure refuge in which to rear its young. It doubtless breeds on trees, nesting in a similar manner to the next species.

In the Plate accompanying this article, the figure in the foreground is taken from a magnificent female bird, mature, but not quite adult, for the possession of which I am indebted to Mr. Gould, of Maturata. The second figure is that of the young male described in this article, and for the loan of which I am indebted to the kindness of my friend Mr. Gurney, coupled with the civility of the authorities of the Norwich Museum, who loaned the specimen to me for the purpose of figuring. Mr. Keuleman's talented pencil has delineated this bird in the act of reposing on one leg, so characteristic of these Eagles.



Spizaetus kelaarti.



Spizaetus nipalensis.

The above woodcut of the *adult* breast-feathers of this Eagle and those of *Spizaetus nipalensis* shows the distinctive characters of marking in the two birds.



$\frac{2}{5}$

SPILAETUS CEYLONENSIS.

SPIZAETUS CEYLONENSIS.

(THE CEYLON HAWK-EAGLE.)

(Peculiar to Ceylon?)

Falco ceylanensis, Gmelin, S. N. i. p. 275 (1788).

Falco cristatellus, Temm. Pl. Col. i. pl. 282 (1824).

Spizaetus limnaetus, (Horsf.) *apud* Layard, Ann. & Mag. Nat. Hist. 1855, xii. p. 98; Kelaart, Prodromus, Cat. p. 114; Blyth, Cat. B. Mus. Asiat. Soc. Beng. (var. β) p. 25; id. Journ. Asiat. Soc. Beng. 1852, vol. xxi. p. 352.

Limnaetus cristatellus, Jerd. B. of Ind. p. 71 (in part); Holdsworth, P. Z. S. 1872, p. 411; Legge, Ibis, 1874, p. 9, and 1875, p. 277.

Spizaetus cirrhatus, Sharpe, Cat. Birds, i. p. 269 (in part).

Limnaetus ceylonensis, Gurney, Ibis, 1877, p. 431, et 1878, p. 85.

The Ceylonese Crested Falcon, Latham, Gen. Syn. i. p. 80 (1781).

Autour cristatelle, Temm. Pl. Col. 282.

The Crested Eagle and *The Hawk-Eagle* of Europeans in Ceylon.

Rajaliya, Sinhalese.

Ad. similis S. cirrhato, sed minor: alâ vix 15.2 unc. longâ: cristâ occipitali 3 vel 4 unc. longâ: pedibus flavis: iride flavâ.

Adult male and female. Length to front of cere 21.5 to 23.5 inches; culmen from cere 1.1 to 1.25; wing 13.8 to 15.2, but rarely exceeding $14\frac{3}{4}$; tail 9.0 to 10.5; tarsus 3.5 to 3.8; middle toe 1.8 to 2.0, its claw (straight) 0.85 to 1.0; height of bill at cere 0.5 to 0.56. Expanse 46 to 50. In the female I find no constant excess in size in the above measurements, taken from a series of fifteen examples; one of that sex measures 14.2.

Iris leaden grey with a tinge of yellow, pale straw-colour or golden yellow; cere dark leaden, in some with a greenish tint above; bill dark plumbeous, black at the tip, pale bluish at the gape and base; feet lemon-yellow or greenish yellow; claws black.

Obs. As will appear from the above, this Eagle is a bird of uncertain character in the coloration of its iris. It is likewise so in its plumage, there existing both a dark and a light phrase, of which the latter, I think, contains the larger birds. To the dark form I will give precedence in this article, as I am able to furnish a more complete sequence of changes than in the pale.

1. *Dark form, old bird.* Head and hind neck dark tawny, the centres of the feathers blackish; a crest of five or six elongated black feathers tipped with fulvous; back, scapulars, and wing-coverts blackish brown, the feathers slightly paler at the margins, the coverts edged with tawny fulvous, blending gradually into the dark centres of the feathers and more conspicuous on the greater series than on the rest; lesser coverts pervaded with an ashen hue; primaries and secondaries deep brown, with the terminal portions and a series of bars across both webs black, the basal portions of the inner webs white; tertials paler brown than the secondaries; rump and upper tail-coverts dark wood-brown; tail dark ashen, crossed with three black bands, one at the coverts, another at the centre, and a third at the tip, about $1\frac{1}{2}$ inch in width, having an interspace above it of about 2 inches wide.

Loral plumes and a superciliary streak blackish; cheeks and moustache boldly streaked with black, passing into the blackish brown of the ear-coverts; throat white, with a broad black chin-stripe, spreading over the fore neck and chest into a series of blackish "drops," paling into brownish at the margins of the feathers; chest and under surface brownish rufescent, the bases and sides of the chest-feathers white, and each with a slaty-black central stripe vanishing on the lower parts into the dark smoky-brown ground-colour; on the flanks, abdomen, and under tail-coverts the feathers have white bases, which show here and there, and disturb the uniformity of the ground-tint; thighs paler than the abdomen and cross-rayed with obscure fulvous; tarsi brownish fulvous; under surface of tail greyish; under wing-coverts whitish, dashed with tawny brown; greater series white, with terminal black spots.

The above is a description of the example now at the Zoological Gardens, aged six years, which is by far the darkest bird, particularly as regards the under surface, which I have ever met with. Its iris is *very* pale straw-colour.

Mature bird. At about three or four years of age, in a stage of plumage in which most dark birds are met with, the head and hind neck are more or less sienna-brown, with the centres of the feathers blackish, least so on the hind neck; on the forehead and above the lores the narrow feathers are pale-edged; crest, which is sometimes $4\frac{1}{2}$ inches in length, black, conspicuously tipped with white, the shorter feathers being blackish brown, paling into rufous at the white tips; back, scapulars, and wing-coverts deep glossy brown, paling off at the margins into a tawny hue, the greater coverts with less of the dark brown central hue, finely edged greyish, and with the concealed portions of the bases white; winglet and primary-coverts, the quills and secondaries dark brown, barred and terminated with black, much as in the above, but with more white on the inner webs, and with the tips of the secondaries whitish, a fulvous patch on the outer webs of the longer primaries opposite the notch; tertials wood-brown, paler than the scapulars; rump and upper tail-coverts of a similar hue; tail smoky brown, tipped white and crossed with four blackish bands, the subterminal one equal in width to the preceding interspace, the next two much narrower, and the basal one generally incomplete; on the lateral feathers there is an additional pale basal bar, and the interspaces are mottled with white.

Cheeks and the sides of the neck beneath them boldly streaked with blackish, the edges of the feathers being white; ear-coverts concolorous with the hind neck. Chin, throat, and under surface white, contracted at the centre of the fore neck between the tawny hue of its sides; a narrow blackish-brown chin-stripe passing down to the chest, from which to the abdomen each feather is centred with a broad drop-shaped dash of blackish brown; on the abdomen and flanks these expand until they cover the terminal portion of the feathers; the lower flank-plumes blackish brown, forming a large dark patch; under tail-coverts dark brown, usually tipped with white; thighs and upper part of tarsus a more rufous-brown, paling into buffy white at the feet; under surface of tail and of the quill-interspaces whitish; bases of quills beneath pure white; under wing-coverts white, dashed and striped in places with blackish brown, those beneath the ulna centred widely with rufous-brown.

In these birds I have invariably found the iris yellow, which is the normal colour, I imagine, of the eye in the adult.

Young.* Nestling clothed with white down, with the crest-feathers plainly indicated by three or four attenuated downy shafts; the wing-coverts, scapulars, and quill-feathers on first appearing are fulvous-brown, deeply tipped with white; the tail-feathers are similar, and the whole darken considerably in a short time, the hue of the inter-scapular feathers being deeper than that of the rest.

Nestling plumage at 3 months. Iris leaden grey; bill dusky plumbeous, blackish at the tip; feet light lemon-yellow.

Head, back, and sides of neck with the ear-coverts light sienna-brown, edged with whitish; crest-feathers blackish, deeply tipped with white; back, scapulars, and lesser wing-coverts dark sepia-brown, the scapulars broadly tipped with white, and the back feathers margined, terminally, with rufous-grey, the bases being paler brown than the rest; median wing-coverts mostly white, with a longitudinal patch of brown; greater series broadly margined with white, the outer webs being a paler or fawn-brown; primaries and secondaries brown, the former the darker in hue, tipped with white and crossed with narrow bars of black, vanishing near the internal edges, which are white; first primary and terminal portion of the long ones almost uniform blackish; rump and upper tail-coverts fawn-brown; tail umber-brown, with a deep white tip and five or six narrow bars of blackish brown, the sub-terminal one slightly broader than the others, and the light interspaces, as in the quills, showing white beneath.

A thin white line from nostril over the lores; loreal plumes blackish; lower part of cheeks, throat, and under surface pure white, dashed on the sides of the chest and breast with light sienna-brown "drops," those on the flanks being slightly darker and coalescing into a patch at the lower part; belly, thighs, and under tail-coverts dashed with pale brown and tipped with white; tarsi white. The extent to which the under surface is marked in this stage varies. The "drops," however, darken after the space of two months, as do also the feathers of the head and hind neck, which at the same time acquire darker mesial stripes; the brown of the back and wings also becomes more intense, and the bird is then in the normal plumage of the first year, with a long crest measuring from 3 to 4 inches.

At the second moult the example under consideration darkened on the head and hind neck, the crest remaining the same; the white of the wing-coverts diminished in extent, and the tail underwent a considerable change, the number of bars on the central feathers being reduced to four of greater width than the last, especially the terminal one, which was preceded by an equally broad interspace, the chest "drops" increased in number and in intensity, and the lower parts became more covered with brown; the dark patches on the white under wing-coverts were also more numerous.

* These changes of plumage are described from observation, during youth, of the above living example, as well as from notes on other immature birds in my collection.

In the third year the upper surface continued to darken, the back became more uniform in hue, the white on the wing-coverts diminished, but the tail remained much the same, except that the brown was more cinereous in its tint; the crest, however, was almost entirely absent, but this was doubtless an abnormal characteristic; on the under surface a faint chin-stripe developed itself, and the coloration of the cheeks altered, becoming striated with dark shaft-lines, and each feather of the breast and under surface had a "drop" of umber-brown, those on the flanks completely covering the feather, while the abdomen, thighs, and under tail-coverts became uniform brown; under wing-coverts dashed with brown.

Iris during these years pale grey, without a sign of yellow in the coloration.

In the fourth year the "drops" on the under surface darkened, the marking of the tail altered, and the lower parts were more completely covered with brown; the crest was much shorter than it was in the second year, but otherwise the bird was in the plumage described above as mature, with the exception that the iris was still leaden grey.

No change took place after this until the autumn of the fifth year, when the bird commenced to moult several months after the time*, and assumed the fuliginous plumage in which it has been above described.

2. *Pale form.* Iris greenish grey; pale slate-grey; greenish grey faintly tinged with yellow. Head, back, and sides of neck tawny brown, the centres of the feathers black and broadest on the crown; crest as in the *dark form*, with the longer feathers boldly tipped with white and the shorter with rufescent greyish; major portion of the feathers of the back, scapulars, and lesser wing-coverts blackish, paling off at the margins and exposed bases into fulvescent brown, with the tips paler still; bases and most of the inner webs of the median and greater coverts white, showing most on the former, and the terminal portions blackish brown at the centre; rump, upper tail-coverts, and tertials pale brown, the tips of the coverts, in some, whitish; secondaries dark brown, barred and edged internally with white, as in the other phase; primaries and tail the same, but with a large fulvous patch at the quill-notches; cheeks and ear-coverts concolorous with the sides of the neck; the lower part of the face striated with dark brown; chin, throat, and entire under surface down to the abdomen white.

No chin-stripe; centres of the chest- and breast-feathers rufous-brown, many of them with dark shaft-lines, and on the flanks and sides of breast with patches of dark brown; a dark brown patch on the lower flank-plumes; under tail-coverts and thighs rufous-brown, the white bases on the latter giving them a chequered appearance; tarsi buffy white, dashed with the hue of the thighs; under wing-coverts white, the primary series with dark brown terminal patches; under surface of primaries white as far as the notch, that of the secondaries for two thirds of their length.

Obs. The above is a description of the oldest example in this phase of plumage that I have been able to procure. I obtained it on the shores of the Kanthelai tank, and judging by the bars on the tail, which are three narrow ones, separated from a broadish terminal one by an interspace of equal width, it is only in the third year. Another example, of apparently similar age, has the cheeks whitish, streaked with brown lines, but no chin-stripe; there is a series of dark shaft-stripes on the chest, but the lower parts are less clothed in brown than in the aforementioned. It is in the above phase of plumage that by far the greatest number of examples are procured in Ceylon.

Young (bird of the year). Wing nearly equal to that of the adult. Iris leaden grey or pale slate-colour, sometimes tinged with greenish; in one example pearly white; cere and gape bluish leaden; bill blackish at the tip.

Forehead, crown, back, and sides of neck tawny buff, the feathers in some with dark shaft-lines, in others entirely without any dark coloration; crest as in the dark bird; on the lower hind neck the brown terminal centres gradually develop into the dark brown of the back, scapulars, and wing-coverts, which are margined with tawny and tipped with whitish; on the median coverts there is much more white than in the mature bird, in some examples the entire feathers being uncoloured, with the exception of the terminal portion of the outer webs, and form an extensive white patch across the wing; first primary uniform blackish brown as in the older bird; upper tail-coverts pale brown, tipped with white; tail smoke-brown, tipped with white and crossed with five narrow bars of blackish brown, the subterminal one broader than the rest; lateral feathers white internally and with an additional bar.

Entire under surface pure white; the pale rufescent feathers of the side neck encroaching on the throat, and a few dashes of the same hue on the sides of the chest, flanks, and belly; thighs and under tail-coverts shaded with pale rufescent brown, the feathers tipped with white; tarsi washed with the same in some, pure white in others;

* The moulting-time was a month later every year, a circumstance which apparently was caused by the natural want of vigour consequent on the captivity of the bird.

under wing-coverts white, the primary series spotted with dark brown, and the lining of the ulna washed with rufous-brown.

Obs. The Crested Hawk-Eagle of Ceylon is a miniature representative of the peninsular Indian species *S. cirrhatus*. Gmelin recognized Latham's Ceylonese Crested Falcon as a distinct form, and described it (*loc. cit.*) under the name of *Falco ceylonensis*; but subsequent naturalists, overlooking its smaller size, have treated it as one and the same with its large ally. Mr. Gurney refutes this idea with reason, as will be seen by reference to his remarks on the species ('Ibis,' 1877, p. 430). The maximum size which the insular bird attains in the wing is 15·3 inches, a measurement representing the minimum of *cirrhatus*, it being, however, at the same time about 2 inches below the average of the Indian species. I am not aware that the latter acquires the fuliginous plumage of *ceylonensis*; and the light phase of this is, moreover, paler than the immature dress of the Indian bird, which appears to partake somewhat of the characteristics of the *mature* form above described. I have examined a large series, and have found them all less pale on the head than Ceylonese young birds, and many of them possess the chin-stripe and striated cheeks unknown in our buff-plumaged young. It is possible that *ceylonensis* may prove not to be peculiar to Ceylon, Mr. Hume having described a small bird from Travancore as *Spizaetus sphinx*, which may, when a sufficient series is obtained, prove identical with it as a resident in S. India, or, should it turn out to have been a straggler, demonstrate the fact that *Spizaetus ceylonensis* strays over to the Indian coast from North Ceylon.

The dimensions of *Spizaetus sphinx* ('Stray Feathers,' vol. i. p. 321) are as follows:—"Length 22 to 23 inches; wing 14·1; tail 10·2; tarsus 3·9; mid toe and claw 2·5 (nearly)."

The upper plumage appears to bear a great resemblance to melanistic examples of the Ceylonese birds; "the whole back, top, and sides of the head (excluding the crest), back, and sides of the neck, a pale, slightly rufous-brown, each feather with a blackish-brown shaft-stripe." The lesser lower wing-coverts are "dull rufous, brown-shafted, more or less white-edged; the rest white, very broadly barred* with deep brown." In this the species seems to differ from *S. ceylonensis*, as also in the coloration of the throat, which is described as follows:—"Chin and throat white, with one central and two lateral blackish-brown streaks, which unite at the base of the throat at the front of the neck; below this for about an inch dull rufous-brown, like the sides and the back of the neck; the breast white; the feathers with huge dark brown drops, edged paler towards the tips; sides, abdomen, lower tail-coverts, flanks, and exterior tibial plumes a nearly uniform, somewhat pale umber-brown, most of the feathers with inconspicuous very narrow whitish tips; interior tibial plumes and tarsal feathers pale dingy yellowish brown, paling most towards the feet."

Distribution.—The small crested Eagle of Ceylon is chiefly a low-country bird, and is more or less dispersed throughout the maritime provinces and the interior jungles of the island. In the Eastern Province it is located in greatest force, and thence northwards it occurs principally along the coast, near salt-lakes and open tracts of land, to the delta of the Mahawelliganga and the district lying between Tanglegam and Kanthelai tank, where it is again more common than immediately to the south of the Virgel. To the north of Trincomalee it is found in the open woods bordering the continuous salt-lakes of that part of the coast, and in the interior is met with generally in the vicinity of the tanks of the Vanni. Layard found it at Pt. Pedro; but it is on the whole a scarce bird in the Jaffna peninsula. It occurs sparingly throughout the west of the island to the north of Negombo, but it is decidedly scarce between that place and Kalatura.

In the wooded districts interspersed with paddy-cultivation, which form the south-west corner of the island, it is more common than in the Western Province, and again further east, beyond the Morowak Korale ranges, it becomes more numerous still, frequenting the low-lying jungles between Hambantota and the Badulla mountains. In the Kandyan Province it is not unfrequent up to an elevation of 4000 feet, occurring chiefly in the Knuckles ranges, in Medamahanuwara, Dumbura, and southwards to Ambegamoa, as also round the eastern slopes of the Maturata district into Uva proper and Madulsima. Mr. Bligh has obtained it in Kotmalie and in the spurs of the Haputale range, and Mr. Holdsworth speaks of having seen it at Nuwara Eliya†. Layard mentions (*l. c.*) that Kelaart obtained it at Nuwara Eliya; but the latter does not include it in his list of birds from that locality ('Prodrusus,' p. xxix).

* The italics are mine.

† I have never seen any specimens of this bird from the Nuwara-Eliya plateau. Mr. Holdsworth speaks of the Eagle that he observed as soaring in "wide circles, with a squealing cry." This is a marked characteristic of the Serpent-Eagle (*Spilornis spilogaster*), whereas the Crested Eagle rarely soars, and seldom utters its cry on the wing. I think, therefore, that Mr. Holdsworth may have been mistaken in his identification.

Habits.—This noble little Eagle frequents open forest, the borders of heavy jungle, detached woods, cheenas, and scrubs interspersed with large trees. About such localities it prowls with a slow, though buoyant flight, being chiefly about in the mornings and afternoons, and searches the open ground for its favourite food, the large *Calotes* lizard. When satisfied with the result of its excursions it perches on solitary dead trees or exposed limbs of others in the forest, and enlivens the wilds with its complaining cry, which may be syllabized as *kre kre kre kreee*, *kre kre kre kreee*, quickly repeated, and continued to a wearisome extent. This is, however, the cry of the young or immature bird, and develops in the adult into a prolonged note in a different key, and in which the principal accent is laid on the second syllable, resembling the sounds *kre-kreee-kre-kree*. This is as invariably the voice of the brown, dark-marked birds as the former is of the light-plumaged individuals.

Of the lonely cheenas of the Eastern Province, studded with blackened trees and stumps, and scantily covered with a straggling crop of "Kurrukkan" (*Eleusine indica*) or a few wild cucumbers, this Eagle forms a marked characteristic; perched motionless on the limb of a tall tree, it remains for a long time piping out its monotonous cry, which is perhaps answered from another cheena a little distance off. At such times it is seated bolt upright on one leg, with the other drawn up beneath its breast-plumes, its erect crest and its eyes staring proudly before it; and so regardless is it of all around it that it may easily be approached in the open from behind to within an easy shot.

It is a bold and courageous bird in its disposition, as is amply testified to when it is kept in confinement; but as regards its prey it captures nothing larger than jungle-fowl, squirrels, and other small mammals, and feeds more on lizards than any thing else. It is exceedingly active and quick-sighted, and rarely misses any thing upon which it pounces. It is quite capable of capturing a bird on the wing, and in the Kandy district it is often shot carrying off poultry from the planters' bungalows; in the villages of the Vanni it also commits considerable havoc in the same way about the houses of the natives. Layard, in his notes (*vide supra*), speaks of one darting at a wounded Sparrow-Hawk which he had tied to a post in the verandah of his bungalow. Its flight is not, as a rule, swift, but performed with steady flappings of the wings; it rarely soars—and when it does, mounts in quick small circles for a short time and then flies off at a tangent.

The habits and disposition of birds of prey are well observed when they are in confinement; it may not, therefore, be out of place to subjoin here a short account of one of these Eagles which I reared from the nest and had five years in my possession, and which is now personified in the noble little representative of the species in the Zoological Gardens. When a chick he was fed upon lizards, which were first given him cut up; but as soon as he could stand up, he quickly learnt to devour them in the orthodox way, beginning at the head and finishing up at the tail, which he always swallowed whole. As it grew older, whenever food was thrown to it, and more particularly in the case of small birds or any thing which it was fond of, it seized the prey with both feet, squatted down on the tarsi, and spread forward its wings in a line with its head, at the same time expanding its tail and completely covering up its prize from view; it would then droop the head, looking at the coveted morsel, and commence uttering its querulous note, endeavouring to flap its wings when approached by any one, and altogether presenting a very singular appearance. This was its habit throughout life, and was more particularly practised when in company with other Raptors in the same aviary, being evidently its mode of shielding its prey from outward attack. He had the same method of standing on one leg and resting the other on the knee-joint, with the tarsus thrust out from the perch and the toes clenched, that I have observed in other Eagles, and which is no doubt a muscular exercise.

He would now and then seize a stone and fly round the aviary with it, or at other times endeavour by main force to tear up a clod from the floor of his aviary. During his first year he was a timid bird, sometimes retreating into a dark corner or "cot," inhabited by a Wood-Owl (*Syrnium ochrogenys*), and stretching himself out would remain there for hours; he likewise frequently allowed his nocturnal companion, who fed as much by day as by night, to rob him of his meat. Very different, however, was his nature after the first moult; he then developed both in muscular strength and courage, and became a bold and fierce little tyrant, commenced by attacking his companion, and finished by killing him outright. He displayed great agility and power of flight, one day darting up and seizing, through the bamboos of the aviary-roof, a Magpie-Robin that was perched upon it; at other times he would dart from his perch and catch, in the air, birds, rats, and other food thrown in to him. He was fond of bathing, and invariably stood out in heavy showers of rain, in which he

would expose himself to a thorough drenching, and then dry himself in the sun with his wings expanded. The most singular and interesting point in his disposition was his manifest display of anger and excitement, accompanied by a particular note of displeasure, consisting of a shrill scream, followed by a "champing" sound. This passion he exhibited, becoming quite furious when shown a stuffed bird of any size—a huge Pelican, which was his pet aversion, being usually subjected to the fiercest onslaughts when shown to him at the bars of his aviary; these were followed by a continued uttering of his note of anger until his passion died away. At about the age of twelve months he commenced to utter his adult note; but now and then, more particularly in the breeding-season, during the first three years, I heard the querulous cry peculiar to the young stage. When shown any object which excited his interest or curiosity, such as a tempting morsel of food, without the bars of his aviary, he had a singular habit of twisting his head round till it was completely turned upside down, all the time keeping his eyes fixed on the subject of his examination. At other times, when under the influence of excitement from any cause, he would throw his head back until it touched his back, and sway his head too and fro with a spasmodic outdarting of his wings, as if he were going to launch himself through the roof of his aviary. He made two voyages round the island with me, and one trip across country in a bullock-bandy, and during his life in Ceylon experienced several adventures, one of which well-nigh proved fatal. While at Trincomalie he narrowly escaped being killed by a wild cat, from whose clutches he must have escaped purely by dint of fierce struggles, and inflicting, no doubt, severe wounds on the animal with his talons. One morning, during my absence in the jungle, he was found to be missing, and on examining the aviary a large hole was discovered in the roof, through which he had evidently been dragged; search was made high and low throughout the whole premises, but not a sign of the eagle was anywhere to be seen. About midday, when the house-coolie went to draw water, the unfortunate bird was perceived floating on the surface, which was about 30 feet below the trap. On rescuing him from his perilous position he was found to be uninjured, with the exception of a wound at the point of the wing, evidently made by the teeth of a cat, which must have dragged him across the compound some 40 yards, with a view of taking him through an opening at the back of the wall, where the beast found the eagle's clutches too strong for him, and dropped him close to the trap, down which he had fallen in the darkness. Neither his mauling by the cat nor his five or six hours' cold bath in the darkness of the well had done much towards intimidating his eagleship; for the plucky little fellow fought vigorously while being secured, and it was only by dint of enveloping him in the coolie's cloth that he could be brought up again to *terra firma*. He was then tied to a stick and well dried in the sun, and then, much to my wife's satisfaction, was reinstated, undaunted by his adventures, in his aviary.

Nidification.—The Crested Eagle breeds in the south of Ceylon in February and March, but commences in the north somewhat earlier. In the neighbourhood of Trincomalie I twice found its nest during the course of its being built or repaired in January, but was unsuccessful in obtaining the eggs, for the birds deserted on both occasions. They were both large structures of sticks placed in the uppermost branches of banyan trees, and appear to have taken a long time to set in order, one nest being worked at for a month before I ventured to have it looked at, and then it seemed to have made but little advance. Only one young bird appears to be reared, for I am aware of two instances in which a solitary eaglet was taken from the nest.

The front figure in the Plate accompanying this article represents the dark bird now in the Zoological Gardens, and in his sixth year. The second is that of an immature *light* bird, which I shot with three others on the same day in the Batticaloa district.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus SPILORNIS.

Bill longer than in the last genus; festoon slightly pronounced, the culmen curved from the cere; the cere advanced. Nostrils oval, oblique, protected by the loreal plumes. Eyelid furnished with long lashes. Wings short, rounded, the 4th and 5th quills the longest. Tail moderately long and ample. Tarsus slender, feathered slightly below the knee, protected with small hexagonal scales both in front and behind. Toes short, furnished at the tip with transverse scales, changing at their bases into the reticulated scales of the tarsus; claws short and rather straight.

Head furnished with a heavy rounded crest, extending entirely across the occiput.

SPILORNIS SPILOGASTER.

(THE CEYLONESE SERPENT-EAGLE.)

Buteo bacha, Vigors, Mem. Raffles. p. 650 (1830, *nec* Daud.).

Hæmatornis spilogaster, Blyth, Journ. As. Soc. Beng. vol. xvi. 1852, p. 351; Kelaart, Prodromus, Cat. p. 114 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 100.

Hæmatornis cheela, Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 99.

Spilornis bacha, Holdsworth, Proc. Zool. Soc. 1872, p. 412; Legge, Ibis, 1875, p. 277.

Spilornis spilogaster, Walden, Ibis, 1873, p. 298; Gurney, Ibis, 1878, p. 100.

Spilornis cheela, Legge, Ibis, 1874, p. 9.

Spilornis melanotis, Sharpe, Cat. Birds, i. p. 289 (1874).

The Harrier-Eagle, Buzzard-Eagle, in India (pt.); *The Cheela Eagle, Ceylon Eagle, "Cheela,"* Kelaart and Layard; *Serpent-Eagle*, Europeans in Ceylon.

Rajaliya, Sinhalese; *Cudooombien*, Tam., in Ceylon (*apud* Layard).

♂ *ad.* similis *S. bachæ*; sed ubique pallidior, gutture pallidè cinerascens nec nigricanti-brunneo: pectoris et abdominis maculis ocellatis minoribus, minus rotundatis et saturatiore brunneo circumdatis: pedibus obscurè flavicantibus: iride flavâ.

Adult female. Length to front of cere 22.0 to 23.5 inches; culmen from cere 1.3 to 1.4; wing 15.3 to 15.8; tail 9.0 to 10.5; tarsus 3.3 to 3.4; middle toe 1.8, its claw (straight) 0.9; height of bill at cere 0.65.

Male. Length to front of cere 21.5 to 22.5 inches; wing 14.5 to 15.7 (average of seven examples 15.1); tarsus 3.2 to 3.3.

Obs. The above measurements are taken from a series of examples shot in the low country or on its hill-borders, representing a small type of our Serpent-Eagle inhabiting these districts. The majority of examples from the Kandyan province are considerably larger, and may be fairly held to constitute a bigger race of the species, as will be seen from the following dimensions, taken from several specimens:—

Adult female. Length to front of cere 25.0 inches; culmen 1.5; wing 15.9 to 16.6; expanse 52.5; tail 11.0 to 11.5; tarsus 3.4 to 3.5; middle toe 1.8.

Male. Wing 1.5 to 15.8 inches.

Iris golden yellow, the external edge, in some, indented with black; cere and loreal skin varying from greenish yellow

to "citron;" gape greenish yellow; bill bluish at cere and base, darkening at the tip to blackish; legs and feet citron-yellow (usually much stained).

Fully adult plumage. Forehead, crown, and elongated occipital feathers more or less overlying the entire hind neck jet-black, with the basal two thirds of the feathers white and concealed beneath the black portions, and the tips almost always faintly tipped with fulvous; cheeks and ear-coverts more or less blackish grey, according as the throat is light or dark, blending into the adjacent black; hind neck, back, rump, scapulars, wing-coverts, and tertials dark neutral brown, with a strong purplish lustre, particularly on the upper back and scapulars; lower part of hind neck paler than the back; upper tail-coverts tipped with white; least wing-coverts, including the winglet, with two terminal white spots on each feather; greater wing-coverts tipped white at the outer feathers; terminal portion of the primaries and secondaries (about $2\frac{1}{2}$ inches of the former), a narrow band across the centre of the feathers, and another near the base blackish brown, with a purple lustre, the interspaces smoky brown on the outer webs, gradually paling to white internally, the whole band showing whitish beneath; secondaries and shorter primaries tipped with white; winglet blackish brown, tipped with white, and barred near the base of the inner webs with the same; tail with a two-inch terminal band, and a second, nearly as broad, on the basal half purplish black; an equally broad interspace of dusky whitish, more or less clouded with light brown, and the space between the second band and the coverts paler, but not conspicuously lighter than the band; all the caudal feathers tipped with white.

Loral and rictal plumes black; chin and gorge iron-grey, more or less dark according to the individual, in some almost as pale as the fore neck, which, together with the chest and under surface, varies from a light earth-brown to a chocolate-colour, paling always slightly towards the belly and under tail-coverts; the feathers of the breast, flanks, belly, and thighs with a series of roundish, opposite white spots surrounded by a dark edge; on the under tail-coverts, and in some specimens on the thighs, the spots develop into bars, either continuous or interrupted at the shaft; under wing-coverts, as in the young stages, variable, the ground-colour of the lesser series usually more rufous than that of the breast and covered with large white spots, which, near the tip, predominate over the brown; greater series dark brown, spotted like the rest; edge of the wing unspotted white.

Mature plumage. In this phase the lower feathers of the crest are tipped with fulvous, and in some the basal portion washed with the same; the cheeks, ear-coverts, and chin are darker than in old birds; the scapulars, median wing-coverts, and rump-feathers are tipped with white; winglet more conspicuously tipped than in the above; markings of quills and caudal feathers much the same; sometimes the secondaries are terminated with brown, adjacent to the white tip, and occasionally there is a remnant of *white mottling* above the central tail-bar.

Under surface chocolate-brown, the fore neck darker, blending into the blackish-grey hue of the throat, and the feathers slightly edged with fulvous; lower parts darker than in the fully adult, the edging round the spots deeper, and these latter, therefore, more conspicuous; under wing-coverts dark like the breast, the spots on the lesser series smaller than in old birds; external edge of wing-lining sometimes unmarked white, at others striped or barred, like the rest of the feathers, with brown; under surface of tip of tail showing more white than the upper.

Obs. Great variation exists, particularly in this latter stage, in the markings of the under surface, although there is, as in the coloration of the throat, a certain similarity of type, which distinguishes the species from some of the more eastern forms. As regards the spots, in birds of the same age and with similar upper-surface plumage, they are in some examples very large and darkly bordered, in others small, and then, of course, more of them on each feather, the edge being sometimes scarcely darker than the ground of the feathers; in others, again, they are more bar-shaped than circular. There is, in this mature stage, sometimes an indication of fulvous cross-marking near the tips of the chest-feathers; but I have never seen it in a fully old, completely black-crested bird. In some specimens much more of the hind neck is blacker than in others, the sides of this part being black right round to the throat. Hill examples of the larger race are blacker on the chin and throat than the small birds of a like age. This is a peculiarity I have observed in 4 specimens at Norwich, 4 in Mr. Bligh's collection, and 2 in my own.

Young (bird of the year). Iris greenish yellow, sometimes with a brown inner circle, in one specimen I have seen (as also in that referred to by Mr. Blyth, *l.c.*, as drawn by a Mr. Moogaart) white; cere, gape, and loral skin greenish yellow; bill dark horn-colour, the tip blackish; legs and feet pale yellow.

The white eye appears to be an abnormal, though doubtless not an unfrequent feature.

Head and elongated occipital feathers dusky fulvous, the feathers with an extensive subterminal blackish-brown patch and deep tips of buffy white, the bases white; interscapular region, wing-coverts, and scapulars rich sepia-brown, with a purplish lustre, becoming paler on the rump and upper tail-coverts, the feathers tipped with fulvous grey, least so on the lesser wing-coverts, which are darker than the median series; these and the greater coverts tipped

generally with white and spotted on both webs with the same, the markings in some taking the form of bars; primaries and secondaries dark earth-brown (this colour corresponding to the light interspaces in the adult), terminal portions blackish, and the rest of the feather crossed with three bars of the same; the brown interspaces mottled with white at the inner edge, and the tips of all the quills deeply marked with the same; upper tail-coverts tipped with white; tail light brown, mottled transversely with white, with a subterminal band, one about the middle, and one at the base, of purplish black; lateral feathers with three bars and the tips of all white, the inner webs white at the edge.

Cheeks, ear-coverts, chin, and upper throat black, the feathers white at the base, and those at the lower edge of the gorge tipped with fulvous; in some birds the throat is marked up to the chin with this hue; fore neck, chest, and under surface chocolate-brown, light in some, dark in others, the breast marked inconspicuously with fulvous-brown cross rays; the lower parts, thighs, and under tail-coverts spotted with white as in the adult, the spots with less dark surroundings, those on the under tail-coverts developing into bars; under wing-coverts and axillary plumes concolorous with the chest, except the greater series, which are blackish brown, the whole with large round spots of white, but covering the ground-colour less than in the adult; external edge of wing-lining white; base of quills beneath white.

The change from this plumage, which is that of Blyth's *S. spilogaster*, to the mature dress following the adult plumage in this article takes place in the gradual increase of the black on the head-feathers, the decrease of the pale terminal margins of the upper surface, the widening of the subterminal black caudal band and its adjacent light interspace, causing a moving up of the centre dark band, and in the gradual lessening of the light interspace above it; the light transverse rays across the chest (in those birds which possess them) grow fainter, and the ocelli of the lower parts extend, as a rule, more up the breast. These changes take place in the second moult.

Hill birds in their first plumage often have the white wing-covert tippings, in the form of deep terminal margins, extending up the webs, on which the bar-like markings are more extensive than in low-country birds. In one specimen the basal portions of the mantle-feathers are fulvescent buff, showing on the surface very markedly; the head-feathers do not show much of the fulvous centres, and the throat is a very dark brown, blending into the chocolate of the fore neck.

*Light phase of young plumage**. A pale or albescent form of plumage exists occasionally in the young of this species, which is analogous to the same feature in the Booted Eagle (see remarks in my article on this latter bird).

Such an example, in my collection, shot near Kadugannawa in October 1876, has the upper surface similar to other birds, except that the least wing-coverts are very lightly tipped with fulvous, whereas the greater and median coverts have much white about them, the inner webs of the latter being almost entirely of this colour and the outer margined with it; cheeks, ear-coverts, and chin black; throat, chest, and entire under surface buff-white; the feathers of the chest, sides of the breast, and flanks with large oval patches of deep brown on their terminal portions, which diminish on the lower parts into oval central streaks; the long flank-feathers covering the thighs barred widely with a paler brown, with which the thighs are closely banded; coverts immediately beneath the ulna spotted with brown; remainder of the wing-lining white, a few of the feathers with a single dark spot near the tip; base of primaries white beneath.

Obs. This Serpent- or Harrier Eagle, as the genus is perhaps more generally styled in India, was referred to by Layard in his notes as *Hæmatornis cheela*, it having been identified for him as such by Blyth in the days when it was not discriminated as distinct from this latter northern form. Adult specimens are still extant in the faded collection at Poole. Subsequent (evidently) to his acquaintance with the bird in its adult character, immature specimens were procured by Dr. Kelaart and himself, and sent by both gentlemen, under the impression that they belonged to a new species, to Blyth, by whom they were described as such under the title of *H. spilogaster*, by which name it must now stand as a Ceylonese and Sumatran bird.

From the Northern-Indian *Spilornis cheela* it differs widely, inasmuch as it is a much smaller bird, has a paler throat, wants the yellowish-brown cross markings on the chest which are characteristic of the mature birds in that species, and differs in the character of the ocelli of the lower parts.

As regards the South-Indian form, whether the *Sp. melanotis* of Jerdon, or perhaps, more properly speaking, *Sp. albidus* of Temm., represents the common species of that part, I am unable to say; but if it does, the Ceylon bird is its inferior in size. The wing in Jerdon's type, from the foot of the Nilghiris, is 16 inches; but it is probably a male, as other examples in the British Museum, referred by Mr. Sharpe to that species, exceed 17 inches in the

* This occurs in *S. cheela*; there is a similar specimen in the British Museum.

wing, and I have lately examined a bird, not fully adult, from Malabar, which has a wing of 18·2. It may be well to remark that this specimen, which has since passed into the Norwich Museum, and was noticed by Mr. Gurney ('Ibis,' 1878, p. 145), does not differ much from immature examples of *S. cheela*, the breast and under surface being isabelline brown, and the white ocelli surrounded each by a bold dark margin, in addition to which the axillaries and under wing-coverts are differently coloured. The nearest affinities of *S. spilogaster* are with the Malayan races, to which it approaches closely in size. It is, however, distinguishable from *S. davisoni* from the Andamans, which species has the ocelli small, very round, and more confined to the lower parts.

From the Javan Serpent-Eagle, also (the *S. bacha* of Mr. Sharpe's Catalogue, and to which it has of late been referred), it differs in a marked manner, inasmuch as the latter species is very dark above and beneath, and possesses in its adult stage an almost black throat, the contrast of *S. spilogaster* at that period; the under wing is likewise different, the lesser coverts being concolorous with the greater, and not paler as in the Ceylonese form.

To the Sumatran bird, however, it approaches very closely, so much so that Mr. Gurney thinks ('Ibis,' 1878, p. 100) the two races are identical. I have carefully examined the series from Sumatra in the Norwich Museum, in company with that gentleman, and though slight points of difference exist, they do not appear sufficient to rank as specific, in which case the species should bear the same name as the Ceylonese, as it is not identical with *Sp. bacha* of Java, with which it has been hitherto united. The differences referred to are the darker throat of the adult, and the lighter, less clouded pale tail-band, resembling somewhat that of *S. pallidus* from Borneo. The four examples which constitute the series seem as a whole to be smaller than Ceylonese, although the wing in one attains 16·5. The race from Singapore is also not separable from the Sumatran; but in its young stage it differs from Ceylonese immature birds (there are none forthcoming from Sumatra) in the subterminal pale band being considerably broader. It is therefore possible that when a larger series is got together from Sumatra, containing old and young, the race may be found, as in the case of the Singapore bird, to differ from the subject of this article in its young plumage.

I subjoin a synopsis of the several species of *Spilornis* referred to in the above observations, in order that the respective characteristics may be seen at a glance:—

- a. *Spilornis cheela*. *Hab.* Himalayan region, Burmah, China, Formosa.
 Large size: wing 18·0 to 19·5 inches.
Ad. Chest almost always crossed with narrow transverse striæ; throat and cheeks iron-grey; ocelli of the lower parts bar-shaped, with a brown border.
Juv. Head black as in adult, but the dark hue separated from the white base of the feather by a fulvous patch; throat and cheeks black.
- b. *Spilornis melanotis*. *Hab.* Peninsular India.
 Smaller: wing 16·5 to 17·8 inches.
 Very similar to *S. cheela* in plumage.
- c. *Spilornis spilogaster*. *Hab.* Ceylon, Sumatra, and Straits Settlements?
 Smaller still: wing 15·3 to 16·6 inches.
Ad. Chest uniform brown, without any transverse striæ; throat and cheeks pale iron-grey; under-surface spots variable in shape and size, surrounded by a dark edge, which is also variable in intensity; median under wing-coverts concolorous with the chest.
Juv. Head-feathers conspicuously tipped with white; throat and cheeks blackish.
- d. *Spilornis bacha*. *Hab.* Java.
 Similar to *S. spilogaster* in size.
Ad. Very dark above and beneath; throat and cheeks black-brown; ocelli large, rounded, the edge scarcely darker than the ground-colour of the feather.
- e. *Spilornis davisoni*. *Hab.* Andaman Islands.
 Smaller than *S. spilogaster*: wing 15·0 inches (Hume).
Ad. Ocelli small, very round, and not extending much above the abdomen.

Distribution.—The Serpent-Eagle is widely distributed over the whole island, but is much more numerous in the dry forest-clad tracts of country than in the humid and more cultivated portions. It is a common bird

in the continuous jungles of the south-eastern low country, parts of the "Park," the Eastern Province, and the entire northern half of the island. In all these districts it is chiefly to be found in the vicinity of village tanks or on the banks of the forest-lined rivers.

In the Western Province it is a scarcer bird, and is mostly confined to the wild country commencing near Avisawella and stretching through Saffragam, and thence along both banks of the Kaluganga to the maritime districts at its mouth. In the hilly country between Galle and the Morowak Korale it is likewise an uncommon bird, being now and then met with on the outskirts of damp paddy-land and on the banks of the Gindurah and other streams. As regards the Kandyan province, it is found generally throughout the coffee-districts, extending even to the Nuwara-Elliya plateau; but it is chiefly noticeable about Kadugunawa, in parts of Dumbara and the Knuckles district, in Dolosbage, and thence into Ambegamoa. In Haputale it is not uncommon, Mr. Bligh having procured many specimens in that district. It is found as near Colombo as Atturugeria and Kaduwella; but going northwards of the capital it is not very frequently met with until the Maha Oya is passed and the drier districts near Kurunegala reached.

Layard, who thought it to be migratory, remarks of its distribution, under the head of *Hæmatornis cheela*, "Abundantly and widely distributed throughout the island;" and in speaking of the immature phase (*H. spilogaster*) says, "the Doctor" (Kelaart) "procured his specimen at Trincomalie, whilst I killed mine in the Vanni. I afterwards shot another pair at Pt. Pedro." From his observations it appears that the species visits the north (the Jaffna peninsula is probably meant) in March, and remains until July. It is very probable that a partial movement to the peninsula does take place at that season, which led to the belief that the species was migratory.

Beyond the confines of Ceylon, this species reappears in the island of Sumatra and extends thence to the Straits Settlements. It was first made known from Sumatra by Sir S. Raffles.

Habits.—This small Eagle, whose serpent-destroying propensities make it a useful bird, is a denizen of forest, frequenting the banks of streams and rivers and the borders of tanks, more especially the smaller class known as the village "Kulam." Every such sheet of water possesses its pair of Snake-Eagles, which haunt the heavy jungle and huge trees clothing the bunds or dams, and patiently watch throughout the day from some huge outstretching limb for the various snakes and frogs which disport themselves from time to time on the banks of the stagnant pool. On espying its prey, the yellow-eyed bird raises his massive topknot, and with glistening orbs darts noiselessly down with dangling feet, and sweeping off the luckless reptile, mounts to the nearest perch and there devours it, resuming there and then his patient watch. This sluggish existence is, however, varied by a daily soar above his accustomed haunt, in the blaze of the noonday sun, when he mounts to a great height in wide circles, and with loud screams proclaims his freedom and success.

Equally at home by the sandy beds of the dried-up rivers in the northern and eastern forests, one of these Eagles may be encountered, at every mile or so, during a ramble down these romantic watercourses. They are invariably seated on the overhanging limb of an immense Kumbook tree, and when disturbed skim noiselessly on before the intruder and take up their post again on the nearest inviting perch.

The last specimen of this Eagle procured by me in Ceylon fell to my gun at one of these riverine haunts under rather interesting circumstances. It was about 4 o'clock on the evening of a scorching day in the Seven Korales when I arrived at the banks of the dry course of the Kimbulana-Oya; and leaving my jaded bullocks to enjoy the welcome shade of the grand umbrageous trees overhanging the crossing-place, I started for a tramp down the heavy sandy bed of the river. Here, as in most rivers in the north and east, which in the wet season are mighty torrents, not a drop of water was now to be seen, save in some more than ordinary deep holes under the denuded roots of the great trees which grow on the bank or in the hollows of the large rock-masses which stood up here and there from the sandy bed. Above most of these tiny pools sat a solitary Little Blue Kingfisher, eagerly eyeing the water, round the edge of which ran quietly one or two Green Sandpipers or a Common Snipe, reduced by scarcity of food to a rare degree of tameness. On rounding one of the rocky barriers a huge Owl glided noiselessly from the branches of an overhanging tree, and immediately fell to my first barrel with a broken wing. As the wounded bird waddled off a Serpent-Eagle, evidently taken aback at the sight of his companion trailing his wing along the sand, swooped down on him, doubtless out of mere curiosity, and quickly followed him to ground with a fractured pinion. This brought the Owl to a sudden

halt; and the two birds now presented a most singular spectacle, standing almost side by side and glaring with manifest amazement first at me and then at each other—the Owl with his long aigrettes erected and his immense yellow orbs staring from beneath them as he angrily snapped his bill; while the Eagle stood in his most defiant attitude, his amber eyes glaring fiercely, and his bushy topknot rising and falling as I approached him! It was a fit tableau for an artist; but, alas! was soon spoiled; and ere many minutes the interesting birds were dangling dead from the roof of my bullock-cart.

The Harrier Eagle may often be met with by the sides of tracks in the northern and eastern jungles, and is usually found with a snake dangling in its talons, which has been killed at the open side of the rudely-made road. When wounded, it is a very handsome object, placing itself on the defensive with its glaring yellow eyes and huge uplifted topknot.

Serpents are killed by these birds before being carried off, a bite on the neck soon depriving them of life; they may often be seen dangling from their grasp in the air, or hanging dead from their talons when perched. The food I have always found on dissection to be torn in pieces; but it is sometimes devoured whole—Mr. Holdsworth recording an instance of a Tree-Snake (*Passerita*), which is the favourite quarry with the Serpent-Eagle, being disgorged whole from the stomach of a wounded bird. Lizards and frogs are likewise eaten, but not so commonly as snakes. The note of this species is a prolonged and clear scream of three syllables, with the accent on the first, and is not unlike that of the Kite-Eagle.

Layard refers to the “doleful moanings” of this bird “scaring the herd-boy from the tank side, or the lonely native threading his way through the jungle.” I myself have never heard these sounds, although the species was constantly under my observation for two years in the jungles of the north, haunting sometimes the vicinity of my camp from morning to night; I infer, therefore, that they may be the utterances peculiar to the breeding-time, which I was not fortunate enough to hear.

With his accustomed keen powers of observation he marked the habits of the Harrier-Eagle well, and has the following descriptive paragraph of them in the ‘Annals and Magazine of Natural History’:—“Concealed in the dark foliage of some overhanging tree, it heedlessly marks the smaller frogs approach the grassy margin of the pool. Suddenly the large green Bull-Frog (*Rana malabarica*) uplifts its head and utters its booming call. The *Cheela* is now all attention; with outstretched neck it fixes its glaring eyeballs on its desired prey; lower and lower it bends, for the frog, which has now reached the sedges with a croak of triumph, gains a log. But a shadow glides over him—in vain he crouches—and his colour becomes a dull brown, so closely resembling the log, that human eyes would take him for a knot in the decaying timber; with noiseless rapidity the barred wings pass on, and the log is untenanted. Fast clutched in the talons of his merciless foe, the frog is borne to the well-known perch, and a sharp blow on the back of the neck from the bill of the bird deprives it of life.”

In the dry season I have known it to take up its quarters permanently by the side of a small water-hole a few square yards in extent, so that it might live on the frogs and snakes which frequented the muddy little spot.

Nidification.—The nest of this Eagle has very seldom been found; and the eggs I have never been able to procure. It breeds in the Western Province in March and April, Mr. MacVicar, of the Ceylon Public Works Department, having received a young bird taken from a nest in the Hewagam Korale in the latter month. The nest was described to me as being a large structure of sticks placed in the fork of a tree.

Layard, who was very fortunate in finding the nests of rare birds, remarks that “it builds in the recesses of the forest on lofty trees. The structure is a mass of sticks piled together and added to year by year. The eggs, generally two in number, are 3 inches in length by 2 in diameter, of a dirty chalk-white, minutely freckled at the obtuse end with black dots.”

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus HALIAETUS.

Bill very stout and long, the cere and base of culmen straight, tip suddenly hooked; festoon well developed. Nostrils round and directed straight backwards and quite exposed. Eyelid devoid of lashes. Wings long, the 3rd quill the longest, the 1st slightly exceeding the 7th; the outer webs of the longer primaries abruptly notched. Tail short, scarcely exceeding the closed wings, cuneate at the tip. Tarsus very stout and longer than the middle toe; its upper third feathered in front, the remainder covered with broad transverse scutæ, the hinder part shielded with narrower transverse scales. Toes protected by rectangular scales to the base; outer toe only slightly longer than the inner; claws short, rather small and well curved, trenchant beneath.

HALIAETUS LEUCOGASTER.

(THE WHITE-BELLIED SEA-EAGLE.)

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- Falco leucogaster*, Gm. S. N. i. p. 257 (1788, *ex* Lath.); Temm. Pl. Col. i. pl. 49 (1823).
Falco blagrus, Daud. Traité, ii. p. 70 (1800).
Haliaetus blagrus, Cuv. Règne An. i. p. 316 (1817).
Falco dimidiatus, Raffles, Trans. Linn. Soc. xiii. p. 277 (1822).
Haliaetus leucogaster, Vig. Zool. Journ. i. p. 336 (1824); Gould, B. Aust. pt. 3, pl. 37. fig. 1 (1838); Schlegel, Mus. P.-B. *Aquilæ*, p. 14, 1862; Jerd. B. of Ind. i. p. 85 (1862); Schlegel, Vog. Nederl. Ind., Valkv. pp. 9, 50, pl. 4. figs. 1, 2 (1866); Hume, Rough Notes, i. p. 259 (1869); Holdsworth, P. Z. S. 1872, p. 412; Ball, Journ. Asiat. Soc. Beng. 1872, p. 276; Sharpe, Cat. Birds, i. p. 307 (1874).
Ichthyaetus leucogaster, Gould, B. Austr. i. pl. 3 (1837); Gray, Cat. Accipitr. 1844, p. 13.
Pontoaetus leucogaster, Gray, Gen. Birds, i. p. 18 (1845); Kelaart, Prodromus, Cat. p. 114 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 100.
Cuncuma leucogaster, Gray, Cat. Accip. 1848, p. 24; Wall. Ibis, 1868, p. 15; Walden, Trans. Zool. Soc. viii. p. 35 (1872); Hume, Str. Feath. 1874, p. 149; id. Nest and Eggs, i. p. 48; Legge, Ibis, 1875, p. 278; Hume, Str. Feath. 1876, p. 461.
Blagrus leucogaster, Blyth, Cat. B. Mus. A. S. B. p. 30 (1849); Swinh. Ibis, 1870, p. 86.
Polioaetus leucogaster, Gould, Handb. B. of Austr. i. p. 13.
White-bellied Eagle, Lath. Gen. Syn. i. p. 33 (1781).
Le Blagre, Levaill. Ois. d'Afr. i. pl. 5 (1797).
The Grey-backed Sea-Eagle of some writers; *The "Fish-Eagle," "Fish-Hawk,"* Europeans in Australia; *The "Sea-Eagle," "Osprey,"* Europeans in Ceylon. *Duck-Eagle*, Andamans. *Kohassa*, Hind.; *Samp-mar*, Hind. in Orissa; *Ala*, Tel. and Tam. (*apud* Jerdon, *l. c.*); *Lang-laut*, Sumatra.
Loko-Rajaliya, Sinhalese; *Kadal-ala*, Tam. in Ceylon.

Adult male. Length to front of cere 25.2 to 26.5 inches; culmen from cere 1.98 to 2.0; wing 21.2 to 22.5, expanse 71.5 to 78.0; tail 10.0; tarsus 3.4 to 3.8; mid toe 2.3 to 2.4, claw (straight) 1.05 to 1.1; hind toe 1.5, claw (straight) 1.4; height of bill at cere 0.71.

Female. Length to front of cere 27.0 to 27.75 inches; culmen from cere 2.1; wing 22.5 to 24.0, expanse 79.0 to 80.1; tarsus 4.0; mid toe 2.5, claw (straight) 1.2.

A series of Malaccan, Indian, and Cape* birds examined in the British Museum correspond well in size with Ceylonese; and Tasmanian examples, which are very fine, do not, as far as I am aware, exceed the above limits.

Iris hazel-brown; cere pale leaden; bill dark leaden; legs and feet whitish, or sometimes pale greenish white.

Entire head and neck, with the entire under surface, lesser under wing-coverts, under tail-coverts, and terminal $3\frac{1}{2}$ inches of the tail pure white; interscapular region, back, and rump dark cinereous grey, becoming darker on the upper tail-coverts; the white feathers at the lower part of the hind neck with dark shafts, and the grey hue appearing lower down on each side of them; wing-coverts, scapulars, and tertials bluish slate-colour, with dark shafts; quills and basal portion of the tail blackish cinereous; under wing-coverts and flank-feathers with black shafts.

I observe no variation in the tints or proportions of the several colours in this bird from all parts of its habitat.

Young. The unfledged nestling† has the iris brown; bill and cere very much as in the adult but more "fleshy," and the base of the under mandible very pale; legs and feet fleshy white. The body is covered with pure white down for about three weeks, when yellowish-brown feathers appear on the nape, and dark brown ones on the scapulars, the primaries coming out blackish at the same time, the whole being tipped with white, which shows most conspicuously on the forehead and crown; the tail-feathers, which are brown, tipped with fulvous, appear simultaneously with the primaries; the chest is clothed with umber-brown feathers, with fine tips of fulvous. The various hues of this first plumage alter somewhat during the first six months until they settle down into the normal hue of the yearling dress.

At a year old the iris is of the same hue as the adult's, the bill has lost its fleshy tint, and the legs are as in old birds. The plumage is as follows:—

Head, neck, and throat pale tawny brown, lightest on the chin, and the tips and margins of the head-feathers paler than the rest; over the eye there is a pale stripe, and above the ears a conspicuous dark patch; the light hue of the hind neck darkens into rich brown on the interscapular region, back, and wings; the lower part of hind neck and the lesser wing-coverts tipped with fulvous; the edge of the wing above the flexure has the feathers broadly margined with buff-white, which with a light patch on the side of the neck, partly concealed by the wing, forms a conspicuous light space in the bird's plumage; the median wing-coverts and the inner feathers of the greater series edged fulvous; the winglet and the quills are deep brown; the upper tail-coverts blackish brown, edged whitish; tail white at the base, with the terminal half blackish, blending with a mottled edge into the white; chest and upper breast chocolate-brown, the lower part edged with fulvous; the breast below this and the belly are whitish, washed at the sides with pale brownish; under tail-coverts whitish; on the under wing the secondary coverts are buff, marked with brownish, the greater row of the primary-coverts brownish, the next fulvous, and the least series brown, edged with buff. At the end of the first year the head, in the example here treated of, got very much paler, and the dark half of the tail faded considerably, while the chest-patch became much lighter.

After the first moult an advance towards the adult dress is made on the head, tail, and under surface; but the back and wings remain in the brown plumage still. The head and hind neck have the bases of the feathers brownish, and the terminal portions fulvous-white, revealing in the centre the dark shaft; the interscapular region and lesser wing-coverts are of a corresponding deep brown, with narrow pale margins; the median wing-coverts have the external portions of the feathers brownish fulvous, and the central brown with darker shafts; the upper tail-coverts are more or less white, mottled and clouded with blackish brown near the tip; the order of coloration in the tail is reversed, the terminal half becoming white and the basal black, but not completely so, some of the inner webs being nearly all white.

The throat and cheeks are fulvous-white, with a dark patch above the ears; the pale fore neck darkens into light earth-brown on the chest, the centres of the feathers being whitish with dark shafts; this part gradually pales, with a mottling of brown, into the whitish of the lower parts, on which, however, the shafts are brown; the lesser under wing-coverts are a rufescent buff, the upper series shaded with brown, and the greater row of the primary-coverts blackish brown.

* Specimen "m," p. 308, Sharpe, Cat. of Birds.

† The immature plumages of this Eagle are described from birds reared from the nest in my aviary.

In the third year traces of immature plumage sometimes remain in the form of patches on the chest and some brown feathers in the wing-coverts; but I imagine that, as a rule, the adult dress is then put on.

There was a singular example of this Eagle, exhibiting a phase of plumage bordering on melanism, in the Zoological Gardens last year, and which it may be interesting to notice here. The head and neck were uniform earth-brown, and the back and wings dark brown; the cheeks and throat were pale brownish, and the whole under surface sooty brown; under surface of quills pale greyish, and the lesser under wing-coverts tawny.

Distribution.—The Grey-backed Sea-Eagle is a common bird round the whole of the north and east coasts and down the west side of the island to the lower end of the Puttalam lake. On the Jaffna lake and among the numerous islands off the west coast of the peninsula, as well as on the many back waters and estuaries from Point Pedro to Batticaloa, it is a characteristic ornithological feature of the coast; and further south every river-mouth that debouches on, and every salt lagoon that lines the shore from Kalmunai to Tangalla has its pair of Eagles. On the west coast, from Chilaw to Point de Galle, where the line of coast is less cut up by brackish inlets, it is not so frequent, being there confined to particular localities, such as the Negombo, Panadure, and Amblangoda lakes and the estuaries of Kalatura and Bentota. In the harbour of Galle a pair are often to be seen, and have their head-quarters at the Kogalla Lake or other neighbouring sheet of water, where an abundant supply of fish furnishes them with daily food. It is not, however, confined to the sea-coast; for the large tanks of the Eastern Province, viz. Ambaré, Erakkamum, and others, are frequented by it; and in the northern half of the island it is a permanent resident on all the large inland sheets of water, such as Minery, Kanthelai, and Tissa Wewa tanks. Its presence at the two former of these lakes adds no little to their romantic beauty; there are always one or two pairs there, which breed in the adjacent forest, and probably never leave the vicinity of these fine sheets of water. At Minery there is an eyrie on the great bund of the tank, and at Kanthelai a huge nest existed, until it was cut down, for many years in the fork of a lofty dead tree which towered above the surrounding forest on the north side of the lake.

The Grey-backed Sea-Eagle has a wide geographical range, extending north to south from Northern India to Tasmania, and west to east from the Cape of Good Hope to the Friendly Islands. In India it is chiefly confined to the sea-coast, and on the western side does not extend commonly above Bombay. It is very numerous near Pigeon Island (lat. 14° N.), which forms one of its chief breeding strongholds. At the Laccadive group it is rare, Mr. Hume recording but one specimen, which he saw at the island of Amini. In the other islands of the Indian Ocean, to the south-west, viz. the Seychelles, Mauritius, &c., it disappears, but again appears at the Cape of Good Hope, provided, that is, that M. Verreaux's specimen in the British Museum is correctly labelled. Returning to India we find it more common on the east coast than it is on the west, and at some parts of it it extends far inland, for Mr. Ball records it as by no means rare in Chota Nagpur. In Burmah it is likewise common; Mr. Davison procured it in Tenasserim, and Mr. Armstrong along the coast of the Irrawaddy delta, but found that it did not extend far up the Rangoon river. In the Gulf of Siam, Finlayson says that it frequents the desert islands. In the Malay peninsula and in all the islands of the Bay of Bengal it is numerous, and it inhabits the entire chain of the Malay islands from Sumatra to Timor, and extends thence through Borneo, Celebes, and the Moluccas to the Philippines, in which group it has been found as far north as Luzon. Eastward and to the south of the Philippines it has been found in the Solomon Islands and in New Guinea. Down the entire east coast of Australia to the islands of Bass's Straits and Tasmania it is a common bird, and, according to Gould, extends up the west coast of the insular continent to Swan River; but I have no doubt that it inhabits the entire western seaboard round to Torres Straits. It has not been observed in New Zealand, which, in spite of the peculiar character of the ornis of this country, is somewhat singular in a bird of such wide range.

Habits.—The island of Ceylon being devoid of the larger and more regal members of the genus *Aquila*, the present species must be considered to rank foremost among its Eagles. Though not possessing the courageous nature or the bold aspect of the powerful Mountain Hawk-Eagle, the lofty, noble flight and commanding bearing of this fine bird, together with the associations of foaming shores and flowing tides, amidst which it passes its life, impart to it an interest for the naturalist and sportsman which does not attach to its congeners of the hills and forests. It frequents the open coasts of North and East Ceylon, as well as the estuaries, lagoons, land-locked bays, and salt lakes which form the chief geographical feature of the seaboard. It lives in pairs,

and confines itself to one particular spot—a sequestered hill-side, containing its one or two huge banyan trees towering above the surrounding jungle, or the forest-covered bank of some inland sheet of water; here it breeds and passes all its life, sending forth its young to other haunts, which are usually not far from the place of their birth. Sallying out in the early morning, it quietly sails along high above the resounding shore, its wings outstretched and motionless, and its snowy head turning from side to side, as it scans each passing reef for its favourite morsel, the sea-snake; or it sweeps out to sea, with its eye intent on the inhabitants of the blue waters beneath; and keen indeed is its sight. Should any luckless fish venture to the surface beneath those silent wings, his time has come; with half-closed pinions and extended talons the Fish-Eagle descends with a booming rush; a splash, and up he rises with heavy flappings, bearing away his well-caught prey to some favourite rock or tree, beneath which the bones of many a fish and snake testify to the Eagle's feasts. It is partial to the sea-snake (*Hydrophis*), which, basking on the uncovered reef, is an easy prey; it likewise captures crabs, or feeds, if hungry, on any thing dead which it finds on the shore; but its favourite food is fish, for which it will pursue even the Osprey and rob it, as Jerdon remarks, of its well-earned food. During the heat of the day this Eagle often soars to a great height, and as it rises in wide circles, its pinions upturned to the extreme, its flight is grand and majestic*. Its loud cry of *clank, clank, clank*, which is repeatedly uttered in the breeding-season, can be heard at a considerable distance, and often leads to the discovery of its eyrie. It lives admirably in confinement, thriving even when wounded and captured as an adult, and feeds gluttonously on either cooked or raw meat. Mr. Holdsworth mentions one bird in his notes which was reared on the universal rice and curry of the native; and I have no doubt he was rightly informed, for little came amiss to my tame one. He was a cowardly bird in his disposition, standing in wholesome fear of a fierce little Crested Eagle in the same aviary with him, and also allowing himself to be bullied out of many a morsel by a Gannet which at another time kept company with him. A notice of this fine Eagle would be incomplete without quoting from Layard's graphic description of its habits. He says, "The flight of this species is noble and imposing; poised high over the resounding surge, it wheels above on circling pinions, and with extended neck surveys the finny tribes. Here shoals of beak-nosed fishes swim in their seasonal migrations along the coral reef; there brilliant *Chaetodons* float in the shallows. The tide has partially receded, and the water lies in still crystal pools in the depressions of the reef: over one of these the Fish-Eagle passes; an abrupt wheel shows his attention arrested; a moment's pause, and down he plunges, his body swaying to and fro. The surface is reached, the legs suddenly thrown out, and with exulting cries he soars aloft, bearing in his talons a writhing snake, eel, or large fish. The efforts of the bird to secure its prey in a proper position are now curious. If a fish is captured the feat is comparatively easy; the talons of the Hawk are gradually shifted until one grasps the prey near the gills and the other near the tail. With a snake or eel the matter is more difficult, and I have often seen the prey free itself from its captor by its strong writhings; a bite, however, near the head destroys its power, and it is borne away dangling by the neck in the grasp of its destroyer." I observed that my tame birds invariably commenced eating a fish by tearing it at the back of the neck, the head being pointed to the bird's left; small fish, however, up to 5 or 6 inches, they would bolt entire, jerking them down head foremost.

Mr. Hume, in his interesting account of his trip to the Laccadives, contained in 'Stray Feathers,' 1874, has the following observations on the habits of this Eagle at Pigeon Island. At page 423 he writes, "One that I shot as he swept overhead, high above the stunted trees that concealed me, had in his claws the entire liver and stomach of a goat. It is a fine sight to see these Eagles striking one after the other in rapid succession. Soaring far above the island, often, I should judge, from a height of at least 1000 feet they come down with nearly closed wings, and with a rushing roar, like that of a cannon-ball, in a perfectly direct line, making an angle of about 60° with the water, which they scarcely seem to reach before they are again mounting with heavy flaps, and with a yard or two of snake hanging *dead* in their talons. One snake I recovered, shooting its captor, less than a minute after it had been seized. It was stone dead (though we all know how tenacious

* Gould, in his grand work on the 'Birds of Australia,' remarks that the great breadth and roundness of its pinions and the shortness of its neck and tail give this Eagle, when floating in circles high in the air, the resemblance of a large butterfly.

of life these reptiles are), and had its head and neck pierced through in several places by the Eagle's cruel claws, its whole skull being completely crushed up."

Messrs. Hume and Ball both allude to the shy disposition of this Eagle. The former says that at the Andamans it is exceedingly difficult to procure; and in writing of it as an inhabitant of Chota Nagpur, Mr. Ball remarks that it is extremely wary and difficult to approach. In Ceylon it is certainly when perched a shier bird than *P. ichthyaetus*; but it will frequently fly close overhead, and then affords an easy shot.

Instances have been likewise known in Ceylon of its having carried off wounded birds. Captain Wade writes me that he saw one in the Yala district take away a fallen Duck; and Mr. Bligh relates to me a similar case in which another of these Eagles pounced on a Stone-Plover (*Esacus recurvirostris*) which had been fired at and had fallen in the surf. The robber turned inland with his booty, and flying over the sportsman's head dropped it, on being fired at, almost at his feet.

Nidification.—In Ceylon this species breeds during the months of December, January, and February. It selects for its eyrie an enormous banyan or other tree with stout limbs and taller than the surrounding forest, and there builds a huge nest, sometimes 5 or 6 feet in diameter, and often, to secure a firm foundation, as many deep. The interior is almost flat, and contains a bed of green leaves, in which the eggs are laid, and with which the bird hurriedly but skilfully covers them on leaving or being frightened from the nest. This lining is removed when the young are hatched, and they repose on the twigs beneath.

One of several eyries which I discovered in the neighbourhood of Trincomalie was visited on two successive years; and on the occasion of my second visit I found that the male bird, whose mate I had robbed him of, had procured another, who was quite at home in her new quarters. The nest was at the top of the junction of an enormous aerial root with the parent limb, and up which my coolie progressed at a great speed: the bird sat very close, not stirring from the nest until the man was up to it; while he was ascending the male brought a huge fish to the nest, but on perceiving the intended robbery, flew off with it, leaving the hen still setting. Both birds flew round the nest, swooping down near it and uttering their loud clanking notes; but they did not, as also on all other occasions in my experience, attempt to molest the man. Even when losing their young these Eagles do not exhibit much courage, although they do not fly off, and calmly settle on a distant tree, as I have seen *Polioaetus ichthyaetus* do. The eggs are nearly always two in number, but sometimes only one, as I, on one occasion, took a single incubated egg from a nest. They are dull white and vary in shape, some being very round, while others are long ovals or pointed at one end; the shell is tolerably rough, and, in general, much stained and soiled. They vary from 3·17 to 2·77 inches in length, by 2·18 to 2·02 in breadth.

On Pigeon Island there is a large nesting-colony of these birds; they breed in the lofty trees growing on the island, as many as thirty or forty nests being placed in close proximity to each other. Their breeding-time here, according to Jerdon, is during the months of December, January, and February, or the same as it is in Ceylon. Concerning the nesting of the White-bellied Sea-Eagle in the Andamans and Nicobars, Mr. Davison writes to Mr. Hume, "I found this bird nesting on Nancowry Island on the 8th of March; the nest was a huge mass of sticks, placed between two great branches of a large tree, at an height of about 80 feet from the ground. . . . I could not climb the tree myself, and I could get no assistance from the Nicobarese; they would not go near the nest; and when I said I would have it taken without their assistance, they earnestly begged me not to touch it, as doing so would be sure to bring fever into the village, and they would all die." This strange idea of the Nicobarese evidently arises from their acquaintance with the incongruous mass of fish-bones, snakes, skeletons, crab-shells, &c. which are always to be found beneath these great eyries, and which are not always of the most odoriferous kind.

Although this species breeds, as a rule, on lofty trees, it alters its habit according to the locality to which it is obliged to confine itself. Mr. Gould, in writing of it as an Australian bird, says, "I could not fail to remark how readily the birds accommodate themselves to the different circumstances in which they are placed; for while on the mainland they invariably construct their large flat nest on a fork of the most lofty trees, on the islands, where not a tree is to be found, it is placed upon the flat surface of a large stone, the materials of which it is formed being twigs and branches of the Barilla, a low shrub which is there plentiful."

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus POLIOAETUS.

Bill not so long nor straight as in *Haliaetus*, but deeper and more powerful in proportion to its size; culmen boldly arched from the cere; festoon slightly pronounced; nostrils oval and exposed; cere moderately advanced. Eyelid devoid of lashes. Wings moderate, rounded, the 4th and 5th quills the longest, the 1st subequal with the 9th. Tail moderately long, considerably exceeding the closed wings, rounded at the tip. Tarsus very stout, its upper third feathered in front, the rest covered with broad rectangular scutæ, the posterior with large irregular scales. Toes stout, protected above by rectangular scales nearly to the base. Claws long, much curved and rounded beneath.

POLIOAETUS ICHTHYAETUS.

(THE BAR-TAILED FISH-EAGLE.)

Falco ichthyaetus, Horsf. Tr. Linn. Soc. xiii. p. 136 (1822); id. Zool. Res. Java, pl. 34 (1824).

Pandion ichthyaetus, Vig. Zool. Journ. i. p. 321 (1824); Horsf. & Moore, Cat. B. Mus. East Ind. Comp. p. 53. no. 65 (1854); Schleg. Vog. Nederl. Ind., Valkv. pp. 13, 62, pl. 5. figs. 1, 2 (1866).

Haliaetus ichthyaetus, Cuv. Règne An. i. p. 327 (1824).

Haliaetus unicolor, Gray & Hardw. Ill. Ind. Zool. i. pl. 19 (1830).

Ichthyaetus horsfieldi, Blyth, J. A. S. B. xi. p. 110 (1842).

Pontoaetus ichthyaetus, Gray, Gen. B. i. p. 17 (1845); Blyth, Cat. B. Mus. A. S. B. no. 121, p. 30 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 101; Kelaart, Prodromus, Cat. p. 115.

Palioaetus ichthyaetus, Kaup, Contr. Orn. 1850, p. 73; Jerd. B. of Ind. i. p. 81 (1862); Blyth, Ibis, 1866, p. 243; Hume, Rough Notes, ii. p. 1 (1870); Holdsworth, P. Z. S. 1872, p. 412; Hume, Nests and Eggs, p. 43 (1873); Sharpe, Cat. Birds, i. p. 452 (1874); Legge, Ibis, 1875, p. 278; Hume, Str. Feath. 1875, vol. iii. p. 28; Legge, ibid. p. 362.

White-tailed Sea-Eagle, *Fishing-Eagle*, Europeans in India; *Tank-Eagle* in Ceylon.

Matchmorol, "Fish-Tyrant," Bengal; *Madhuya*, Hind.; *Jokowuru*, Javanese.

Rajaliya, Sinhalese; *Ala*, Tam. in Ceylon.

Adult male. Length to front of cere 23·0 to 24·0 inches; culmen from cere 1·8; wing 17·0 to 17·5; tail 9·5 to 10·0; tarsus 3·5; mid toe 2·3 to 2·4, claw (straight) 1·2; inner claw (straight) 1·3; height of bill at cere 0·65.

Adult female. Length to front of cere 25·5 to 26·0 inches; culmen from cere 1·8; wing 18·0 to 18·3; tail 10·0; tarsus 3·5; mid toe 2·3 to 2·5. Expanse 58·5.

These measurements are from Ceylon examples.

Iris clear yellow, sometimes tinged with reddish and mottled with brown; bill dark horn, paling to bluish near the cere

and bluish fleshy at gape; cere above leaden, at lower edge bluish; legs and feet fleshy white, with a bluish tinge; claws black.

Entire head, upper part of hind neck, and throat cinereous ashy, the crown and nape shaded with brown; back, rump, scapulars, and wings dark wood-brown, passing on the interscapular region into a paler shade, which blends above into the grey of the neck; in old birds the latter part is especially pale, and sometimes has the feathers edged light; primaries dull black; secondaries blackish brown, the inner webs somewhat cinereous; chest, breast, and upper flanks light wood-brown, blending into the grey of the throat; abdomen, lower flanks, thighs, under tail-coverts, and tail white, terminal portion (from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches) of tail black; lesser under wing-coverts umber-brown. When freshly acquired, the hues of the upper surface are much darker than when the bird is in old-feather, in which state the breast fades considerably, becoming a light chocolate-brown. The chin is whitish in some birds, probably those which have for the first time acquired the adult plumage.

Young. In the bird of the year the iris is hazel-brown; bill and legs much as in the adult.

The nestling is covered with white down.

On becoming fully plumaged at about four months' old, the upper part of the forehead, crown, hind neck, and interscapular region are light chocolate-brown, deepening slightly on the scapulars, back, and wing-coverts; edge of forehead, throat, face, and above the eye, together with the tips and centres of the head and hind-neck feathers, and the tips only of those of the lower part of the neck, buffy white; tips of the back, scapulars, and wing-covert feathers fulvous-grey, passing with a tawny hue into the brown; quills blackish brown, all but the longer primaries and the secondaries tipped with the fulvous hue; the primaries, secondaries, and greater wing-coverts crossed on their inner webs with light bars, paling into whitish at the inner edges; tail brown, tipped with fulvous, paling beneath the coverts into whitish, and mottled, except on the bars, with fulvous; a broad, blackish, terminal band, preceded by a narrow undefined bar of the same, on the central feathers only.

Lower part of fore neck, chest, flanks, and breast more or less pale tan-brown, with shaft-stripes and tips of fulvous-grey, which are usually broadest on the chest; bases of the chest-feathers dark brown; abdomen and thigh-covert feathers white, mottled at the tips and terminal margins with the pale hue of the lower breast; under tail-coverts faintly washed with the same; under surface of tail at its base white, mottled towards the terminal band with grey; lesser under wing-coverts light tawny fulvous; greater series white, barred with black; axillaries pale tawny, marked across the centres of the feathers with brown and white.

At the end of the first year the plumage fades, sometimes to an extraordinary degree, the chest and breast becoming whitish, merely washed about the margins of the feathers with very pale tawny grey; on lifting up the feathers of the chest the brown bases are found in their original state; the upper surface does not undergo such a change, except that the light tipplings, by reason of abrasion, are less conspicuous; the tail, however, becomes considerably paler than in the freshly-plumaged yearling. The adult plumage, as far as I can ascertain, is not put on until after the second moult.

Obs. In my notes on "Ceylonese Ornithology and Oology" (*loc. cit.*) I pointed out that Ceylon examples of this Fish-Eagle were, as a constant rule, smaller than those from other places. An examination of specimens in the National collection from the Malay region, and a perusal of the dimensions given of late in various articles in 'Stray Feathers,' confirms the opinion that our bird constitutes a small race of *P. ichthyaetus* of Java. This latter is not invariably a larger bird than the Ceylonese, as I have examined a specimen from Sumatra with a wing of 17.7 inches, and that of another collected by Mr. Armstrong in the Rangoon district measures only 18.2; on the other hand the type specimen from Java in the British Museum measures 20.0, and an immature bird, presumably a female, so young that it could not be sexed, shot by Mr. Oates in Burmah, had the wing as large as 19.0, both of which latter dimensions I have never known attained to in the Ceylon bird. The Javan bird has a less cinereous brown hue, both above and beneath, than several that I have examined from other places; but this is a worthless character, as the brown tints are variable in the Ceylon bird, depending entirely on the age of the feather.

As regards the position of this Eagle among its congeners, I have not placed it with the Ospreys, as Mr. Sharpe has done in his 'Catalogue,' but kept it in its hitherto accepted position among the Sea-Eagles. It differs structurally from the Osprey in having two foramina in the sternum, the posterior edge of which is devoid of the tolerably deep notches existing in that of *Pandion*, and in not having the keel, which is also much shallower, prolonged to the edge; the sternum is likewise weak, narrow, and more angulated than in the Osprey; the feathers do not want the accessory plumule, and the bony protection or brow above the eye, which does not exist in the Osprey, is present in this genus as in all other Raptors. In the structure of the foot, the outer toe of which is partially reversible, and also in the rounded claws, *Polioaetus* has some affinities with *Pandion*; but it differs again in its much shorter wings and the habits consequent on this structure.

Distribution.—The Fish-Eagle is chiefly an inhabitant of the northern half of the island, frequenting, on the east, the numerous land-locked bays, estuaries, salt lagoons, and large rivers which intersect the coast-line from Elephant Pass to Batticaloa, and on the west, but not so abundantly, similar localities as far south as Chilaw. In such situations as the Jaffna lagoon at its upper end, portions of the Mullaittivu and Kokelai lakes, the Peria Kerretje and other large salt lagoons, and the mouths of the Mahawelliganga it is numerous. It is found throughout the whole of the interior of this part of the island, haunting the large tanks at Kanthelai, Minery, Topare, Anaradjapura, and likewise most of the smaller sheets of water, the village tanks of not more than a few acres having generally each their pair of these noisy birds. In the Eastern Province it is found on the Rugam, Ambaré, and other tanks, and further south occurs, but not so numerously, at the river-mouths as far down as Hambantota. On the western side of the island, to the southward of Chilaw, I have seen it at the head of the Bolgodde Lake, and it is doubtless an inhabitant of the large sheet of water near Amblangoda.

As regards the mainland, the Bar-tailed Fish-Eagle has chiefly an eastern distribution. I find no record of its being found on the western coast; and though so common in Ceylon, it appears to be almost unknown in Southern India. Dr. Jerdon remarks, in the 'Birds of India,' "I never observed it myself south of Nerbudda. I saw it frequently in the Saugor territories and in Bengal. It extends to Burmah and the Malay countries." Concerning its *locale* in the north of India, Mr. Hume writes, in 'Nests and Eggs,' "I have myself never seen a specimen of the Bar-tailed Fishing-Eagle from any locality westward of Nepal, though I have it from Sikhim and Rangoon; it is the next (*P. plumbeus*) and not the present species which is so common along the bases of the Himalayas, from Kumaon to Afghanistan." In North-eastern Cachar it is rather rare, but occurs, both there and in the Sikhim Terai, in conjunction with *P. plumbeus*. In the Tenasserim provinces it appears likewise to be uncommon, a single locality for it (Paybounk) being given in the "First List" of the birds of that region ('Stray Feathers,' 1874). It inhabits the coasts of the Malay peninsula, but does not appear to take the Andaman and Nicobar Islands into its range, as since its supposed occurrence there chronicled by Captain Beavan in 'The Ibis' for 1867, on Col. Tytler's authority, no specimens have ever been met with. In Java, the "Jokowuru" is, according to Horsfield, by no means generally distributed, the only two localities at which this naturalist met with it being "on the banks of the river Kediri, in the eastern district, and the other near the middle of the island, on the hills of Prowoto." It has been procured in Sumatra, Borneo, and Celebes, and probably occurs in all the intermediate islands.

Habits.—This fine Eagle frequents the borders of wooded estuaries and salt lagoons, the narrow mouths of rivers which are lined with forest, and the shores of inland lakes and tanks. The open coast it rather shuns, leaving the sway over that to its nobler ally the Sea-Eagle. The wild and secluded tanks of the interior are, however, best suited to the habits of this inveterate fish-eater. At these solitary reservoirs, many of them the persevering work of Lanka's ancient kings, the Fish-Eagle is to be found, sitting motionless on the limbs of the noble trees which line the retaining bunds, every now and then calling to its mate with its singular, far-resounding shout. While the lazy and uncouth crocodile sleeps on the bank beneath, the Eagle overhead eagerly watches its opportunity, with eye intent on some lotus-covered nook, above which hum, in the morning sun, myriads of insects, luring the finny tribes to the surface. On getting sight of a rising fish, the watchful bird launches itself down with a rapid swoop, not pouncing as an Osprey, but raking up the prey with its talons, like the Sea-Eagle. In May and June, when the village tanks of the Vanni are fast drying up under the influence of the parching south-west wind, and one muddy pool, alive with half-dead fish and frogs, is all that is left of the broad December lake, the "Fish-Hawk," in company with a host of Cormorants, Kingfishers, Egrets, and Pond-Herons, spends a prosperous time, and becomes so fat and lazy, that I have seen one fired at with a rifle, from some little distance, refuse to leave his post. In spite of its ample wings, it seldom soars or takes long flights, contenting itself with frequent peregrinations round the tank or lake on which it has taken up its permanent quarters; but when chased or harassed by the Sea-Eagle, as I have seen it by a pair of these birds which were breeding at Minery, it exhibits considerable adroitness on the wing. It never stoops on its prey with the velocity of either the Osprey or the Sea-Eagle, but glides leisurely over it with outstretched legs. It perches with a very erect pose, and usually, when not watching for fish, seats itself on the top of a tree. Its singular note is one of the characteristic sounds of the forest-begirt tanks in the north of Ceylon. It is a deep, resounding call or "shout," louder than any bird-note in Ceylon, and when heard at intervals

during the night, breaks in with startling effect on the stillness of the forest. It is repeated three or four times, and somewhat resembles the monosyllables *koow*, *koow*. I have not noticed this peculiar cry referred to by Indian writers; and as regards the Javan bird, Horsfield says, in his 'Zoological Researches,' that its cry is like that of the Osprey. The same author confirms my experience of its timid nature, relating that a male bird "on being caught in a snare permitted itself to be seized by the native without making any resistance. When brought to me lying in the arms of the native, apparently conscious of its situation, and without making use of its claws or bill, or exerting any efforts to extricate itself, it suffered itself to be handled and examined very patiently."

In confinement this Eagle thrives well, and is a very docile and quaint bird in its habits. A young one which I reared soon learnt to recognize the person who fed it, and would swallow fish 6 inches in length as fast as they were thrown to it, quickly filling out its crop, and working it, by a muscular effort, to and fro, so as to pass the food into its stomach. It was kept in the same aviary as the Crested Eagle now in the Zoological Gardens, and would, long after it was fully plumaged, sidle up to it, crouch down, chuckling with a low note, as it would do to its parent. As it grew old, it became the noisiest bird I ever had any thing to do with, continually "cawing" for its food, notwithstanding that it was plied with raw meat, lizards, and fish to an alarming extent, and was almost as ravenous a feeder as a Pelican Ibis, if any bird *could* be found to equal the latter in point of appetite. Up to the age of six months, when he, to my great regret, fell a victim to an accident, he very seldom gave vent to the loud call of the wild bird, his note in confinement being a harsh clanking cry.

Nidification.—This Eagle breeds in December and January, building a huge nest of sticks in large trees near the water's edge. If the structure is fixed in a deep fork or awkward situation on the limbs of the tree, the foundation is heaped up until sufficient breadth is attained for the platform, and the result is a fabric of enormous size. I have never obtained the eggs; but a nest which I visited in 1873 contained one nestling, the tame bird above described, and it may therefore be premised that the bird lays two eggs, the other, in this instance, having been addled. The interior of this nest, which was entirely made of good-sized sticks, was flat, and contained no lining or preparation for the repose of the eaglet, which, on my appearing at the edge of its domicile, stood up and placed itself in an attitude of defence, its cowardly parents flying off and seating themselves on distant trees. As to the eggs they are, in all probability, white and unspotted, and about the size of those of *Pol. plumbeus*, its Himalayan congener, which vary, according to Mr. Hume, "from 2·72 to 2·8 inches in length, and from 2·1 to 2·15 in breadth."

I have never seen more than one nest belonging to this Eagle in the same locality; but occasionally it appears they congregate together in the same manner that the Grey-backed Sea-Eagle does—an abnormal habit, arising no doubt from the force of circumstances. Jerdon mentions having found a whole colony of the nests of this Eagle in a single tree on the skirts of a village near the Ganges.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus HALIASTUR.

Bill stout, rather lengthened, the direction of the cere straight, the culmen descending from its edge; festoon prominent. Nostrils oval and oblique, exposed. Eyelid furnished with short lashes. Wings long, reaching nearly to the tip of the tail, the 4th quill the longest. Tail short and broad at base, rounded at the tip. Tarsus short, feathered in front slightly below the knee, moderately stout, protected in front by rectangular transverse scales, behind with broad pentagonal scutæ. Toes rather short, the outer considerably longer than the inner, the whole covered with transverse scales. Claws shortish, moderately curved and trenchant beneath.

HALIASTUR INDUS.

(THE BRAHMINY KITE.)

Falco indus, Bodd. Tabl. Pl. Enl. 25 (1783).

Falco pondicerianus, Gm. Syst. Nat. i. p. 265 (1788).

Haliaetus ponticerianus, Cuv. Règne An. i. p. 316 (1817).

Milvus pondicerianus, Jerd. Madr. Journ. x. p. 72 (1839).

Haliastur indus, Gray, Gen. B. i. p. 18 (1845); Blyth, Cat. B. Mus. A. S. B. p. 31; Kelaart, Prodromus, Cat. p. 114 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 101; Horsf. and Moore, Cat. B. Mus. E. I. Co. i. p. 57 (1854); Jerdon, B. of Ind. i. p. 101; Hume, Rough Notes, ii. p. 316 (1870); Holdsworth, P. Z. S. 1872, p. 414; Hume, Nests and Eggs, p. 51 (1873); Sharpe, Cat. Birds, i. p. 313 (1874); Legge, Ibis, 1874, p. 10, et 1875, p. 279.

Haliaetus indus, Schl. Mus. P.-B. *Aquilæ*, p. 19 (1862).

L'Aigle de Pondichery, Briss. Orn. i. p. 450, pl. 35 (1760).

Aigle des Grandes Indes, Buff. Pl. Enl. i. pl. 416 (1770).

Shiva's Kite, Kelaart, Prodromus; *Pondicherry Eagle*, Lath.; *Maroon-backed Kite*, Jerdon, B. of Ind.

Bahmani-chil, Hind.; *Ru-Mubarik*, Mussulmen; *Sunker-chil*, lit. "Shiva's Kite;" *Dhobia-chil*, lit. "Washerman's Kite," Beng.; *Khemankari*, Sanscrit; *Ratta ookab*, Sindh; *Garud-alawa*, Tel.; *Shemberrid*, Yerklees (*apud* Jerdon). *Lang-bondol*, Sumatra; *Uhung*, Java (Horsf. & Moore, Cat.).

Rajaliya, Sinhalese; *Chem Prāndu*, Tam.; *Brimalgumoitu*, Portuguese in Ceylon (*apud* Layard).

Adult male. Length to front of cere 18.0 to 18.5 inches; culmen from cere 1.1; wing 14.5 to 15.0; tail 8.0 to 9.5; tarsus 2.0 to 2.25; mid toe 1.2, claw (straight) 0.7; height of bill at cere 0.5.

Adult female. Slightly larger only. Length to front of cere about 19.0 inches; culmen from cere 1.2; wing 15.0 to 15.3.

Iris brown and mottled in some with yellow; cere yellowish; bill bluish horn, palest at the base beneath; legs and feet greenish yellow.

Plumage above, from the forehead to the lower part of the hind neck, and beneath down to the abdomen, including the flanks, white, each feather with a narrow, blackish, mesial stripe, which includes a fine portion of the web as well as the shaft; in mature birds these are as broad on the head as on the hind neck, but in very old examples are confined to the shaft only; rest of the plumage, with the exception of the longer primaries, greater series of under wing-coverts, and lower surface of tail maroon-red, darkest on the back, lesser and under wing-coverts, and palest on the abdomen, thighs, and under tail-coverts; the shafts, except of the tail, black, these latter fulvous-white; tip of tail the same; longer primaries black, their inner webs rufous from the base to the notch, the under surface rufescent, paling to whitish at the base; primary wing-coverts dark at their outer edges, the inner webs, as well as those of the secondary feathers, crossed with narrow, widely-separated bars of blackish.

Obs. In some examples the black stripes are conspicuously developed on the red feathers of the abdomen, while in others the shafts alone are dark. I have noticed this characteristic chiefly in Bengal examples, which, as a rule, I think, have the stripes on the white plumage bolder than in Ceylonese birds, although they coincide exactly in the hue of the maroon parts. The Ceylonese bird, as regards the white striping (the variation in which has been considered by Mr. Gurney of sufficient value to justify the separation into species of the two Malayan races, *H. intermedius* and *H. girrenera*), comes between the Bengal and the Malaccan bird. The latter (*H. intermedius*), besides having the shaft-stripes reduced to very narrow lines, is of a redder or paler hue than *H. indus*, and appears to be a well-marked race or subspecies.

Young. The nestling has the iris dark brown, the bill and cere brownish, the latter and the loreal skin tinged with green; legs and feet greenish.

Body at first covered with white down; when fully plumaged, the forehead, chin, and lower part of cheeks are dull whitish, the ear-coverts brownish, and the head and hind neck fulvous tawny overcome with brown on the lower part of the latter, the centres of the feathers light, and the edges tawny, imparting a streaked appearance; the brown feathers of the hind neck with rufescent central streaks, diminishing to terminal spots on the interscapular region, which, with the back, scapulars, wing-coverts, and secondaries, is dark brown, paling much on the upper tail-coverts; the scapulars margined terminally with rufous; quills and tail blackish brown; inner edges of primaries white; greater wing-coverts with pale inner margins and conspicuously black shafts; throat and breast isabelline brown, with tawny shaft-stripes, lower parts with the thigh-coverts tawny, with dark shaft-stripes on the thighs. This plumage at the end of the first year, as ascertained by observation of a caged bird, becomes paler throughout.

After the first moult the head and hind neck are rufous, paling at the tips, and with blackish shaft-stripes, the back, scapulars, and wing-coverts a sober brown, with pale terminal margins, the greater wing-coverts with much white on the concealed portions of the inner webs, the upper tail-coverts with broad pale margins, shorter primaries with rufous-brown, outer webs and the inner webs rufescent white at the base; ear-coverts paler than in the first plumage; under surface pale brownish, with light terminal streaks, and the shafts dark in the brown portion of the feather; the abdomen paler than the breast; under tail-coverts and lesser under wing-coverts rufous, median under wing-coverts brown edged pale, greater series pale as in the adult.

After the second moult, the back, wings, and tail assume their rufous or maroon colouring, the head and hind neck are whitish, washed here and there with rufous, and with black shaft-stripes; the face and throat are white, gradually darkening into rufescent fulvous on the chest and upper breast, on which there is again a gradual change to the maroon of the lower parts, the shafts of all the feathers being black. After this stage, the head, hind neck, and breast get whiter by degrees, throwing off all trace of the rufous hue, and the shaft-stripes assume their normal character, covering a portion of the web at the sides of the shaft, which alone is dark in the intermediate stages.

Distribution.—The Brahminy Kite is a well-known and very common bird in Ceylon, being more or less abundant round the whole coast of the island, and occurring about the large tanks and inland waters of the interior. On the seaboard, however, it is local in its choice of habitat, as an instance of which feature I may cite its abundance in Galle harbour, and almost total absence from the equally inviting roadstead at Colombo. It is sometimes seen about the mouth of the Kelani, and in the marshes at the back of Borella, and it occurs sparingly at Negombo and more commonly at Bolgodde; but I never once saw it about the shipping in the Colombo Roads. At Chilaw it commences to be commoner, and continues to increase in numbers at Puttalam and northwards to the Manaar district, where, as well as throughout the whole of the northern maritime region, it is very numerous. At Trincomalie it is abundant, and is a common bird down the coast to the Batticaloa Lake. South of this and in the Hambantota district it is scarcer. I have met with it at Kanthelai, Minery,

and other tanks in the northern interior, and I believe it also frequents the Bintenne Lake. In the south-western district it is found about the Sinhalese villages on the Gindurah as far up as the "Haycock" hill; and I have known it to breed as far inland as Oodogamma. I am not aware of its ever having been seen on the upland of Dumbara, or anywhere else in the Kandyan hill-region, although there is no reason why it should not follow as a straggler the course of the Mahawelliganga from the low country to the north of Bintenne, up to the neighbourhood of the highland capital.

The Brahminy Kite is found throughout India on the sea-coast and on all large rivers and jheels, extending eastwards to Burmah, and as far south as the lower parts of the province of Tenasserim, where it is, however, not very common. In the south it is abundant, and at the island of Ramisserum I have always found numbers of this bird. Jerdon remarks that it is rare in the plains of India and in the Deccan, in which latter region Mr. Fairbank, in 'Stray Feathers,' records it as uncommon. In the north-western portion of the empire, Mr. Hume speaks of it as follows ('Stray Feathers,' 1875, p. 448):—"Common enough in Sindh and about the coasts of Cutch and Kattiawar, but almost (if not quite) unknown in the dry riverless regions of Rajpootana. Adam never obtained it about Sambhur, and at Ajmere I only once remember seeing it. Dr. King does not appear to have observed it in any part of Jodhpoor." In Chota Nagpur, Mr. Ball remarks that it is found "near the larger rivers and jheels, but nowhere in abundance." In Lower Bengal it is of course plentiful. Further eastward, Mr. Inglis records it as common throughout the year in Eastern Cachar; and in Burmah Mr. Oates writes that it "occurs in immense numbers in all the tidal creeks of the Pegu plains."

Habits.—In Ceylon the Brahminy Kite is especially a denizen of seaport towns and large villages at the mouths of rivers and salt lakes; it frequents, likewise, land-locked bays, estuaries, and lagoons; but in all of such localities seems to prefer the vicinity of human habitations, probably on account of its garbage-eating habits, to the solitude of the surrounding plains. It collects in great numbers among shipping, flying round the vessels on the look-out for garbage of all sorts, soaring in high circles above their masts, and even settling on the rigging, where it keeps a sharp eye on the galley about the dinner-hour, and is ready to pounce immediately on any thing that may be thrown overboard.

It picks up its food with a graceful swoop, and very frequently devours it while in full flight, proceeding about this operation in the most leisurely manner possible; it may be seen bringing forward its talons with the food it has seized beneath the breast, and with a combined backward and upward pull from the legs and shoulders respectively, fragments are torn off with but little exertion. I have observed it swoop down and pick up a Lizard (*Calotes*) basking on the topmost twig of a low tree, this favourite prey among eastern Hawks no doubt forming a considerable portion of its sustenance. It will capture fish in shallow pools, and is very fond of the small crabs frequenting the foreshores of tidal rivers; it may be often seen devouring its food on the ground or on a large rock or the bank of a paddy-field. It is a tame bird, and exhibits but little fear of man or a gun, sometimes making off with a Snipe which has fallen at some little distance from the sportsman. At Trincomalie it was always a morning attendant at the drawing of the sea-nets; and was just as agile in snapping up any outside fish as its more numerous companions the Crows, and when not particularly successful in its foraging, would pursue a Crow and rob it of its well-earned "sardine." Layard says that he has known it seize a fowl; but, as he remarks, this must be a rare occurrence. Jerdon has seen it "questing over woods and catching insects, especially large *Cicadæ*." It is continually on the wing, and has an easy, buoyant, and powerful flight, being much in the habit of soaring up to a great height, and then launching itself off for a long distance with motionless wings. Its chief characteristic as regards locomotion is its habit and power of sailing steadily up against the wind, with scarcely a movement of its frame, except a twisting of its head from side to side, as it carefully scans the ground beneath and awaits its chance of darting down on some coveted morsel. I have on other occasions witnessed it exhibit considerable skill in catching up a lizard in the air, which it had let fall from its talons while flying off with it. Its favourite note is a weak squealing cry, which it constantly utters on the wing, or while perched on some building or tree-top. In Ceylon it sits much on the fronds of cocoanut-trees in the vicinity of native bazaars, and at night takes itself off in flocks to roost in some favourite spot in the jungle. Numbers of these birds frequented the town of Trincomalie, haunting the harbour and the sea-beaches of Dutch and Back Bays, where they subsisted chiefly on the fish picked up from

about the fishermen's nets; about 4 or 5 p.m. they commenced to fly away one after the other to the north, and, passing over the "Salt Lake," retired for the night to the forest between there and Peria Kulam.

Altogether the habits of this bird are as singular as they are interesting, and tend to place it more among the Kites than the true Sea-Eagles. Jerdon very aptly remarks, it may be considered either an aberrant form of *Haliaetus* leading to the Kites, or an aberrant Kite leading to the Sea-Eagles: and this is the position claimed for it in Mr. Bowdler Sharpe's 'Catalogue.'

Nidification.—This species breeds in Ceylon in February and March, nesting in trees on the shores of salt lagoons or paddy-fields. All the nests I have seen have been rather bulky structures, about the size of that of *Herodias alba*, made of tolerably large sticks, and placed in a top branch of moderately-sized trees. The number of eggs is usually two; but mention is made in Mr. Hume's book on Indian oology of four in one instance. The ground-colour is dull white, and the markings, which are scanty, consist of faded reddish or reddish-grey dots, sometimes scattered over the surface, and occasionally confined to the obtuse end; the spottings in some are mixed with small streak-shaped blots; and one egg, taken by Mr. MacVicar in the Western Province, has the appearance of being "dusted" all over with minute pale reddish specks. Five Ceylonese specimens varied in length from 2.04 to 1.88 inch, and in breadth from 1.7 to 1.54.

Layard states that this Kite makes several false nests, and that the male occupies one of them while the female is incubating her eggs near at hand. The chick or nestling has a querulous twittering cry. Concerning its nidification in India, Mr. Hume writes, "It almost invariably makes its nest in the neighbourhood of water, building a rather large loose stick-structure, scarcely if at all distinguishable from those of the Common Kite (*M. govinda*), high up in some large mango, tamarind, or peepul tree. The nest, which is from 18 inches to 2 feet in diameter, and from 3 to 5 inches in depth, with a rather considerable depression internally, is sometimes perfectly unlined, at other times has a few green leaves laid under the eggs, as in an Eagle's nest; but most commonly is more or less lined, or has the inner part of the nest intermingled with pieces of rag, wool, human hair, and the like."

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus MILVUS.

Bill longer and with the tip more hooked than in *Haliastur*; festoon less prominent, the cere more advanced at the sides. Nostrils moderately large, oval, and oblique. Wings very long and pointed; the 3rd and 4th quills the longest, and reaching nearly to the tip of the tail. Tail long and forked. Tarsus short, the front and sides plumed considerably below the knee, the rest covered in front with transverse scutæ and behind with hexagonal scales. Toes longer than in *Haliastur*. Claws similar.

MILVUS GOVINDA.

(THE INDIAN PARIAN-KITE.)

Milvus govinda, Sykes, P. Z. S. 1832, p. 81; Kelaart, Prodrömus, Cat. p. 115 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 103; Schlegel, Mus. P.-B. *Milvi*, p. 2 (1862); Gould, B. of Asia, part iv.; Jerd. B. of Ind. i. p. 104 (1862); Blyth, Ibis, 1866, p. 248; Hume, Rough Notes, ii. p. 320 (1870); Holdsworth, P. Z. S. 1872, p. 414; Hume, Nests and Eggs, p. 52 (1873); Sharpe, Cat. Birds, i. p. 325; Legge, Ibis, 1874, p. 10; Hume, Str. Feath. 1875, p. 229, footnote.

Haliaetus lineatus, Gray & Hardw. Ill. Ind. Zool. i. pl. 18 (young).

Milvus cheela, Jerd. Madr. Journ. x. p. 71 (1839).

Milvus ater, Blyth, Cat. B. Mus. A. S. B. p. 31 (1849).

Common Kite, *Black Kite*, Jaffna Europeans; *The Cheela Kite*, Kelaart's Prodrömus.

Chil, Hind.; *Malla Gedda*, Tel.; *Paria Prāndu* (apud Jerdon).

Rajaliya, Sinhalese; *Kalu-Prāndu*, *Paria Prāndu*, Tam. in Ceylon.

Adult female. Length to front of cere 22.0 to 22.5 inches; culmen from cere 1.2; wing 17.5 to 18.0; tail 10.0 to 11.0; tarsus 2.0 to 2.2; middle toe 1.5, its claw (straight) 0.7; height of bill at cere 0.5; expanse 55.5 (of an example with a wing of 18.0).

Adult male. Length to front of cere 21.0 to 22.0 inches; wing 16.0 to 17.3; tarsus 2.0 to 2.2.

Iris light hazel-brown, sometimes tawny, with brown radii and mottlings between them; cere pale greenish, dusky above; bill blackish, gape and base of under mandible bluish; legs and feet whitish green, greenish yellow, or pale yellowish; claws black.

Head and hind neck brownish tawny, the feathers slightly pale-edged, and each with a fine dark shaft-stripe; on the hind neck the stripes expand slightly, and the ground-colour darkens into the glossy wood-brown of the back, rump, scapulars, and lesser wing-coverts; upper tail-coverts paler than the back, and the margins of the feathers of the foregoing parts slightly paler than the rest, those of the least coverts tawny; median wing-coverts lighter than the rest, the webs paling off from the shaft to fulvescent greyish at the edges; primary-coverts, secondaries, and shorter primaries dark brown, the latter somewhat paler on the outer webs; longer primaries blackish brown, the inner webs paling from the notch to the base, and the colour broken up with white interspaces and mottlings; inner secondaries and adjacent tertials crossed with narrow blackish-brown bars, the interspaces being ashen, paling to white on the shorter and innermost tertials; tail ashen brown, with a tawny hue near the shafts of the feathers, and the laterals paling to whitish at the bases of the inner webs, the whole crossed with narrow bars of

dark brown, more or less incomplete towards the margins; tips of all but the two outer feathers whitish; a line of blackish above the lores, and over the ears a dark brown patch; face greyish with the shafts dark; beneath brown, paling to tawny rufous from the lower breast to the under tail-coverts; the centres of the feathers dark brown and the shafts blackish, the web adjacent to the mesial stripes being somewhat paler than the margin; margins of the throat-feathers fulvous, and the basal portions of the webs whitish; on the belly and under tail-coverts the mesial stripes are wanting, the shafts alone being dark; least under wing-coverts deep tawny, the feathers dark-centred; greater series blackish brown with tawny edges; primary under wing-coverts ashen-brown with dark softened bands; basal portion of the 2nd and 3rd quills beneath more or less whitish, the amount of white varying much in individuals, some being quite as dark as *M. affinis*.

Young. In the first, or nestling plumage, the head, back, rump, and wing-coverts are dark brown with a purplish gloss, the feathers of the head and hind neck with terminal whitish-buff "points" or streaks, surrounding a shaft-stripe darker than the rest of the feather; those of the back and rump with terminal margins of a slightly more rufous hue, the wing-coverts and tertials with much deeper tips of fulvous, passing with a rusty tint into the brown, and surrounding a dark shaft-stripe; primaries and their coverts blackish brown, tipped with fulvous, slightly on the longer primaries, and deeply on the rest; the inner webs of the quills mottled with dusky greyish; tail obscure ashen-brown, tipped with fulvous and crossed with indistinct bars (as in the adult) of darker brown.

Loral streak and postorbital patch darker, and the latter more extensive than in the adult; throat and lower part of cheeks fulvous, with narrow shaft-stripes of brown; fore neck, chest, breast, and flanks brown, the centres of the feathers rufous, enclosing pointed shaft-stripes of blackish brown; on the lower parts the brown hue pales into brownish fulvous, and the shaft-stripes disappear; tibial plumes and under tail-coverts more rufous still; under wing-coverts dark chocolate-brown tipped with fulvous, the primary-coverts ashen-brown with the outer webs whitish, as is also the edge of the wing; basal portion of primaries beneath scarcely showing any white in some birds, and in others even more than in old birds.

In the following season the terminal margins throughout the upper surface are less conspicuous, and those of the back- and scapular feathers less rufous, the margins of the head- and hindneck-feathers, however, are often more fulvescent, and the dark stripes on the latter part less conspicuous than in the nestling; the tips of the secondaries are likewise less in extent; on the under surface the throat becomes more "lined," the streaks on the chest and upper breast diminish, and their pale borders contrast less forcibly with them, while the ground-colour of these parts is browner than in the youngest stage; the amount of white at the base of the quills beneath varies, but it is usually more extensive during this period.

When not fully adult, the signs of nonage show themselves in the pale tips of the back, scapulars, and tertials, the softened and less intense shaft-lines of the head and hind neck, and the pale borders of the dark chest-striae; the markings of the throat are variable at this stage, the shaft-lines being marked in some and faint in others, while the ground-colour is at times conspicuously rufous; the quills are quite untipped in these birds, and the lower parts more rufous than in adults.

Obs. The difference of opinion among some ornithologists as to what Kites in India should be classed as *M. govinda* and what as *M. affinis* makes it somewhat difficult to define what the Ceylon birds really are, as they present some points of dissimilarity to the types of both these species. If typical *M. affinis* be represented by the small rufous-plumaged Kite inhabiting the east coast of Australia and the Malay Archipelago, and *M. govinda* by the ordinary brown-plumaged bird of the plains of India, having a certain amount of white (which, however, is a variable and uncertain characteristic in Ceylon birds) at the base of the primaries beneath, then the Ceylon Kite has more affinity with the latter than with the former.

From *M. affinis* it differs, as an adult bird, in the less rufous coloration of the head, hind neck, and lesser wing-coverts, and in youth in the less-rufescent character of the upper-surface tippings, a Macassar example being taken for comparison. It is likewise a larger bird, the wings of six examples of *M. affinis* measuring as follows—(Sydney) 15·8, (Australia) 15·0, (Australia) 15·2, (Timor) 16·5, (Macassar) 16·6, (Timor) 16·5. As regards the pale markings of the under wing, adults of *M. affinis* are on the whole darker than Ceylon birds, which, though quite as dark in the young stage, are variable when mature. From the type of *M. govinda* in the India Museum, and similar examples in the British and Norwich Museums, the insular bird differs in the more rufous edgings of the head- and hindneck-feathers, the paler median wing-coverts, more cinereous tail, more conspicuous striation of the upper part of the throat, more ashy hue of the dark chest-stripes, and more fulvous colour of the abdomen and under tail-coverts; but though these differences are numerous, they are less appreciable than are those in the case of the Australasian bird. The Ceylon *Milvus* is also a somewhat smaller bird than the Indian *M. govinda*, Sykes's type, a female measuring 18·5 inches in the wing, and others I have examined 18·0, 17·8, 17·8 and 17·4, while Mr. Huime gives the wing in five females as from 18·25 to 19·10.

In several examples of the young of Indian *M. govinda* I have observed that there is more whitish at the base of primaries than in adults; some juvenile Ceylonese examples have scarcely any, while others have more white than old birds; so that I incline to the belief that this character in the medium-sized Kite is entirely worthless.

In referring to the species *M. govinda*, and speaking of its type in the India Museum, I select the example of the medium-sized Indian Kite, which, I believe, Sykes's description relates to, and which has, on the bottom of the pedestal, the name *govinda* written in pencil by Dr. Horsfield. Sykes's description is too short to identify with certainty the specimen which it refers to; but the smaller bird agrees better with it than with the young example of *M. melanotis* mentioned by Mr. Brooks ('Stray Feathers,' 1876, p. 272). Then there is, in favour of the smaller bird being the type, the indisputable evidence of the habits and locality of the bird referred to by Sykes. He says it is the Common Kite of the Deccan, and is "constantly soaring in the air in circles, watching an opportunity to dart upon a chicken, upon refuse matter thrown from the cook-room, and occasionally even having the hardihood to stoop at a dish of meat carrying from the cook-room to the house." This is not the habit of the larger Kite, which, according to most Indian observers, is a wary bird, and is furthermore not found in the district dealt with by Sykes. Mr. Hume, who has, I conclude, the largest series of Kites of any one in India, says, "I have examined more than 30 specimens of Kites from Bombay, Matteran, Sholapoor, Sattara, and Poona, and I never found one *M. major* among them; nay, when at Bombay and Poona, I specially noticed the Kites, and, while I thought I recognized some *M. affinis*, I can positively affirm there were no *M. major*. Everywhere in the plains *M. major* is a bird of the jungle, very rarely approaching towns or even villages, and living more on frogs, locusts, &c. than on offal." With regard to the measurements given by Sykes, ornithologists so far back as thirty or forty years ago rarely measured birds in the flesh; and I agree with Mr. Hume that Sykes's bird must have been measured from the skin. The tail, which is 11 inches, is decidedly that of the medium-sized bird, and corresponds in size with that of Ceylonese examples.

Distribution.—The Pariah Kite of Ceylon has a somewhat local habitat, being almost entirely confined to the northern half of the island. Its headquarters are the Jaffna peninsula and the west coast of the Northern Province, as far south as Manaar. It is, singularly enough, notwithstanding its limited range, subject to a seasonal movement from the east coast to the west during the south-west monsoon. Although tolerably common from the peninsula down to Trincomalie, from October until March, scarcely a bird is to be seen in that quarter during the opposite season. I am likewise informed by my friend Mr. W. Murray, of the Ceylon Civil Service, who has made large collections of birds in the Jaffna district, that its numbers are greatly decreased during the same time of the year—a circumstance which may be explained by its retiring into the jungle to breed, and also by its undertaking a partial migration to the southern coasts of India. In the island of Manaar and in the adjoining district of Mantotte it is plentiful, Mr. Holdsworth recording it as very common at Aripo; to the southward of the latter place it occurs in less numbers, taking in the island of Karativoe into its range, down the coast to Puttalam, at which place it is again tolerably numerous in the cool season. South of this it is rare, occurring as far as Madampe and perhaps to Negombo, below which I have never observed it.

In Ceylon it is exclusively a sea-coast bird, except in the very north of the Vanni, where it may now and then be seen about the villages of the interior. I have no record of its occurrence south of Batticaloa, on the east side of the island. Nor does it ascend into the hills as it does in the Nilghiris and Himalayas.

In India this Kite is almost everywhere abundant. It is found alike at seaport and inland towns; and most villages even have their attendant flock, who act the part of scavengers in quickly disposing of every thing which it is possible for a bird to digest. In the south it inhabits the Nilghiris, in which hills Mr. Davison says it is very common, ascending to their summits, and often roosting with *Haliastur indus*. In the Travancore hills, likewise, Mr. Bourdillon writes that the Pariah Kite occurs in numbers in the hot weather; and it is to be presumed that the present species is intended, as the larger bird (*M. melanotis*) is not found in the extreme south. Sykes, who first discriminated the species, says it is the common Kite of the Deccan, while at Bombay and up the coast to Sindh, as well as throughout the whole region of Mount Aboo and Northern Guzerat, and in the Kandhala district, it is recorded by various writers in 'Stray Feathers' as very common. It inhabits the southern slopes of the Himalayas, up which it ascends to an elevation of 6000 or 7000 feet. It has been procured by Mr. Ball as far west as in the Suliman Hills, which form the western boundary of the Punjab. The same writer observes that it is common at Chota Nagpur, and that specimens from the jungle are often intensely dark. In Kashgar Dr. Scully obtained nothing but the large bird, although the late Dr. Stoliczka

mentions seeing what appeared to be true *M. govinda* in the hills between Yanjihissar and Sirikul; this, I am inclined to think, was a wrong identification. In the plains of India and at Calcutta it abounds; but from Burmah Mr. Hume has only received what he considers to be the rufous (Australian) species, *M. affinis*, which inhabits the Malay peninsula, the Archipelago, and the eastern coasts of Australia. From the Andamans *M. govinda* appears to be entirely absent; and doubtless, if a Kite is procured from the islands of the Bay of Bengal, it will be the Malayan bird, which, as I have just mentioned, inhabits the peninsula. At the Laccadives, Mr. Hume mentions that a Kite not uncommonly occurs, which must be either *govinda* or *affinis*; and as the former species is represented in Ceylon, it is doubtless the same bird which affects these islands.

Habits.—This Kite, in the north of Ceylon, as it does in India, plays the part of an extremely useful scavenger. There, as in the districts on the mainland frequented by it, it resorts to villages and towns, more particularly those situated on the coast, and, collecting in large flocks, performs the office of devouring all the offal, refuse of human food, thrown out of the doors of native houses, garbage, and decaying organic remains which it can possibly get hold of in the course of the day's peregrinations. At the hauling-in of the morning seine net it is also a constant and regular attendant, disputing with the usual crowd of "Kakas" for the possession of stray fish and crabs rejected by the fishermen. In the town of Jaffna, where it is exceedingly abundant and extremely useful in a sanitary point of view, it resorts in scores, nay, hundreds at times, to the grand old banyan tree upon the fort-ramparts, roosting in it at nights, and perching on its outspreading branches between "meals," sallying out thence to the sea-beach and various parts of the town, as well as to the open fields of the surrounding country. At the beach, attracted by the arrival of fishing-boats and small craft from the adjacent islands, they present a lively scene: scores of birds circle round and fly to and fro with squealing notes and eager glances at the boats beneath them; some glide over the roofs of the houses, and, taking a wider tour than their mates, return again, sailing back through the streets in utter disregard of the busy human throng; meanwhile their more fortunate companions, alighted here and there on the sand, are discussing dainty (?) morsels of the most various description picked up with a quick and sudden swoop, or robbed from their sable allies the Crows, who stand off at a respectful distance, ruefully "cawing" their disappointment and rage. Layard, who lived for a considerable period in the north of the island, markedly alludes to their daring when pressed by hunger, and says:—"They are bold enough to make frequent depredations on the fish-stalls; and in one instance I saw a lad of about thirteen years struck to the ground by the sudden pounce of a Kite, who bore off a good-sized fish from a basket the boy was carrying on his head." This statement of its boldness is corroborated by a letter which has lately appeared in 'Stray Feathers,' vol. v. p. 347, in which a correspondent states that a Kite, whose nest had been robbed by the son of a sepoy, persistently watched for the lad, swooping down and attacking him whenever he left the house, ample evidence of which maltreatment was afforded by the appearance of the lad's head and arms.

Jerdon has the following paragraph in his 'Birds of India,' on the habits of the "Chil" in India:—"When a basket of refuse or offal is thrown out in the streets to be carted away, the Kites of the immediate neighbourhood, who appear to be quite cognizant of the usual time at which this is done, are all on the look-out, and dash down on it impetuously, some of them seizing the most tempting morsels by a rapid swoop, others deliberately sitting down on the heaps along with crows and dogs, and selecting their scraps. On such an occasion, too, there is many a struggle to retain a larger fragment than usual; for the possessor no sooner emerges from its swoop than several empty-clawed spectators instantly pursue it eagerly, till the owner finds the chase too hot, and drops the bone of contention, which is generally picked up long before it reaches the ground, again and again to change owners, and perhaps finally revert to its original proprietor. On such occasions a considerable amount of squealing goes on."

The flight of the Pariah Kite is buoyant and easy, the points of its wings being much turned up, and its long tail swayed to and fro as it gracefully curves about and alters its course with motionless pinions. It devours much of its food on the wing; and what it cannot thus consume it disposes of on the ground. In the north of Ceylon the bare and broken leaves of the Palmyra palm afford it a favourite perch. When not occupied in seeking for garbage it quests about marshes and other open places near the sea-coast for frogs, water-snakes, small crabs, &c. Mr. Holdsworth has observed a large flock at Aripu, feeding on winged termites, which they

were taking in the air, with apparently but little exertion, by seizing them in their talons! The note of this Kite is a tremulous squeal, uttered much when on the wing, or when congregated to feed on any newly-found garbage, when they become very noisy, as observed by Jerdon in the above paragraph.

Nidification.—The Pariah Kite breeds, as I am informed, in the north of Ceylon about May, retiring into the jungle for the purpose, and often building on trees near village tanks or in the vicinity of villages. I have not myself seen their nests; nor have I any description of them as built in Ceylon; I therefore subjoin the following account from Mr. Hume's voluminous notes in his 'Nests and Eggs of Indian Birds':—"They build, almost without exception, on trees; but I have found two nests (out of many hundreds that I have examined) placed, *Neophron*-like, on the cornices of ruins. The nest, mostly placed in a fork, but not uncommonly laid on a flat bough, is a large clumsy mass of sticks and twigs, the various thorny acacias appearing to be the favourite material, lined or intermingled with rags, leaves, tow, &c. The birds are perfectly fearless, breeding as freely on stunted trees situated in the densest-populated bazaars or most crowded grain-markets as on the noblest trees in the open fields. Two appears to be the normal number of eggs; but they often lay three." The same author remarks that the variety of types of coloration is countless, and that "the ground-colour is almost invariably a pale greenish or greyish white, more or less blotched, clouded, mottled, streaked, penlined, spotted, or speckled with various shades of brown and red, from a pale buffy brown to purple, and from blood-red to earth-brown. Many of the eggs are excessively handsome, having the boldest hieroglyphics blotched in blood-red on a clear white or pale-green ground. Others, again, are covered with delicate markings, as if etched on them with a crow-quill." The average size of 273 eggs, measured by Mr. Hume, was 2.19 by 1.77 inch.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus ELANUS.

Bill weak, the tip considerably produced, margin slightly festooned. Nostrils oval, and protected by the long loral bristles. Wings very long, reaching to or beyond the tip of the tail when closed, the 2nd quill the longest, and the 1st and 3rd slightly shorter; the distance between the tips of the secondaries and those of the primaries almost equal to length of tail. Tail slightly sinuated, or even at the tip. Tarsus short and stout, covered throughout with small reticulate scales, its anterior portion feathered for more than half its length. Toes very strong and short, inner toe very slightly longer than the outer one. Claws well curved, acute, and all but the centre one rounded beneath.

ELANUS CÆRULEUS.

(THE BLACK-SHOULDERED KITE.)

Falco cæruleus, Desf. Mém. Acad. R. des Sciences, 1787, p. 503, pl. 15.

Falco vociferans, Lath. Ind. Orn. i. p. 46 (1790).

Falco melanopterus, Daud. Traité, ii. p. 152 (1800).

Elanus cæsius, Savign. Syst. Ois. d'Égypte, p. 274 (1809).

Elanus melanopterus, Leach, Zool. Misc. iii. p. 5, pl. 122 (1817); Gould, B. of Eur. i. pl. 31 (1837); Gray, Gen. B. i. p. 26 (1845); Kelaart, Prodromus, Cat. p. 115; Layard, Ann. & Mag. Nat. Hist. xii. 1853, p. 104; Jerdon, B. of Ind. i. p. 112 (1862); Layard, B. S. Afr. p. 26 (1867); Hume, Rough Notes, p. 338 (1870); Shelley, Ibis, 1871, p. 44; Holdsworth, P. Z. S. 1872, p. 415; Hume, Str. Feath. 1873, p. 21; Jerd. 'Nests and Eggs,' p. 56 (1873); Legge, Ibis, 1874, p. 10; Butler, Str. Feath. 1875, p. 449; Hume, Str. Feath. 1876, p. 462; Inglis, Str. Feath. 1877, p. 16.

Elanoides cæsius, Bonn. et Vieill. Enc. Méth. iii. p. 1206 (1823).

Buteo vociferus, Bon. et Vieill. Enc. Méth. iii. p. 1220.

Elanus minor, Bp. Consp. i. p. 22 (1850).

Elanus cæruleus, Strickl. Orn. Syn. p. 137 (1855); Shelley, B. of Egypt, p. 198 (1872); Sharpe, Cat. B. i. p. 336; Legge, Ibis, 1875, p. 279; Dresser, B. of Eur. pts. xxxv. xxxvi. (1875).

La Petite Buse criarde, Sonn. Voy. Ind. ii. p. 184 (1782).

Criard Falcon, Lath. Gen. Syn. Suppl. i. p. 38 (1787); *Black-winged Kite*, Europeans in India.

Kapasi, Hind.; *Chanwa*, Nepalese; *Adavi Ramadasu*, Tel., lit. "Jungle-Tern" (*apud* Jerdon).

Ukkussa, Sinhalese, West Province.

Adult male. Length to front of cere 11·4 to 12·0; culmen from cere 0·75; wing 10·4 to 10·8; tail 5·2 to 5·6; tarsus 1·3 to 1·4; mid toe 1·0 to 1·1; claw (straight) 0·5 to 0·6; height of bill at cere 0·35. The wings exceed the tail in old birds.

Female. Wing 10·6 to 10·9.

Iris, varying according to age from orange-red to pale scarlet or carmine; cere and base of under mandible yellow; bill black; legs and feet rich yellow, claws black.

Crown, hind neck, back, scapulars, major wing-coverts, and central tail-feathers bluish or ashy grey; forehead, a line above the supercilium, ear-coverts, entire under surface, under wing, upper edge of the same, axillaries, and under surface of tail white; lores, a short supercilium, lesser and median wing-coverts, and the winglet coal-black; quills dark ashen-grey, the shafts black, and the under surface of the primaries blackish, the three lateral tail-feathers whitish, sullied on the outer webs with grey, shafts of all the rectrices black except at the tip.

Young. After leaving the nest, the iris is hazel-brown, and the bill, cere, and legs much as in the adult; in a few months the iris pales to olive-grey.

Crown and nape brownish fulvous, paling into buff over the eyes; upper part of hind neck edged whitish; back, scapulars, and greater wing-coverts slaty brown, broadly edged with fulvous white; quills dark slate, with deep whitish tips; secondary wing-coverts only, black with pale margins; tail with the central feathers brownish slaty, the rest slaty-grey; chin, gorge, and ear-coverts white; throat, chest, and breast richly tinged with buff, paling into the pure white of the lower parts; lores and eye-streak as in the adult.

With age the forehead and chest become whitish, or, in some, pale greyish, while the back and scapulars lose their brown hue and become ashy, but the two latter parts still remain tipped with whitish; the shoulder of the wing becomes blacker before the end of the first year; but the greater coverts, the primaries, and their coverts remain tipped with white until after the next moult. It is not until the bird is fully adult, probably two years old, that the back loses entirely the brown shade, and the lateral tail-feathers their grey hue.

Distribution.—The Black-winged Kite is widely dispersed over the low country, and is a common bird throughout the Kandyan Province, more especially during the cool season (October until April), during which period it breeds in many of the hill-districts. As regards the lowlands, it is not at all uncommon in the south-eastern, eastern, and northern portions of the island, where the characteristic grass-lands, surrounded by forest, or bordering the shores of large tanks or inlets of the sea, and often, too, studded with dead trees, furnish it with a hunting-ground and many a favourite perch. In the extreme north I have seen it in the Jaffna peninsula; and Layard procured at Pt. Pedro.

In the Western Province south of the Chilaw district it is not often seen during the south-west monsoon; but in the dry season it is not uncommon, and has been procured as near Colombo as the cinnamon-gardens.

It occurs in many places in the Galle district, more particularly about citronella-grass estates and young cocoa-nut plantations. I have found it more particularly in the open lands of the delta of the Mahawelliganga and the Batticaloa district, in the low jungles and scattered scrubs between Madampe and Puttalam, and in grassy wastes surrounding the tanks near the south-east coast, than in other parts of the low country.

In the Central Province it confines itself to the open country in Uva, and the patnas and cultivated valleys interspersed with woods which are characteristic of the hills from the neighbourhood of Kandy to the base of the main range, as also to the so-called "plains" surrounded by forest in the latter district, among which I may cite Nuwara Eliya, the Kandapolla, Elk, and Elephant Plains, where it is a well known bird, particularly in the breeding-season.

The Black-winged Kite is a bird of wide geographical range, inhabiting the entire Indian peninsula, South-eastern Europe, and the whole of the continent of Africa. As regards the Indian empire, in which its range has more interest than elsewhere for my readers, it is found in the south of the peninsula, but perhaps not commonly, as it is absent from Mr. Hume's First List of Birds from the Travancore Hills, Mr. Bourdillon not having observed it there. In the Khandalla district it is rare in the vicinity of Ahmednagar; but this is a local peculiarity, for it is fairly plentiful further north. Dr. Stoliczka procured it at the Gulf of Cutch, Captain Butler says it occurs all over the plains of Northern Guzerat; and Mr. Hume records it as plentiful in Nepal, though it is rare in Sindh, which region is probably too barren for its habits. Along the base of the Himalayas it is not uncommon, Mr. Thompson having found it breeding in Lower Gurhwal and the Dehra Doon. About the Sambhur Lake Mr. Adam says it is not uncommon; and Mr. Ball found it tolerably so in the western parts of Chota Nagpur, while in the Satpura hills it was rather abundant. Bearing towards Burmah, we find that in the boundary-district of Cachar it is rare, Mr. Inglis only having seen half-a-dozen

specimens in four years; and at Thayetmyo Captain Feilden merely notes its occurrence, while Mr. Oates met with it only in the Arracan hills. In Tennasserim Mr. Hume has reason to think it occurs; and if so, this is its furthest range to the south-east. It has not been met with at the Andamans. In the Laccadives, however, it is a visitant, presumably from the west coast; and Mr. Hume procured specimens at the islands of Amini and Cardamum. Turning towards Western Asia, we find Mr. Danford observing it in Asia Minor *in winter*, and Canon Tristram recording it as a summer visitant to Palestine and haunting the thickets on the Jordan, where it is very shy—the reverse of its nature in Egypt, where it is said to be tame and easy to shoot. In South-eastern Europe it occurs as a straggler; and Lord Lilford mentions having seen a specimen killed in Southern Spain.

The example recorded in 'The Ibis,' 1872, as killed at Harristown Bay on the east coast of Ireland, was probably an escaped bird from some ship.

As regards Africa, Captain Shelley says that it is abundant in Egypt. On the Gold Coast Mr. H. T. Ussher, now Governor of Labuan, observed it in considerable numbers; it frequented there low ground sloping towards the sea, and hawked in the evening towards sunset. Mr. T. E. Buckley found it fairly common in Natal; and Mr. Barratt procured it near Rustenberg; and it is seen in most South-African collections.

Habits.—This handsome bird, frequently called the "White Hawk" in the coffee-districts, affects grass-land surrounded by forest, dry pastures interspersed with low timber, cocoa-nut estates, citronella-grass plantations, and such spots as are open and dotted here and there with large trees. The maana-grass patna teeming with life and here and there broken by strips of jungle is a favourite resort; or, in the upper hills, a tall dead tree by the border of the lonely forest-begirt "plain" forms an equally appreciated look-out. It is usually a solitary bird, and is abroad at early dawn, lazily flapping its way across the silent jungle-glade to some accustomed perch, where it will sit preening its feathers in the rays of the rising sun, and if disturbed will fly off to the nearest prominent tree, of which it invariably selects the topmost branch to rest on. In some places, however, where no doubt it is very plentiful, it forsakes its solitary habit; for Mr. Hume writes in his 'Rough Notes,' that he once saw more than a dozen pairs hunting together over the dry reedy bed of a jheel. I have usually found its diet to consist of lizards and large coleoptera; but it is said to carry off wounded birds in India. It likewise feeds on field-mice and rats; and when quartering over grass-land I have often seen it stop and hover like a Kestrel, but with a slower motion of the wings. Its usual flight is performed with a heavy flapping of the wings; and this action, combined with its short tail and white plumage, imparts to it much the appearance of a Sea-Gull. I have often admired it, showing its handsome plumage off against the dark green forests in the upper hills, as it would leisurely course round the edge of one of the open patnas, now and then stopping when its attention was arrested by something in the grass beneath it, and hovering for a minute, perhaps rapidly to descend with outstretched talons and uplifted wings, or to resume its quiet tour of observation round the forest. Concerning its economy in India Jerdon writes, "It is not very much on the wing, nor does it soar to any height, but either watches for insects from its perch on a tree or any elevated situation, or takes a short circuit over grain-fields, long grass, or thin jungle, often hovering in the air like a Kestrel, and pounces down on its prey, which is chiefly insects, but also mice and rats, and probably young or feeble birds."

In Northern Guzerat, Capt. Butler writes (*loc. cit.*), "it is generally found singly or in pairs. Its *modus volandi* is very varied. Sometimes it flies lazily along like a Gull; at other times it sails round and round in circles, often stopping to hover in the air like a Kestrel, as recorded by Dr. Jerdon. Then, again, when hunting, it flies with quite the swiftness and quite the style of a Falcon. I have seen one of these birds stoop and carry a wounded Quail with quite the rapidity and dash of a Peregrine." Concerning this Kite's note, although it is generally a very silent bird (I have never heard its voice, though I have seen it dozens of times), it is said sometimes to utter loud screams. So far back as 1782, Sonnerat, who met with it in his voyages to India, named it the "Petite Buse criarde," doubtless on account of the loud notes it uttered; and Mr. F. A. Barratt writes, in his "Notes on the Birds of the Lydenburg district," South Africa, of one which he shot:—"It attracted my attention by a harsh cry, high in the air, which I thought to be that of an Eagle; but, to my surprise, I found it proceeded from this bird."

The Black-winged Kite appears to thrive in confinement. Mr. W. Murray, of the Ceylon Civil Service,

kept a young bird, which he took from a nest at Nuwara ELLIYA, for some time. It partook greedily of meat; and I noticed that it perched with the outer toe reversed. The iris of this bird took two months to change from dark brown to light hazel.

Nidification.—This species breeds from December until March, and, I have reason to believe, resorts in considerable numbers to the hills during its nesting-season. I have known it to build both near and in Nuwara ELLIYA, in Deltota, and in Kadugunawa, in which latter place I took its nest myself in December 1876. This nest was built in a moderately tall, umbrageous tree, in an exposed situation on one of the patnas of the Kirimattie estate, and within a few hundred yards of the bungalow. It was placed among the topmost leafy branches, supported by a fork so slender that the small boy I sent up had great difficulty in reaching it. It was a very openly constructed fabric, about the size of a common Indian Crow's nest, made of small sticks laid over one another so far apart that daylight could be seen anywhere through it except just in the centre. The interior was flat, and formed of small twigs, on which lay the two eggs. One of these was almost a perfect, and the other a broadish oval, of a dull white ground-colour, in one stippled all over with reddish-brown dots and encircled just beyond the centre with a ring or zone of the same, in the other blotched openly throughout with smeary markings of brownish red, confluent round the smaller end, and mingled in other parts with lighter patches of reddish brown. They measured respectively 1·54 and 1·61 inch in length by 1·23 and 1·17 inch in breadth. The female bird was frightened from the nest by our approach, and flew off with the male, not returning until after we had left with the eggs, and then only to fly heavily round the tree, and make off again to a neighbouring wood.

The nest from which Mr. Murray procured his young bird was situated in the compound of the Agent's house at Nuwara ELLIYA, and built in the top of an Australian lightwood (*Acacia melanoxyton*). It contained two young. Conflicting descriptions have been given of the eggs of this Kite by various naturalists; and a *résumé* of the information possessed concerning its nidification up to date will be found in 'Stray Feathers,' 1873, as above quoted. So many nests have, however, now been taken and thoroughly identified that the eggs have been satisfactorily proved not to vary more than those of other Hawks. Messrs. Blewitt and Adam in India, and likewise Captain Shelley in Egypt, found the number to vary from three to four; and most of the eggs found by these gentlemen seem to have been more heavily and darkly blotched than mine. From Mr. Adam's account, quoted by Mr. Hume in 'Nests and Eggs,' it appears that the nest is built in less than a week, which is a short time for a hawk to construct its nest in. After writing of the discovery of a nest near the Sambhur Lake in July 1872, he says:—"On the 7th of August I sent a man to see if the nest contained eggs; but he found that it had been abandoned and a new nest commenced in one of a group of six Lasora trees (*Cordia myxa*), which stood near to the Khajur tree. He also informed me he had seen the birds together. I inspected the nest on the 10th of August, and found one of the birds sitting on it. The nest was so loosely constructed that with my binocular I could see that it contained no eggs. I again inspected the nest on the 14th August, and found that it contained two eggs. One of the birds sat close on the nest, and could not be frightened off by a man beating on the trunk of the tree with a stick; and this same bird made a swoop at my servant as he was climbing the tree. The nest was situated on the very top of the Lasora tree, and was from 25 to 30 feet from the ground. In shape it was circular; and, with the exception of two or three pieces of Sarpat grass (*Saccharum sara*), there was no attempt at lining. It was about 10 inches in diameter; and the egg-cavity had a depression of about 2 inches." Of the eggs he writes, they "are without gloss; both have a light creamy-white ground, of which, however, little is shown. One had the broad end all blotched over with confluent patches of deep rusty red, while the smaller had numerous spots of a much lighter brownish-red." Captain Shelley, who found these nests at different times in Egypt containing each four eggs, says that in that country the nest is carefully constructed of sticks and reeds, and is smoothly lined with dry leaves of the sugar-cane.

ACCIPITRES.

FALCONIDÆ.

AQUILINÆ.

Genus PERNIS.

Bill long, rather weak, curved from the base, the tip not much hooked, wide at the base, the sides slanting from the culmen to the margin, which is not festooned; cere much advanced and bare. Nostrils linear, oblique, overlapped by the membrane of the cere. *Lores feathered like the forehead.* Wings moderately long, pointed; the 3rd and 4th quills subequal and longest. Tail rather long, broad, even at the tip. Tarsus stout, shorter than the middle toe, the upper half plumed in front, and the remainder covered with small reticulate scales. Toes protected above with narrow bony transverse scales; lateral toes rather long and subequal. Claws acute, rather straight, trenchant beneath. Tibial plumes reaching down to the foot. Head usually furnished with an occipital and somewhat scanty crest. Eyes placed in the head posterior to the gape.

PERNIS PTILONORHYNCHUS.

(THE INDIAN HONEY-BUZZARD.)

Falco ptilorhynchus, Temm. Pl. Col. i. pl. 44 (1823).

Pernis ptilonorhynchus, Steph. Gen. Zool. xiii. pl. 35 (1826); Holdsworth, P. Z. S. 1872, p. 414; Sharpe, Cat. Birds, i. p. 347 (1874); Ball, Str. Feath. 1874, p. 381; Hume, Nests and Eggs, p. 56 (1874); Legge, Str. Feath. 1875, p. 364; Butler, *ibid.* p. 448; Tweeddale, Ibis, 1877, p. 286.

Pernis cristata, Cuv. Règn. An. i. p. 335 (1829); Blyth, Cat. B. Mus. A. S. B. p. 18, no. 82 (1849); Horsf. and Moore, Cat. B. Mus. E.I. Co. no. 74, p. 63 (1854); Jerd. B. of Ind. i. p. 108 (1862); Wall, Ibis, 1868, p. 17; Hume, Rough Notes, ii. p. 330 (1870).

Pernis torquata, Less. Traité, p. 76 (1831).

Pernis ruficollis, Less. *l. c.* p. 77 (1831).

Pernis albigularis, Less. *l. c.* p. 77 (1831).

Pernis apivorus, Temm. and Schl. Faun. Jap. Aves, p. 24 (1850).

The Crested Honey-Buzzard of some authors.

Madhava, Nepalese, from *madhu* (honey); *Shahutela*, Hind., from *shahud* (honey); *Tenngedda*, Tel.; *Ten Prandu*, Tam.; *Jutalu*, Yerklees; *Malsuwari* of the Mharis (Jerdon).

Rajaliya, Sinhalese.

Adult male. Length to front of cere 23·5 to 24·5 inches; culmen from cere 1·0; wing 15·5 to 15·8; tail 9·0 to 10·3; tarsus 1·9 to 2·0; middle toe 1·9 to 2·1, its claw (straight) 0·95; height of bill at cere 0·38 to 0·4.

Female. Length to front of cere 24·5 to 25·5 inches; culmen from cere 1·0 to 1·1; wing 15·7 to 17·9; tail 10·0 to 11·5; tarsus 1·9 to 2·1; middle toe 1·9 to 2·2, its claw (straight) 1·0 to 1·02; height of bill at cere 0·48. Expanse of an example with a wing of 16·5, 55·0.

The above dimensions of males are taken from four specimens, and those of females from twelve, of Ceylon-killed birds. It is the exception to find a female measuring in the wing more than 17·0 inches. Four in my own collection measure as follows—15·7, 16·5, 16·5, 16·6; eight others, five of which are in the Norwich Museum, and two in Lord Tweeddale's collection, 15·7, 16·8, 16·7, 16·4, 17·5, 16·6, 17·9, 16·4. The last but one is included in a list my friend Mr. Gurney sent me, of two or three birds in Lord Tweeddale's collection, measured by himself, and is most exceptional if the measurement is correct, which I have no doubt it is. The specimen must be an extraordinary and quite abnormal one—a giant among the Ceylonese Honey-Buzzards! I may remark that Mr. Gurney sends me the wing-measurement of a male in the same collection as 17·78. I take it for granted that this specimen has been wrongly sexed by the collector.

Iris golden yellow, yellow mottled with brown, or yellow with a pale outer circle; cere deep leaden colour; bill blackish. Gape and the base of under mandible bluish; legs and feet dull yellow, in some citron-yellow. The iris being very variable, I have enumerated the several colours which I have found in dark birds. It is never *red* as in the North-Bengal race.

Fully adult or very old stage. Crown, hind neck, and upper surface rich dark earth-brown, the tips of the hindneck-feathers often darker than the rest; back and wing-coverts suffused with a purplish lustre, a short occipital crest of 4 or 5 stiffish ovate feathers attaining a length of 2·3 inches, sometimes black, and at others concolorous with the nape; the forehead above the eye, entire face, ear-coverts, and throat iron-grey, blending into the surrounding plumage; quills ashy brown, crossed with three or four widely separated bars of dark purplish brown, and a broad terminal band of the same, the extreme tip pale, the inner webs whitish from the notch inwards, with the interspaces mottled with brownish; upper tail-coverts, in some examples, tipped with whitish; tail dark purple brown, crossed by a broad, 2-inch, smoky-grey band about the same distance from the tip, and in some with a narrow bar of the same near the base.

Throat and entire under surface dark chocolate-brown, the feathers dark-shafted; a dark stripe on each side of the throat, frequently continued across the fore neck in the shape of a gorget; under wing-coverts at times tipped with fulvous; under surface of light portion of tail grey. In two very dark specimens I examined in Kandy the feathers of the lower breast and abdomen were pale-tipped.

A younger stage of plumage, but one which represents the generality of apparently adult birds killed in Ceylon, is as follows:—

Above rich sepia brown, the margins of the feathers somewhat paler, and the feathers of the occiput and hind neck, as well as the fore neck and entire hinder surface, a fine chestnut brown, with blackish shafts; a well-developed crest of black feathers; the lores and round the eye, in some examples, dark iron-grey mingled with brown, while in others the forehead and above the eye is whitish, the centres of the feathers being concolorous with the crown; the dark moustachial stripe is present, and, in the darker examples, is black, spreading over the throat and sometimes running up in a point to the chin; the median wing-coverts are usually light-tipped, and have a considerable amount of white at the base of the feathers; the quills are not so dark as in the above, and have more white at the tips, the bars being also closer together, and the interspaces more or less crossed with wavy light rays; in the tail, the lighter or earthy-brown hue is the ground-colour, and contains numerous pale wavy cross rays; the tip is whitish, and adjacent to it is a broadish deep-brown bar; about 2½ inches above this, across the centre of the feathers, is a narrow bar of the same, and another similar one near the base. The under surface is variable, being in some examples a light fulvous brown, with the stripes very broad; while in others the striae are almost wanting on the breast; the colour of the whole breast, however, is more or less uniform and devoid of white spaces in the younger bird; most of the basal portion of the inner webs of the primaries is white.

In this stage the tail wants the characteristics of the very old bird, viz. the smoky-grey nearly uniform bands; but the lores and the space beneath the eye have the grey appearance, which is a marked adult sign. The presence of the white forehead in this adult stage, I consider to be quite abnormal, as many younger birds (as will be presently noticed) have it uniform with the head.

Young. In birds of the first year the wing varies from 15·6 to 16·0, the other parts equal those of the adult.

Iris in some yellow, in others brownish yellow, sometimes with a dark inner edge; cere bluish with greenish patches, in others greenish yellow; legs and feet greener than in the adult.

Back, scapulars, and wing-coverts darkish hair-brown, the wing-coverts more or less pale-edged, the median series being the lightest, some examples having the lesser rows edged with whitish, and the outer series of primary-coverts broadly margined with the same; crown and occiput rich tawny brown, the feathers with blackish shaft-stripes; the hind neck with the larger part of the feather whitish, and the terminal portion pale brown with a dark shaft-stripe; the crest-feathers blackish brown, broadly margined or tipped with white; forehead and a broad space above the eye white; lores and a broad posterior orbital streak dark brown with a slightly greyish shade, inner primaries and secondaries deeply tipped with white, pale brown on both webs, and barred with dark brown, longer primaries with more of the inner webs white than in adults, and with the basal portion of the outer webs light

brown, crossed with dark bars alternating with the interspaces of the inner webs ; tail smoky brown, deeply tipped with white, and crossed with four narrow and rather irregular bars of dark sepia-brown, the subterminal one not much broader than the others, and the light portions crossed with wavy light rays ; throat and entire under surface, with the under wing and the edge above the metacarpal joint, pure unmarked white ; ear-coverts pale brownish.

From this stage the first advance towards adult plumage is made (probably after the first moult) by the head, hind neck, and upper surface generally becoming more uniformly dark, although there is usually still a good deal of white about the hind neck ; the dark lores and space behind the eye extend, and the cheeks and face become striated with dark brown, and a series of streaks from the gape down each side of the throat appear as the first signs of the future dark stripe ; the bars on the tail, especially the subterminal one, become broader ; the chest and breast assume blackish-brown stripes, more or less broad, on the white ground, while the lower breast, flanks, and abdomen become, in some examples, barred with brown, and in others washed over the whole feather with the same, the flanks and thigh-coverts generally being the darkest. In this stage, I believe, a considerable advance in the plumage is made by a change in the feather itself ; and hence the great variety in the birds at this age. The dark grey hue of the lores spreads over the cheeks ; the ear-coverts and forehead become nearly concolorous with the crown ; the broad lateral throat-stripes of black develop and spread across the fore neck, the chin and gorge becoming brownish ; at the same time the bars on the lower parts of those examples having the barred feature spread over the feather, or the brown of the flanks in the other type encroaches gradually on the breast.

Obs. Mr. Gurney has noticed that Ceylonese specimens of this Honey-Buzzard are larger than those from India. As will be seen, the above list contains some very high wing-measurements ; but if an extensive series of Indian birds be examined, I have no doubt some will be found equally large. Mr. Hume gives the largest wing, in six females measured, as 17.25, and Mr. Sharpe, in his Catalogue, the average of a large series as 16.5. Some I have measured in the British Museum are as follows—(Deccan) 16.2, (Nepaul) 16.2, (N. Bengal) 17.4, (Kamptee) 16.3, (Himalayas) 17.1, (Darjiling) 15.9. All our largest specimens have been shot in the hills of Ceylon ; and, as I demonstrate below that the species is for the most part migratory to Ceylon, these large birds must be not inferior to their fellows elsewhere, or they must be bred on the hills of the island. Mr. Sharpe has measured an example from Java with the wing 17.8, which favours the idea that Ceylonese birds may migrate from that quarter, although it must be remarked that Javan birds have longer crests than ours. Much has been said about the irregular plumage of the Honey-Buzzards ; but if a series of examples of different ages be examined, a regular gradation in the plumage, from the pale-chested bird up to the one with the grey face (which is an unmistakable sign of age) and the dark under surface, can be noticed. The fact of white-chested birds breeding with dark ones can be easily explained by assuming that there is in the Honey-Buzzard, as in some Eagles, a permanent light phase.

Distribution.—The Honey-Buzzard is to a certain extent a migratory bird to Ceylon, and appears, from what I observed while in the island, to make its appearance first of all on the north and north-east coasts, which leads to the inference that it migrates with the north-east monsoon from Burmah, or perhaps from the southern part of the Indian peninsula, to Ceylon. It used to appear yearly on the coast about Trincomalie during November and December, and then depart into the interior. In 1874 I obtained two newly arrived and very tame examples in the Fort, which is a point of call for many migrants arriving with the north-east wind on that part of the coast. Several other birds haunted the vicinity of the town at the same time ; in the following year, however, scarcely an example was to be seen, although it was comparatively numerous in the Kandy district. It was first recorded as a Ceylonese bird by Mr. Holdsworth (*loc. cit.*), from an adult female shot by Mr. Forbes Laurie in the Madoolkella district, not far from Kandy. It had prior to this been received from Ceylon, but its occurrence omitted to be noticed in print. It locates itself in the northern forests, preferring the vicinity of the tanks which abound in that part ; and many birds remain there yearly, and doubtless breed in those unfrequented haunts. I have seen it in such places during the south-west monsoon, and have likewise received specimens from Avisawela and Kurunegala, in the western part of the island, at the same season of the year. I have shot it in August in the Park country, where it is not uncommon ; and I have no doubt it inhabits the forests between Badulla and Hambantota. In the south-west I have never known it to occur. As regards the mountain-region, it is principally found about Dumbara and other places of intermediate altitude in the direction of Kandy. Occasionally, however, it ascends much above this ; for Mr. Bligh has shot it in Dimbula. It is possible that some of the birds occurring on the hills have been bred there, as they appear to be larger than those which are evidently migrants.

One of the most interesting points yet to be decided with reference to Ceylon ornithology is that relating to the movements of this fine bird. Whether it comes from Burmah or from South India, or even from Sumatra, remains yet to be seen. If an extensive series could be obtained from South India, a comparison of it with another from Ceylon would easily settle the matter with reference to that quarter.

This species is scattered throughout India, extending into Burmah and a portion of the Asiatic archipelago. It is not unfrequent in the south of India, but appears to be local in its distribution there. Jerdon says of it, in the 'Madras Journal':—"I have only met with this bird in the jungles of the western coast and Nilghiris. It is by no means common. I procured a female at the foot of the Conoor pass, and another on the summit of the hills." Mr. Bourdillon appears not to have found it in the Travancore district. Near Khandala and in the western parts of the Deccan it is common; in the region about Mount Aboo and in Northern Guzerat Captain Butler states that it occurs, but not commonly; and at Sambhur it appears now and then as a straggler. Mr. Hume does not record it from Sindh. In the North-west Provinces it occurs; and in Chota Nagpur Mr. Ball has procured it; but it is found in that district sparingly, though this gentleman says that it appears to be common near the Ganges at the north-east corner of the Rajmehal hills; this, however, has reference to the red-eyed race, which is spread through Bengal, and which some think is specifically distinct from the southern bird. The Pegu race, likewise, Mr. Hume considers different from the Bengal on account of its smaller size; it appears to be not uncommon there. From Tenasserim I do not find that it has as yet been received; and it has not yet been discovered in the islands of the Bay of Bengal. From Java it is well known; and of late it has been procured by Mr. Buxton in South-east Sumatra, having been also previously known from the island of Banka.

Habits.—Well-wooded districts and large tracts of jungle are the favourite habitat of this handsome bird. It is solitary in its habits, and is partial to the vicinity of water. I have more than once surprised it in shady trees on the borders of forest-rivers or lonely tanks, when it would make off with a straight quick flight to another inviting perch. I have also seen it perched on the tops of high trees in forests, when it much resembles the Serpent-Eagle in the distance. It soars high in the air at times, taking short circles as it ascends, and, according to some observers, has the habit of descending with a rush, much to the terror of the small birds in the neighbourhood. This I have not seen myself, though I have witnessed it soaring at a considerable height. Jerdon observed it attempting to hover, which he said it did in a clumsy manner. Its usual diet consists of honey, which it robs in spite of the attacks of the inmates of the nest, against whose stings, however, its peculiarly-feathered face and lores well protect it. With the honey it also devours the young ones, remains of which I have invariably found in its stomach. It is said also to eat other insects, white ants, and small reptiles; but the latter food, I imagine, is only resorted to when pressed for want of its usual diet. One that was shot in the Fort at Trincomalie was associating with Crows, and flying round the barrack-room at the dinner-hour in company with them, on the look-out for scraps thrown out from the verandahs. Another haunted the fine trees shading the officers' quarters for more than a day, and appeared not to mind the frequent passers-by in the least, finally allowing me to shoot it in the tamest manner.

Its habits do not appear to have been paid much attention to by Indian observers, Jerdon being the only one who has recorded much concerning it. He writes in the 'Madras Journal':—"I occasionally saw it seated on a tree, alternately raising and depressing its crest, and in the Nilghiris frequently noticed it questing diligently backwards and forwards over the dense woods there. Their usual flight is rather slow; but I once observed one flying more rapidly than in general, with a continued motion of its wings, and every now and then attempting to hover, with its wings turned very obliquely upwards." He further remarks in the 'Birds of India,' that Burgess mentions his having been told by some natives that, when about to feed on a comb, it spreads its tail and with it drives off the bees before attacking it.

Nidification.—The Honey-Buzzard may possibly breed in the central and northern forests of Ceylon; but I know of no evidence to this effect. In India it breeds from April until July, nesting in the forks of trees. It builds a nest of sticks and small twigs, and lines the interior with green leaves or fresh grass—a common habit with raptorial birds. Captain G. Marshall observes that the female sits very close during the period of incubation, and is not easily driven away from its nest. This is unusual with the Hawk tribe, the

majority of which leave their nests when they are approached. The eggs are two in number as a rule ; but some nests have been found only to contain one. They are round in shape, of a " whitish pinkish-white or buffy-yellow " ground-colour, and vary much in the character of their markings, although they are usually very highly coloured with blotches and clouds of reddish or purplish brown and dark red, sometimes quite confluent round one end. They average 2·03 inches in length by 1·72 in breadth.

Subfam. FALCONINÆ.

"Outer toe only connected to the middle toe by interdigital membrane ; tibia much longer than tarsus, but the latter not contained twice in the former ; hinder aspect of tarsus reticulate ; bill distinctly toothed." (*Sharpe*, Cat. Birds, i. p. 350.)

ACCIPITRES.

FALCONIDÆ.

FALCONINÆ.

Genus BAZA.

Bill stout, curved rapidly from the base of the cere; tip much hooked, and notched with a double tooth; cere but slightly advanced. Nostrils linear, oblique, covered as in *Pernis* by the superlying membrane. Wings moderate, rounded, with the 4th quill the longest, and the 1st subequal to the secondaries. Tail moderately long, much exceeding the closed wings. Tarsus short, the front and sides plumed for more than half its length; the remainder covered throughout with reticulate scales. Middle toe subequal to the tarsus; lateral toes nearly equal; the whole covered with bony transverse scales. Claws rather straight, the inner less than the middle.

Head with an elongated occipital crest.

BAZA CEYLONENSIS.

(THE CEYLONESE CRESTED FALCON.)

(Peculiar to Ceylon?)

Baza ceylonensis, Legge, Str. Feath. 1876, vol. iv. p. 202; Whyte, ibid. 1877, p. 202.

Similis *B. magnirostri* sed cristâ nigrâ latè albo terminatâ, secundariis latè albo terminaliter marginatis: rectricibus 4-fasciatis, plagâ subterminaliter minore quam fascia apicalis brunnea: subtùs fulvescenti-brunneo nec rufescenti transfasciata: gutture fulvescenti nec cinereo lavato.

Adult. The following are the measurements of the two type specimens described by me *loc. cit.*, the larger of which is presumed to be a female:—Length to front of cere (from skin) 16·5 and 16·8; culmen from cere 1·01 and 1·03; wing 11·7 and 12·0; tail 7·5 and 8·0; tarsus 1·5 and 1·5; middle toe 1·35 and 1·45; claw (straight) 0·65 and 0·68; height of bill at cere 0·4 and 0·5; tarsus feathered to 0·5 from the root of the middle toe.

Iris yellow; bill blackish leaden, lower mandible pale at base; cere (judging from the skin) dusky plumbeous; legs and feet yellow; claws plumbeous, pale at base.

Male. Back, scapulars, lesser wing-coverts, and centres of the feathers on the hind neck and head deep brown, paling on the rump slightly, and with a strong purple sheen on the mantle as well as on the under-mentioned caudal bars; the feathers of the back with perceptibly pale edgings, those of the head and hind neck broadly margined with pale tawny, the superciliary region being entirely of this colour, the forehead slightly darker with the shafts of the feathers blackish; crest $1\frac{3}{4}$ inch in length, black, conspicuously tipped with white; greater secondary-coverts and tertials paler brown than the scapulars, many of the feathers tipped whitish, primaries and secondaries smoky brown, the latter and the inner primaries deeply tipped with white, and the whole crossed with blackish bars, the ulterior one being terminal, inner edges of the primaries white on the lighter portion of the feather; tail drab-brown, pale-tipped, a broad subterminal band of purplish black, and three narrower of the same, the basal one hidden beneath the coverts.

Lores and a stripe behind the eye blackish brown; cheeks and ear-coverts slate-grey, with dark shafts; chin and throat buff, the feathers down the centre with blackish shaft-stripes; chest and sides of the fore-neck almost uniform tawny cinereous, under surface from the chest, with the under wing-coverts and lower surface of the basal portion



1
2

LALA CEYL NENSIS

of quills, white, barred on the breast and flanks with rufescent brown bands equal to the white interspaces, narrower and further apart on the tibial plumes, and almost absent on the under tail-coverts; inner sides of legs buff-white; lesser under coverts crossed with narrow rufous markings, major series with a few transverse brownish patches; lower surface of light portions of tail greyish white.

Presumed female. Has the upper surface generally somewhat paler; but the crown is darker, the blackish central stripes being broader than in the above example; crest consisting of four long feathers 2 inches long; the primaries and secondaries, which are just acquired after moult, very deeply tipped with white; the chest differs in its less uniform hue, having the feathers with broad rufous centres and widely margined with buff-whitish; the under surface is similarly barred, under tail-coverts and wing-lining the same.

Young. The example referred to below as presented by Mr. S. Bligh to the Norwich Museum is a young bird. The posterior tooth is not developed, and the anterior less deep than in the adult.

Its length (from the skin) is 17.0 inches; wing 12.25; tail 8.0; tarsus 1.15.

Above glossy dark brown, the feathers of the back, scapulars, and wing-coverts edged with whitish; centres of the head- and hindneck-feathers brown, with broad margins of fulvous white; crest black, deeply tipped with white, and 1.8 inch in length; primaries and secondaries smoky brown, with blackish bars and white inner edges to the basal portions of the former, similar to the adult; median and greater secondary wing-coverts deeply tipped with white, adjacent to which the brown hue changes into rufous, giving the wing-coverts a rufescent appearance; tail smoky brown, banded with five brown bars narrower than in the adult; under surface white; a very fine chin-stripe of brown, formed by dark shaft-lines on one or two feathers; chest marked with well-defined brown stripes; breast and flanks widely barred with broad pale sienna-brown bars.

Another immature example, in the British Museum, from the collection of Messrs. Whyte and Co., and which is a female, is very similar to the above, but may perhaps be a little older: wing 12.1, tail 7.8, culmen from cere 1.01. The posterior tooth slightly developed, but not so prominent as the anterior.

Iris yellow; feet and tarsi yellowish; head and hind neck fulvous tawny, with dark central stripes increasing in width at the lower part of the neck; the crest black, deeply tipped with white, and 2.0 inches in length; the back and wings are deep brown with a purplish lustre, the feathers margined with rufous brown; greater wing-coverts barred with pale brown; the barring of the quills is the same, and the inner part of the lighter interspaces on the inner web white; tail as above, the tip whitish, and the subterminal dark bar equal in width to the adjacent interspace; lores blackish brown; cheeks and ear-coverts with tawny-brown striæ; throat and under surface buff-white; the chin with a pale brown mesial stripe, widening and darkening on the throat; chest marked with broad "drops" of rufous-chestnut, changing on the breast, flanks, abdomen, and shorter under tail-coverts into bars of the same; longer under tail-coverts unmarked; thighs crossed with bar-like spots of rufous.

A third immature specimen has been sent home to the Norwich Museum by Messrs. Whyte and Co., since this article was written. Mr. Gurney writes me that it measured, as he was informed, 18.5 inches in the flesh, and weighed 1 lb. The wing, according to his system of measuring, is 12.5 inches (which would be equal, after my plan, to 12.2 or 12.3), tail 8.5, tarsus 1.5, crest 2.3.

It is older than the specimen presented by Mr. Bligh, "having much less of the white margins to the feathers on the upper surface, and the throat and breast being decidedly more fulvous; the tail has 4 bars instead of 5." This latter feature testifies to its age; and I think its plumage may be taken as representing an intermediate stage between the young and the old bird.

Obs. I do not consider this a very good species. It comes very close to *B. magnirostris* from the Philippines; but as this latter has such a remote habitat, I have allowed the slight differences that exist to weigh in favour of keeping the Ceylonese bird distinct for the present. The adult type of *B. magnirostris* is a smaller bird than *B. ceylonensis*: it has the wing 11.1 inches, tail 7.2, tarsus 1.3. The crest is not deeply tipped with white as in the latter, but has the terminal portion of the webs laterally edged with it only; the secondaries and primaries are not deeply tipped with white; and the tail-bands are narrower and five in number; the cheeks are much paler, and the chin-stripe inconspicuous and of a light iron-grey colour uniform with the cheeks; the chest is very similar, but the breast- and flank-bands are more rufous than in my bird. This latter characteristic, however, is not to be depended upon. *B. ceylonensis* likewise has a considerable general resemblance to the example in the British Museum, which Mr. Sharpe considers now to be *B. jerdoni*; but this has the head very dark indeed, and is rufous on the cheeks and sides of the head. Mr. Hume's species, *B. incognita* (Str. Feath. 1875, pp. 314-316), from Sikhim and Tenasserim appears to be more closely allied to this species than to the Ceylonese bird, being considerably larger (wing, ♂ 13.12, ♀ 13.75) than the latter; and the specimens described seem, moreover, to be immature.

If identical with any other member of the genus, one would naturally seek to join my bird to *B. sumatrensis*, which has a comparatively adjacent habitat, to it. I have, however, compared this, in company with Messrs. Sharpe and Gurney, with two of the immature examples of the Ceylonese form; and these gentlemen concur with me that the

Sumatran bird, as far as can be proved by the evidence of the single immature example which exists of it, is distinct. The testimony of an immature bird, it must be allowed, is not a very safe one to go upon; but nevertheless, as the specimen exists, it is a larger bird (wing 12.75, tail, very long, 9.6), has no chin-stripe, which is a marked characteristic of *B. ceylonensis*, has the under-surface bars much broader and of a different appearance, and the tipplings of the back and scapular feathers fulvous and not white. Unless, therefore, *B. magnirostris* from the Philippines turns out some day to be identical with *sumatrensis* from Sumatra, and both the same as *ceylonensis*, I think the latter species may hold its own, as it can scarcely be one with the Philippine bird, a species not hitherto procured to the westward of those distant islands. As yet every member of the genus (except the curious *Baza lophotes*, totally unlike any other in its plumage) has proved very local in its habitat; and were it not for this fact, it would be difficult to imagine our bird restricted to so small an island as Ceylon*.

Distribution and Discovery.—This interesting Crested Falcon was described by me (*loc. cit.*) from two adult examples which I found in the collection of Messrs. Whyte and Co., naturalists, in Kandy, in August 1876. They were both shot on the same day, the 6th of the same month, by Mr. F. H. Davidson, of Matale, on the Kudupolella estate. In May of the same year, however, I had met with an immature specimen (the one now in the Norwich Museum) at Mr. Bligh's bungalow, and identified it from Mr. Sharpe's plate in the 'Catalogue of Birds,' vol. i., as *B. sumatrensis*. This example was therefore the first that came under my notice; it was shot in the early part of 1875 by a Mr. Colville, near Nilambe, in the Kandy district, and preserved in Messrs. Whyte and Co.'s establishment. In the beginning of last year the immature bird referred to above as now in the National collection, was procured near Kandy by Messrs. Whyte and Co.'s collectors; and a third example has been lately sent by this firm to the Norwich Museum, a female, and shot in the Central Province on the 3rd of January last. Since the publication of my account of the species, Mr. A. Whyte has stated, in a paper which appeared in 'Stray Feathers,' August 1877, that the "bird was discovered† by us eight years ago, a pair having been shot by one of our collectors not far from Kandy." With regard to this pair Mr. Whyte writes to me lately as follows:—"They were shot on the same day, from the top of Oodoo-wella crag, about four miles from Kandy, by a Singalese collector, Carolis, in the fall of 1870; since then at least ten specimens of the bird have passed through our hands; and I can quote Kandy, Matale, Rattota, and Deltota as among the situations in which it has been found." It would appear, therefore, that it has only been procured within the very limited district stretching from Matale 10 miles north of Kandy, to Deltota, about 12 miles, in a direct line, to the south of the town. This part of the hill-region of Ceylon, it should be remarked, is that in which most of the birds are shot that are sent to Messrs. Whyte and Co.'s for preservation, inasmuch as they can be forwarded by Coolie runners, and skinned before suffering from the decomposing effects of tropical heat; it is not, therefore, to be inferred that the habitat of the Ceylon *Baza* is restricted to such a very small tract of country as this, but rather that it is a hill-bird scattered throughout the

* I have just heard, since correcting the proof of this article, from Mr. Hume, that he has lately received a young specimen of a *Baza* from the Wynaad, which he considers must be identical with this species. Mr. Hume has not, as far as I am aware, seen examples of *B. ceylonensis*; but his surmise may be correct. I accordingly put it doubtfully "peculiar to Ceylon."

† In the interests of Ceylon ornithology I am constrained to make some remarks on Mr. Whyte's note on this species. Were it not my aim to give a faithful history of all the peculiar Ceylonese forms, I should not have referred to the subject. It is difficult to see in what sense the writer uses the word "discovered." The species was in reality discovered by the collector who shot it; for the specimens were afterwards skinned, sold unidentified, and lost for ever to science! In continuation of the above paragraph, follows:—"Three more specimens have been collected by us, one of which Captain Legge obtained from us." Two of these I will remark are comprised in the pair shot by Mr. Davidson and sent to Messrs. Whyte and Co.'s for preservation, one of which Mr. Whyte sold me under the impression that it was a Crested Goshawk (a not unlikely mistake for one who had formed no acquaintance with the genus *Baza*); and the other he sent me on the order of Mr. Fraser, of Colombo, a friend of Mr. Davidson, and who kindly presented it to me. The words collected by us, in reference to this pair are therefore misapplied. When I wrote to Mr. Whyte, shortly after the purchase of the type specimen, that it was a new *Baza*, I much wish that he had informed me of his having previously received a pair. I could then have made inquiries concerning the birds, and should perhaps have succeeded in tracing them to their destination; in which case I could have verified Mr. Whyte's identification.

Central-Province subranges, although it has not yet been recorded beyond the vicinity of the Kandyan capital.

Habits.—I am unable to furnish any information concerning the habits of this species, beyond that I learn it frequents the borders of forests, the vicinity of steep-wooded hill-faces and patnas interspersed with jungle. When killed it has doubtless been met with in such localities; but as a rule it will be found, like its congeners, to be a forest-loving species, like *Baza lophotes* and *B. reinwardti*.

The front figure in the Plate accompanying this article is the adult male bird killed at Matale, and that in the background the young bird sent home by Messrs. Whyte and Co. to the British Museum.

BAZA LOPHOTES.

(THE INDIAN CRESTED FALCON.)

Falco lophotes, Temm. Pl. Col. i. pl. 10 (1823).

Buteo cristatus, Bonn. et Vieill. Enc. Méth. iii. p. 1220 (1823).

Baza syama, Hodgs. J. A. S. B. v. p. 777 (1836).

Baza lophotes, Gray, List Gen. B. p. 4. (1840); Blyth, Cat. B. Mus. A. S. B. p. 17 (1849); id. J. A. S. B. xix. p. 325 (1850); Kelaart, Prodromus, p. 115 (1852); Layard, Ann. & Mag. N. H. 1853, xii. p. 102; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 62. no. 72 (1854); Jerd. B. of Ind. i. p. 111 (1862); Hume, Rough Notes, ii. p. 337 (1870); Holdsworth, P. Z. S. 1872, p. 415; Sharpe, Cat. B. i. p. 352 (1874); Walden, Ibis, 1876, p. 341.

Hytiopus syama, Hodgs. J. A. S. B. x. p. 27 (1841).

Hytiopus lophotes, Blyth, J. A. S. B. xii. p. 312 (1843).

Pernis lophotes, Kaup, Contr. Orn. 1850, p. 77.

Baza indicus, Bp. Rev. et Mag. de Zool. 1854, p. 535.

Cohy Falcon, Lath. Gen. Hist. i. p. 165, pl. x. (1821).

Black-crested Kite, "*Baza*," *Cohy Falcon*, *Cohy Pern*, in India.

Cohy of the Parbutties; *Syama*, lit. "Black," Nepal.

*Adult male**. Length to front of cere 12·5 inches; culmen from cere 0·8; wing 9·2 to 9·4, expanse 30·5; tail 5·0 to 5·5; tarsus 1·05 to 1·1; middle toe 1·0 to 1·1, claw (straight) 0·47; height of bill at cere 0·35.

No difference in size exists between examples from Nepal, Ceylon, and Pinang.

Iris brownish red; cere bluish leaden; bill pale bluish leaden, darker at the sides above the tooth; legs and feet pale bluish, claws black.

Entire head, throat, body above, wing-coverts, longer scapulars, quills, tail, and body beneath from the upper breast black, with a dark green gloss above and on the under tail-coverts. A long occipital crest of 3 or 4 narrow feathers $2\frac{1}{2}$ inches in length; tertials and some of the concealed scapulars rufous towards the tips; a broad edging of the same near the extremities of the secondaries; tertials and scapulars white across the middle, showing conspicuously on the longer feathers, the terminal portions of which are black.

Chest pure white, succeeded by a band of deep vinous chestnut, many of the feathers of which are edged with black; below this the black sides of the breast are overlaid with long ochraceous white plumes, meeting across the body below the band, and barred down the sides with the chestnut; lower surface of quills and tail stone-grey, with a dark patch near the tips on the outer portion of the latter.

The black plumage underlying the stiff breast-plumes is a singular character in this bird's attire.

Young. In the bird of the year the anterior tooth is less developed than in the adult, and the second or posterior notch is *not developed*; the crest is of much the same length as in the old bird.

The chief characteristic is the great amount of white and rufous, handsomely intermingled, on the wings and scapulars. Head and upper surface dusky black, with a rufescent tinge on the back-feathers everywhere but at the tips; the scapulars and tertials are vinaceous rufous, with their centre portions white, and a bar of the same extends across the outer webs of the secondaries in the same position as the rufous edgings in the adult; lateral tail-feathers paler than the rest and tipped with white; throat a brownish or paler black than the head: the white of the chest narrower than in the adult; the pectoral band a paler and handsomer rufous, variable in width, and only continued in bars on the breast-plumes to a very limited extent; the abdomen and underlying breast-feathers with pale edgings; under surface of tail wanting the black patch.

* An example in the British Museum from Nepal, which has a wing of 9·4 and is not sexed, may be a female; a Ceylonese male, however, measures 9·3.

With age the back becomes blacker and more glossy, and the rufous colouring of the scapulars and tertials gradually gives place to the nigrescent adult hue; the white patch on the outer webs of the secondaries becomes rufous at the margins, and then black near the shafts, till in the old bird it finally disappears altogether.

Obs. The immature plumage of this bird appears not to have been hitherto described. In looking over the specimens in the National Collection, I came upon the example treated of above, which is undoubtedly in yearling plumage. The absence of the posterior tooth, the undeveloped crest, the pale edgings of the abdominal feathers, and the appearance of the under tail-coverts unmistakably indicate its immaturity, and have furnished a key by which at last the gradations in the plumage of this interesting species may be understood. The existence of this specimen precludes the possibility of the bird shot by Col. Tickell (J. A. S. B. 1833, p. 569) being the young of this *Baza*. This example was 18 inches in length, had a "fine long occipital crest black with white tips; the head, nape, and wing-coverts clouded with ashy and rusty; back clouded with brown; lower parts white, with a streak of black down the centre of the throat, and with rusty bars on the breast and belly." This bird cannot be referable to *B. lophotes*; but it may be *Sp. alboniger* or another species of the genus *Baza* (*B. jerdoni*?).

Distribution.—This beautiful Falcon is one of our rarest raptorial birds, and is, as far as observation has hitherto tended to prove, a cool-season migrant to Ceylon; and the fact of its having been observed to be migratory to Burmah and the east coast of India is, I think, for the most part, confirmatory of this belief. During its visits to the island it appears to confine itself mostly to the low country, and to be most partial to the northern half of the island. It was first recorded from Ceylon by Edgar Layard, who obtained a specimen near Jaffna, and who speaks in his "Notes" of another having been procured by Mr. Mitford, of Ratnapura. Subsequent observers do not seem to have met with it until Mr. Bligh obtained another, which was caught near Lemastota. In January 1876 I came suddenly upon a little troop of five in close company, and out of them secured an immature male. In the following October I saw another example near Ambepussa; and in January last year (1877), through the kindness of Mr. Chas. Byrde, of the Ceylon Civil Service, I received a second specimen, shot at Pasyala, in the Western Province. Mr. Simpson, of the Indian Telegraph Department, who has spent much of his time in the northern forests, and who is an accurate observer of birds, informed me that he had seen this Falcon at Kanthelai tank. Mr. Holdsworth mentions having seen specimens from the Kandy district which, with the exception of the evidence afforded by the Lemastota specimen, is the only record we have of its occurrence in the hill-region.

This species has a limited geographical distribution. As far as can be judged, it has its head-quarters in Assam and Burmah, and migrates thence down the east coast of India to Ceylon. Jerdon procured one specimen on the east coast near Nellore; and he remarks that it is occasionally killed at Calcutta, and is spread very sparingly throughout India. Of late years, however, it has not been recorded from the Deccan, North-west Provinces, Chota Nagpur, nor any of the western districts, the ornithology of all which regions has been so fully worked out in 'Stray Feathers'; neither has it been recorded from the Travancore, Palani, nor Nilghiri forests. It can only therefore locate itself in few places (and those far between) when it makes its annual visits to the Peninsula. The strangest feature in its distribution is, that it is likewise nothing more than a migrant to Burmah and Tenasserim. In the latter district Mr. Davison found it not uncommon in December and January throughout the southern parts of it; but no mention is made of its occurrence at other seasons, so that it is undoubtedly non-resident on the eastern side of the Bay of Bengal. There are specimens from Malacca and Pinang in the British Museum; but it has not been met with in the Andamans or Nicobars. Neither Mr. Oates nor Capt. Feilden appear to have found it in Upper Pegu; but in North-eastern Cachar, which lies to the north of it, Mr. Inglis found it consorting together, in November, in the same sociable manner that I did in the northern forests of Ceylon. Where, then, is its home throughout the greater part of the year? Where are those birds bred which mysteriously visit the above-mentioned regions for so short a time and again vanish as suddenly as they appeared? The northern portion of Burmah, together with the immense Chinese provinces of Yunan, Sechuen, and Quei Chorn, which lie to the north and north-east of the Burmese kingdom, are traversed here and there by extensive mountain-systems, such as the Palkoi, "Snowy," and other ranges—a vast and little-known ornithological district extending over 12° of latitude, all of which forms a territory sufficiently large to furnish a home for a bird of far less local disposition than a *Baza*. It is pretty certain that this species does not inhabit the more eastern parts of the Celestial Empire, for Père David makes no mention of its occurrence there or in the Moupin mountains in his new work on the Birds of China.

Habits.—This “Baza” frequents forest or large tracts of jungle, and usually keeps to districts of no considerable altitude. It appears to be more gregarious than most Hawks; for with the exception of the Kestrels and Kites, none seem to be so fond of each other’s company. The little troop that I met with more resembled Pigeons in their actions than birds of the hawk-tribe; three were seated among the branches of one tree, and two others flew from branch to branch close by; when I approached the whole made off with short flight, from tree to tree, during which movement I dropped my bird. They had a quick irregular mode of flying, and with their white chests and handsome wings, contrasted against the green foliage, had a very unhawk-like appearance. I notice, with regard to their sociability, that Mr. Inglis, in the “First List of Birds from Cachar” (‘Stray Feathers,’ vol. v.), speaks of finding three in company with Bulbuls and King-Crows. Jerdon remarks that it is entirely insectivorous in its diet; and a pair that Mr. Mitford met with near Ratnapura, referred to by Layard in his notes, were catching bees on the wing, and also by darting at them as they issued from their hive; they sat on the dead branches of a tree, and raised and depressed their crests, and this they have the power of doing vertically, like the Crested Swift (*Dendrochelidon coronata*). Layard’s specimen had a Lizard (*Calotes viridis*) in its stomach; and one of my birds, which was shot by Mr. Chas. Byrde, sitting in a jack-tree near the Rest House at Pasyala, had been feeding on Coleoptera. I know nothing of its note, nor can I find any thing recorded concerning it.

Jerdon writes of it in the ‘Birds of India’:—“It is almost entirely insectivorous in its habits, and keeps to the forests or well-wooded districts. It takes only short flights, and certainly is not usually seen soaring high in the air, as Mr. Gray says in his ‘Genera of Birds.’”

Comparatively little is known concerning any of the Malayan members of this interesting genus, conspicuous in which, for its singular and beautiful plumage, is the present species. It is therefore to be hoped that naturalists in India and Ceylon will, when they have the good fortune to come upon it in their wanderings, pay particular attention to its actions and habits, as far as their opportunity will permit of.

ACCIPITRES.

FALCONIDÆ.

FALCONINÆ.

Genus FALCO.

Bill very stout and strong, short, the tip well hooked, and its margin indented with a deep notch or tooth; culmen curved gently from the base of the cere; cere well advanced. Nostrils circular, exposed, and with a tubercle. Wings long, much pointed, reaching in some to the tip of the tail; the 2nd quill the longest, the 1st subequal with the 3rd, and notched near the tip on the inner web; secondaries falling short of the primaries by more than half the length of the tail. Tail moderately short, stiff, and somewhat cuneate at the tip. Tarsus shorter than the middle toe, plumed somewhat below the knee, covered in front with small hexagonal scales. Toes very strong; middle toe much longer than the outer, which exceeds the inner; the whole shielded with narrow transverse scales nearly to the base. Claws much curved and acute.

FALCO PEREGRINUS.

(THE COMMON PEREGRINE.)

Falco peregrinus, Tunstall, Ornith. Brit. p. 1 (1771); Gm. S. N. i. p. 272 (1788); Gould, B. of Eur. pl. 21 (1837); Blyth, Cat. B. Mus. A. S. B. p. 13. no. 63 (1849); Kelaart, Prodromus, Cat. p. 115 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 101; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 16. no. 18 (1854); Jerd. B. of Ind. i. p. 21 (1862); Gould, B. of Gt. Britain, pt. 1 (1862); Blyth, Ibis, 1866, p. 234; Hume, Rough Notes, i. p. 49 (1869); Jerd. Ibis, 1871, p. 237; Delmé Radcliffe, *ibid.* p. 363; Swinhoe, P. Z. S. 1871, p. 340; Holdsworth, P. Z. S. 1872, p. 410; Hume, Str. Feath. 1873, p. 367, et 1874, p. 140; Swinhoe, Ibis, 1874, p. 427; Legge, Str. Feath. 1875, p. 360; Hume, *ibid.* p. 443; Scully, Str. Feath. 1876, p. 117; Hume, *ibid.* p. 461; Dresser, B. Eur. pts. 47, 48 (1876).

Falco communis, Gm. S. N. i. p. 270 (1788, *ex* Buff.); Sch. Vog. Nederl. p. 6, pls. 1-3 (1854); Sundev. Sv. Fogl. p. 206, pl. 26. fig. 2 (1867); Sharpe, Ann. & Mag. Nat. H. 1873, xi. p. 222, et Cat. B. i. p. 376 (1874); David and Oustalet, Ois. de la Chine, p. 32 (1877).

Falco calidus, Lath. Ind. Orn. i. p. 41 (1790).

Falco lunulatus, Daud. Traité, ii. p. 127 (1800, *ex* Lath.).

Falco anatum, Bp. Comp. List B. Eur. & N. Am. p. 4 (1838, *ex* Audubon); Scl. et Salv. Ibis, 1859, p. 219.

Falco micrurus, Hodgs. in Gray's Zool. Misc. p. 81 (1844).

Le Faucon, Briss. Orn. i. p. 321 (1760).

Le Faucon pèlerin, Briss. Orn. i. p. 341 (1760).

Le Faucon sors, Buff. Pl. Enl. i. pl. 470 (1770).

Oriental Hawk, *Behree Falcon*, Latham, Gen. Syn. Suppl. p. 34* (1787).

"*Falcon*" (female), "*Tiercel*" (male), in Falconry; "*Duck-Hawk*" in America.

Bhyri (female), *Bhyri bacha* (male), Hind.; *Bhyri Dega*, Tel.; *Dega*, Yerklees (*apud* Jerdon); *Bahri* or *Water-haunting Bird*, Turkestan (*apud* Scully); *Basi*, Persia (*apud* Pallas); *Raja wali*, Malay; *Sikap lang*, Sumatra (*apud* Raffles); *Laki Angin* of the Passmahs; *Halcón*, Spain.

Ukussa, Sinhalese.

Adult male. Length to front of cere 15.2 to 16.0 inches; culmen from cere 0.8; wing 12.6 to 12.8; tail 6.5; tarsus 1.9 to 2.05; middle toe 1.85 to 1.9, claw (straight) 0.65 to 0.7.

Adult female. Length to front of cere 17.5 to 18.5 inches; culmen from cere 1.05 to 1.2; wing 14.0 to 14.6; tail 7.3 to 8.5; tarsus 2.1 to 2.2; middle toe 2.1 to 2.3, claw (straight) 0.75; height of bill at cere 0.45 to 0.48. Weight of a female (wing 14.5) killed at Trincomalie 2 lb. 4 oz.

Iris dark hazel-brown; eyelid and cere above nostril rich yellow, greenish near the gape; bill pale blue at the cere and yellowish at the base beneath, darkening to blackish at the tips; legs and feet yellow.

Above bluish ashen, darkening into blackish or blackish brown on the head and hind neck, and paling into bluish grey on the rump and upper tail-coverts, all the feathers with dark shafts conspicuous on the back and scapulars, and banded with narrow, softened, wavy bars of cinereous blackish from the hind neck downwards; on the rump and upper tail-coverts these markings take a spear-shaped form; bases and sides of the feathers, in many examples, on the hind neck rufescent; least wing-coverts edged pale; quills dark brown, pervaded with ashy on the outer webs; the tips finely edged with greyish, the inner webs barred with rufescent grey or greyish white; tail dusky ashen, palest at the base, and crossed with narrow wavy bands of blackish, and tipped deeply with buff-white.

Forehead usually whitish close to the cere; lores, cheeks, and a short broad moustachial streak black; chin, throat, fore neck, and all beneath with the under wing-coverts white, tinged on the upper breast with faint isabelline grey, and often on the lower parts with bluish grey; the throat and fore neck unmarked, the chest streaked with narrow shaft-stripes of brown, which change gradually on the upper breast into the narrow wavy bars of blackish brown of the whole under surface and thighs; under wing-coverts with broader bars of the same.

Obs. It is the opinion of many naturalists, and among them Mr. J. Hancock, who has made the Falcons a life-long study, that the Peregrine, as well as other members of the genus, acquires its adult plumage at the first moult*. From observations I have made of a number of specimens in the barred plumage, but showing here and there a thorough immature feather, it seems evident to me that the change does take place in the second year. Notwithstanding this, however, it is equally evident that modifications take place in the adult plumage as the bird grows older; the streaks on the chest become finer and less numerous, and the change to the bars just beneath is more sudden than in the two-year old. Considerable variety exists in the depth of hue of the upper surface in birds from different parts of the world, and some examples are very rufous beneath; an instance of this coloration is afforded in the bird now in the Zoological Gardens, captured off Yucatan, which is almost as rufous as the Indian Peregrine. Asiatic-bred birds shot in India seem to be, as a rule, very heavily streaked on the chest.

"*Young male on leaving the nest* (Sharpe, Cat. B. i. p. 378). Brown, all the feathers edged with rufous, a clear greyish shade pervading the upper surface, and particularly distinct on the secondaries; head and neck rusty buff, the sides of the crown and occiput, the nape and hind neck, the feathers behind the eye, and the moustachial line mottled with blackish; under surface of the body rusty buff, with longitudinal median spots of dark brown, fewer on the thighs, and changing into bars on the under wing- and tail-coverts; throat paler and unspotted."

The bird of the year attains almost its full size before the first moult, and has the cere and bill much as in the adult; legs and feet greenish yellow.

When fully acquired the plumage is as follows:—Head, back, and wings dark brown, paling, in some, on the rump into light umber-brown, in others into cinereous brown, the feathers more or less edged with rufescent brown,

* Mr. Hancock argues from the testimony of caged specimens in his possession, which have invariably acquired the barred plumage at the first moult. Now all who have kept Raptors in confinement know that they are *slower* in acquiring their adult plumage, owing to loss of vigour, than when in a wild state; if, therefore, the Peregrine makes the sudden change in captivity, how much more must it do so in a state of nature.

paling on the scapulars into fulvous ; front of the crown and the forehead whitish or fulvous, with the centres of the feathers blackish ; sides of the hind-neck feathers marked with the same ; shafts of the scapulars and upper tail-coverts black, and the tips of the latter part deeper than elsewhere ; quills brownish black, barred on the inner webs with rufous-grey ; tail cinereous brown, crossed with incomplete bars of rufous- or fulvous-grey and tipped deeply with whitish.

Cheeks and moustachial streak blackish brown, the white portion of the ear-coverts streaked with the same ; chin, throat, and entire under surface white, in some slightly tinged with rufescent on the lower parts, and boldly streaked from the chest downwards with umber-brown ; the markings are usually broader on the flanks, and in very many examples, even at this age, have a bar-like form ; on the under wing-coverts the brown predominates, the white markings being confined to the tips.

Distribution.—The Peregrine was first recorded from Ceylon by Layard, who gives an account (*loc. cit.*) of shooting three specimens at Pt. Pedro in the month of January. Doubt has been thrown by the late Dr. Jerdon and others on Layard's identification, chiefly on account of the latter's statement that he found them nesting ; but I have carefully examined the two specimens that still exist in the Poole collection—an adult and an immature bird ; and there they are, veritable Peregrines, in spite of their having been found breeding in so strange a latitude as Ceylon. It appears to confine itself principally to the sea-coast during its visit to Ceylon, which is of course during the north-east monsoon. During the latter part of 1872 a pair frequented the Fort-Frederick cliffs at Trincomalie ; but, fortunately for themselves, eluded several attempts I made to procure them ; they tenaciously kept to one place on the face of the great " Sāmi " rock, where they commanded any approach to their haunt either by land or sea. In February 1874 Mr. R. Pole, of the Ceylon Civil Service, shot a fine female at Puttalam, which is now in the British Museum, and was the first procured since Layard's time, as far as I am aware. In October of the following year I failed in killing one which frequented the dead trees in the bed of the newly-restored tank at Devilane ; but on the 28th of the same month I succeeded in shooting a female on the cliffs at Fort Frederick. During the cool season of 1876-77 another example, also a female, judging by its size, was observed by myself on two occasions in the cinnamon-gardens near Colombo ; and in December of the same season I met with and wounded a second at the top of Allegalla Peak.

Beyond this latter locality, I do not know of any place in the mountain-zone in which it has been observed. This fine hill, which is one of the bulwarks of the mountain-range of Ceylon, rises 3400 feet sheer out of the low country, and consequently furnishes the present species with a seasonal shelter and the next with a permanent home.

The Peregrine is a cold-weather visitant to the peninsula of India, the Laccadive and the Andaman Islands ; but a good many birds, probably young, remain behind in India, and take up their quarters on the borders of extensive jheels and tanks, attracted by the quantity of wildfowl and waders, which form their chief sustenance. It arrives, says Jerdon, in India, about the first week in October, and departs again in April, and during its visit is less abundant on the west coast than on the east. It is common in Burmah, and finds its way, according to Mr. Hume's observations, to the Andamans *viâ* Cape Negrais. Professor Schlegel records it from Sumatra ; and on the east coast of China Mr. Swinhoe says that it is a permanent resident. Père David, however, remarks that it is driven by the Saker out of the south of China. It is not uncommon in Japan. It is spread throughout Central Asia, extending northwards into Siberia, and, according to Dr. Scully, remains about Yarkand even in the winter. Canon Tristram found it all times of the year in suitable localities on the coast, but to the eastward of the watershed of Central Palestine he never observed it.

It is distributed throughout the continent of Europe to the extreme north, and it occurs likewise in the islands of the Mediterranean. It is found chiefly on the coast-line of Northern Africa, being, however, not very abundant in Egypt, though it is, according to Mr. T. Drake, numerous in Tangiers and Eastern Morocco ; southward it extends its range to Natal and the Cape. From the Canary Islands MM. Berthelot and Bolle record it ; but it does not seem to have been noticed in Madeira. In the New World it enjoys a very wide range ; commencing in Greenland it extends down the east coast to South America, and spreads across the continent to Vancouver Island, and thence along the entire Pacific coast of the continent to Peru, being replaced in Chili and to the south of that country still by *Falco cassini*, a species somewhat akin to the Australian Peregrine, *F. melanogenys*. It is not my province to go so minutely into its distribution as to record those localities from which it is absent ; but from the above sketch of its habitat it will be seen that the Peregrine has one of the widest ranges of the birds of prey, rivalling even the Osprey in its wanderings.

Habits.—This noble Falcon is perhaps too well known to need much comment on its habits. Bold, swift on the wing, and keen-sighted to a degree, as well as extremely docile in confinement, the female has long been celebrated for its employment in the ancient and royal pastime of Falconry; and although this sport has declined much in Europe during the last century, it is still practised to a certain extent both on the continent and in England, the birds used with us being brought over principally from Holland, where they are netted. In India it has always, in common with the next species, been prized by the natives for Falconry, and is still trained there for that purpose; but used to be so, according to Jerdon, much more than now. He writes, in the 'Birds of India,' "It is trained to catch Egrets, Herons, Storks, Cranes, the *Anastomus*, *Ibis papillosa*, *Tantalus leucocephalus*, &c. It has been known, though very rarely, to strike the Bustard. Native falconers do not train it to hunt in couples, as is done in Europe sometimes. I may here mention that the idea of the Heron ever transfixing the Hawk with its bill is scouted by all native falconers, many of whom have had much greater experience than any Europeans. After the prey is brought to the ground, indeed, the Falcon is sometimes in danger of a blow from the powerful bill of the Heron, unless she lays hold of its neck with one foot, which an old bird always does. When the Kulung (*Grus virgo*) is the quarry, the *Bhyri* keeps well on its back to avoid a blow from the sharp, curved inner claw of the Crane, which can, and sometimes does, inflict a severe wound."

Jerdon comments on the curious mistake that artists, even Landseer included, have made in depicting the Peregrine as striking with its bill! This erroneous idea, however, is not confined to artists, for I have more than once seen it in the writings of naturalists. No raptorial bird that I have ever heard of uses its bill either for defence or offence; this organ is constructed for, and only used in, tearing the food on which the bird subsists. The talons alone are used in striking the quarry and in fighting or defending itself against attacks from any source whatever. I have kept half a dozen species of diurnal birds of prey, and have often had occasion to catch them by hand; but have never known one to use its bill when caught further than in giving a very incipient sort of peck. It is well known what a tremendous wound the Peregrine inflicts with the hind claw when striking its quarry; and in America, where it is called the "Duck-Hawk," on account of its partiality for ducks, these birds have been found with the whole back ripped up by the stroke of the Hawk's sharp talon, combined with the great momentum of its downward swoop. Peregrines have their favourite localities in India and Ceylon, which they tenaciously keep to throughout the season; they usually take up their quarters near water, and are very partial to sea-coast cliffs, which afford them a tolerably secure refuge. The birds that almost annually frequent the rocks at Trincomalie feed on the Pigeons frequenting the islets lying off the coast some 12 miles to the north. I observed them flying home at usually about nine or ten o'clock, when they would shelter themselves during the heat of the day, and sally out again in the afternoon. The favourite food of the Peregrine in India consists of waterfowl and waders, the latter being chiefly preyed upon by those birds which frequent the sea-coast. Mr. Adam writes that at the Sambhur Lake "they sit on stakes which are required to form a low retaining wall to separate a portion of the lake-water for the formation of salt, and from these perches they pounce on the numerous waders which feed along this wall." It is well known to what an extent Colcoptera are preyed upon in the East; and Mr. Pole assures me that the specimen he shot at Puttalam was flying round his compound at dusk, and appeared to be darting at the large beetles which were swarming in the air at that hour.

The ordinary flight of the Peregrine is regular and straight on end, being performed, as in other Falcons, with a quick wing-stroke; it is moderately swift, but nothing out of the common; when, however, it is in pursuit of a quick-flying quarry, such as a pigeon, duck, or limicoline bird, its wonderful powers of progression are fully brought out, and in making its final dash on the doomed victim its speed for the moment is estimated at 160 miles an hour.

Nidification.—As the *Bhyri* is not known to breed in India, the fact of its having been found nesting at Pt. Pedro by Layard has been a matter of dispute. As mentioned above, I have identified Layard's birds, and they are not the Jugger (*F. jugger*), as has been suggested; and consequently the interesting fact remains that the species (probably quite an abnormal occurrence in tropical latitudes) has bred in Ceylon. He writes as follows:—"I found them breeding in a palmyra tope on the left-hand side of the road from Jaffna to Pt. Pedro; the nest a rough structure of sticks laid on the dead 'matties' or fronds of the palmyra, from which the leafy parts had been cut away. I shot the first specimen early in the month (January); but the

female was so shy that, though I long remained concealed near the nest, she never afforded me a shot, and I was obliged to return home without her. I was surprised to find another male at the same nest when I revisited the spot at the end of the month, and procured both him and his mate with a double shot."

Schlegel affirms that the Peregrine has bred in Sumatra; and Swinhoe found it nesting on the cliffs of North rock, in the province of Shantung, North China, and remarks that it appears to be a resident species down the whole length of the Chinese coast, young birds in their down having been brought to him at Amoy. No further testimony beyond that of these three writers is forthcoming of its breeding in the south-east of Asia or in the Indian empire southward of the Himalayas. Dr. Adams is supposed to have found its nest on the banks of the Indus; but the occurrence is mentioned with doubt, as to the correct identification of the bird, by both Jerdon and Hume; and the latter does not include it in his list in 'Nests and Eggs.' In more northerly latitudes it usually chooses an inaccessible cliff on which to build and rear its young. There, on some ledge which it deems secure from the attack of man, it constructs a nest of sticks, often mingled with the bones of its quarry, which, collecting year after year, have at last become part and parcel of the structure. The eggs are either three or four in number, and vary both in size and markings, these characters depending on the age of the bird. In Mr. Hewitson's plate (vol. i. of his 'British Birds' Eggs') are two examples: the first laid by an old bird, and measuring 2.13 by 1.7 inch; the second by a younger bird, not exceeding 1.92 by 1.55. In the larger of the two the general colour is reddish white, closely freckled, except at the small end, with brick-red, and blotched openly over that with reddish brown, the markings on the smaller half being the largest. The second egg is not so decided in its markings, is of a paler ground, covered with a stippled wash of pale reddish, in which there are a few darker clouds and several openly distributed large blotches round the centre.

FALCO PEREGRINATOR.

(THE INDIAN PEREGRINE.)

Falco peregrinator, Sund. Phys. Tidssk. Lund, 1837, p. 177, pl. 4; Gray, Gen. Birds, i. p. 19 (1844); Blyth, Cat. B. Mus. A. S. B. p. 14 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 102; Gould, B. of Asia, pt. 3 (1851); Blyth, J. A. S. B. xix. p. 321 (1851); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 18. no. 20 (1854); Jerd. B. of Ind. i. p. 25 (1862); Hume, Rough Notes, i. p. 55 (1869); Jerd. Ibis, 1870, p. 237; Holdsworth, P. Z. S. 1872, p. 410; Sharpe, Ann. & Mag. Nat. Hist. ser. 4, xi. p. 223 (1873); id. Cat. B. i. p. 382 (1874); Legge, Str. Feath. 1875, p. 195; Hume, Nests and Eggs, p. 23 (1874); Walden, on Col. Tickell's MS. Ill. Ind. Orn., Ibis (1876), p. 342.

Falco shaheen, Jerd. Madr. Journ. x. p. 81 (1839); id. Ill. Ind. Orn. pls. 12 & 28 (1847).

Falco sultaneus, Hodgs. in Gray's Zool. Misc. p. 81 (1844).

Falco ruber, Schl. Mus. P.-B. *Falc.* p. 5 (1862).

The Shahin Falcon, Jerdon, B. of India; *Royal Falcon* of some.

Shahin, "Royal bird" (female), *Kohee Koela* (male), Hind.; *Jawolum*, Tel.; *Wallur*, Tam. *Ukussa*, Sinhalese.

Adult male (from Ceylonese and Indian examples). Length to front of cere 13.9 to 14.2 inches; culmen from cere 0.9 to 1.0; wing 11.4 to 11.6, expanse about 34.0; tail 6.0 to 6.4; tarsus 2.0; middle toe 2.1, claw (straight) 0.7; hind toe 0.85, claw (straight) 0.9; height of bill at cere 0.45.

Female. Length to front of cere 15.0 inches; culmen from cere 1.1; wing 12.0 to 13.3, expanse of the latter 38.2.

A male from Ceylon measured 11.6, and a female 12.8 in the wing.

Iris dark umber-brown; cere, eyelid, and gape ochre-yellow; bill dark plumbeous, changing to greenish near the cere; legs and feet chrome-yellow, claws black.

Head, hind neck, and upper back ashy blackish, deepest on the sides of the neck and paling gradually into bluish ashy on the rump and upper tail-coverts, the latter part being the lightest; all the feathers with dark shafts, the scapulars and wing-coverts edged with pale ashy and the lower back and tail-coverts crossed on the centre of the feathers with dark wavy bars, often concealed by the tips of the overlying feathers; lesser coverts darker than the median; quills blackish brown, the shorter primaries slightly pervaded with grey, and the whole narrowly barred on the inner webs with fulvous or light rufous-grey, according to the age of the bird; the secondaries paler than the primaries, and tipped with dull whitish; tail ashy blackish, tipped with rufescent and barred chiefly at the base with softened slaty markings; edge of the forehead buff with dark shafts.

Cheeks and moustachial stripe black, blending into the paler hue of the head; chin and throat rufescent white, passing on the chest into pale rufous, and from that into the rich rufous of the breast, flanks, and lower parts; shafts of the chest-feathers darker rufous than the web; flanks and under tail-coverts crossed on the centre of the feather with narrow lines of blackish; under wing-coverts dark rufescent, with darker shafts and cinereous black barrings; greater row brownish, barred with rufescent.

Obs. The rufous of the under surface is variable in depth, notwithstanding that the bird may be fully adult. Ceylonese examples in my collection correspond well with Indian, old birds, devoid of any barring on the breast, being scarcely less dark on the head and hind neck than the blackish-headed Nepaul birds (*Falco atriceps*, Hume).

Some examples in the British Museum from Northern India present puzzling characteristics. There is one from Simla, presented by Capt. Pinwill, which has the appearance of a rather small Common Peregrine with a very rufous under surface. The feathers of the back and rump and the scapulars are as much barred as in *F. peregrinus*; the chest is marked with fine mesial points like that species; the breast and lower parts are rufous-grey, and barred with narrow cross rays of blackish brown as in an old Peregrine, with the exception that the markings are closer together; the flanks and under tail-coverts are likewise tinged with bluish grey.

Young. Wing of a male 10·6 inches. Cere yellowish, tinged with green, in some entirely bluish; legs and feet greenish yellow.

Above brownish black, the feathers of the back and wing-coverts with fine pale margins, the scapulars tipped with rufous and some of the concealed portions of the feathers barred with the same; rump edged with rufous, upper tail-coverts tipped and barred with a paler hue; quills deep brown, the bars of the inner webs more rufous than in the adult; tail barred obscurely with rufous, which on the central feathers is of a dusky hue.

Cheeks and moustachial stripe blackish brown; throat and chest white, passing into rufescent buff on the breast and flanks; the chest and the white space above the moustache streaked with shaft-lines of brown, expanding at the tip; breast streaked broadly with brown, the lower flank-feathers deeply tipped and marked with bar-like spots of the same; the abdomen, under tail-coverts, and thighs are paler than the breast, the former streaked similarly to the chest and the thighs more boldly marked, some of the longer feathers having bar-like spots; under tail-coverts barred with brown; under wing-coverts whitish, with irregular cross-markings of brown.

At the first moult the following change takes place:—the rump and the base of the tail assume a cinereous hue, the edgings of the scapulars are less conspicuous, the bars of the primary inner webs become paler and the shaft-stripes on the chest narrower, the breast and flanks darker rufous, this hue extending to the belly and thighs, and the stripes on the flanks turn into bars.

The back and rump from this stage onwards begin to turn grey, the shafts of these parts and of the scapulars standing out darkly; the stripes on the centre of the breast disappear altogether in some examples, leaving the flanks barred to a greater or less extent.

Distribution.—This bold and handsome Falcon was recorded by Layard (*loc. cit.*) as having been shot by his collector and servant near the beautiful upland plain of Gillymally. The account of the specimen in question referred chiefly to its long wings causing the native “Muttoo” to think that it was a “large Swift,” deceiving Layard also, who says of the bird, “which I also mistook for a Swift, so much did its wings overlap its tail.” I have carefully examined the whole collection at Poole, and there is not in it any example of *F. peregrinator*; but there is one of a female *Falco severus*, a bird not recorded by Layard in his list. I am therefore of opinion that he did not correctly identify the bird shot on the occasion in question, but that it was in reality a specimen of the Indian Hobby, to which his remarks as to length of wing &c. would relate with correctness. I have written to him on the subject; and in his last letter to me from New Caledonia he says that he has no doubt the bird was the latter species. Should this surmise be correct it is difficult to say when the bird was first discovered in Ceylon; but I imagine that my reference in ‘Stray Feathers,’ 1875, to the Pigeon-Island specimens is the first actual record of the bird’s occurrence in the island. It is resident in Ceylon, but by no means common, and frequents such very retired spots or inaccessible cliffs that it is rarely met with by the ordinary sportsman. A pair usually affected the cliffs at Fort Frederick during the cool season, dividing their time between foraging on the mainland and making inroads upon the Rock-Pigeons which swarmed at the island beyond Nilāvele. At this spot a pair out of three or four birds which had taken up their abode on the northern face were killed by myself and a brother officer in October 1874. This island is an out-of-the-way locality, which, stocked as it is with fine pigeons, forms a welcome refuge for the Shahin. As it has so seldom been shot in Ceylon, I quote here the following passage from my notes in ‘Stray Feathers’ :—
“The islet is situated 14 miles north of Trincomalie at about 1½ mile from the mainland. Near this place, about ½ a mile nearer the shore, is another rocky islet frequented by flocks of *Columba intermedia*, which furnish many a dainty meal for the Royal Falcon. Pigeon Island itself is rarely visited except by fishermen, who can only land at the south side, where there is a little beach backed by a tangled thicket, which rises gradually to the pinnacle in the centre, whence the northern side descends in the form of a perpendicular face right into the sea. This cliff, under which it is very difficult to pass on foot, forms a splendid shelter for the Shahin; for he can perch and roost on the shelves which jut out into the numerous crevices in the face of the rock without being disturbed by any one in the island who does not choose to scramble along the almost inaccessible rocks at its foot. I visited the spot on the 6th October 1874, in search of pigeons, and finding none, was clambering over the rocks on an adjoining islet, separated at high water from the main portion, when I espied a large Falcon coming along over the water and making for the cliff. I quickly turned back, reached the cliff, and got out on to an enormous boulder which enfiladed the precipice, affording a good view of the whole of it, but not a vestige of the Falcon was to be seen. I then determined to get right underneath, and jumped across a

chasm to a lower boulder, from which I could see almost every spot in the precipice ; but still no falcon. I then shouted, and out shot three splendid fellows, which I missed with my first barrel ; but back they came, dashing up to the rock, and not caring the least for my shot, when bang went the weapon, and down came a fine fellow between two large rocks, where I judged him to be safe, and then fired several shots at impossible distances at the other two, which wheeled and dashed round the summit of the hill in such a manner that I thought they must be breeding. After a while the third bird made off, the second disappearing suddenly from the battle-field. Thinking it was about time to pick up my dead bird, I made my way across and through the water to the spot where I had dropped him, and to my extreme disgust found that he had fallen into a sluice, out of which the first receding wave must have carried him. Not a sign of my prize anywhere ; high and low I searched, and at last gave up in despair, convinced that a monstrous blue rock-fish, with which the water beneath the cliff swarmed, had long since polished him off ! On returning to the other side of the island, where my companion was hungrily waiting breakfast, the first sight that greeted me was a magnificent winged *Shahin* hanging by his knotted primaries to the branch of a tree. My companion (Major Sir John Campbell) had dropped him as he shot past ; and hence his sudden disappearance from my side of the island." Elsewhere in the lower country I have met with the *Shahin* in the Friars-Hood district, and at Yakkahatua mountain near Avisawella ; and Captain Wade, 57th Regt., shot a fine adult specimen at Tissa-Wewa Tauk, near Anaradjapura, in December 1875. In the hill-zone it is more often seen, and no doubt breeds in the mountains. I killed an old male at the top of the celebrated Yakka rock, Hewahette, in May 1876, and in the following month Mr. Bligh procured another in Haputale. During the same season a young bird, which I saw afterwards alive in the possession of Messrs. Whyte and Co., was caught in the act of dashing at some pigeons near Kandy. I have seen it on the Alagalla Peak, in the precipices of which I have reason to believe it nests.

This Falcon was first described by Sundevall from a specimen which settled on the vessel he was sailing in, "in lat. 6° 20' N., between Ceylon and Sumatra, rather nearer the last-named island, and at least 70 Swedish miles from the nearest land, viz. the Nicobar Islands." From what follows in the Professor's remarks on this occurrence, he was of opinion that it was either flying to or from Sumatra. It has not, however, been discriminated from that island ; and it is more probable that the specimen in question was on its way to or from the Nicobar Islands, but where also it has not been found up to the present time. It is said by Jerdon to be found "throughout the whole of India, from the Himalayas to the extreme south, extending into Affghanistan and Western Asia." As regards the two latter regions I imagine that it has been here confounded with another species, as the bird does not appear to extend beyond the confines of the Indian empire, and the northern race, inhabiting even the Himalayas, is separated as *F. atriceps* by Mr. Hume. I have, however, examined individuals in the National Collection from Nepaul, and they are not separable from Ceylonese specimens. It is more often found in Central than Upper India, and is more frequent still in the South, inhabiting the Nilghiris and breeding there. In the Carnatic it is seldom met with ; but in the Eastern Ghauts it is tolerably common, according to Jerdon, breeding there, and migrating in the young stage to the former locality. As this writer has stated, it is no doubt far from being a common bird, confining itself to forest-clad districts. I observe that it is not mentioned in Mr. Fairbank's list of birds from the Palani Hills, nor in Mr. Bourdillon's from Travancore, although Jerdon shot it in the latter district. Col. Tickell states that it is a commoner species in Burmah than in India, and that he frequently observed it on the sea-side at Amherst. It must be local, however, in Burmah, as I do not find it recorded thence by any of the naturalists whose work has been described of late years in 'Stray Feathers.' With regard to the specimens of this Falcon said to have been procured at sea in the Indian Ocean, I have to remark that the bird mentioned by Mr. Whyte (*Ibis*, 1877, p. 149) as being captured in the Gulf of Socotra, and belonging to the present species, has eventually proved to be a Common Peregrine ; and I am strongly of opinion that the source to which the presence of another (mentioned in a footnote, 'Stray Feathers,' 1877, p. 502, as being procured in 1833 on board ship between Mauritius and Madagascar) might be traced is that which has led to many mistakes in "distribution," viz. an escape from a state of confinement.

Habits.—In Ceylon the Indian Peregrine frequents lofty mountain-precipices or inaccessible cliffs on the sea-coast. It is an excessively shy bird, retiring when not engaged in the pursuit of its quarry to sequestered ledges, and easily escapes all notice, unless observed to fly towards its retreat. It is as bold and courageous

in the hunt as its larger and more esteemed congener ; but of course is not so powerful in its attack on large birds. It is taught to catch partridges, florikin, and jungle-fowl by native falconers in India, and is usually caught by the ordinary contrivance of bird-lime, with which it comes in contact on stooping at a decoy-bird. Jerdon, who narrates, in his work on the 'Birds of India,' that it is trained for what is called "a standing gait," or the art of hovering or circling in the air over the falconer and his party, says that "it is indeed a beautiful sight to see this fine bird stoop on a partridge or florikin which has been flushed at some considerable distance from it, as it often makes a wide circuit round the party. As soon as the Falcon observes the game which has been flushed, it makes two or three onward plunges in its direction, and then darts down obliquely with half-closed wings on the devoted quarry with more than the velocity of an arrow." I can testify to the accuracy of this account of the Shahin's powers of flight, as I was once myself an eye-witness to its capturing a Palm-Swift at Trincomalie. A little colony of these birds had their nests in a solitary palmyra-palm which grew near the sea-beach ; and one evening I observed one of these Falcons, which had been haunting the cliffs of the Fort, dash past me, and, mounting higher and higher, go away at a tremendous pace, and with a twisting flight, for about 300 yards. I could not see at the moment what he was pursuing, as it was getting dusk ; but he suddenly checked himself and shot down with meteoric swiftness almost into the sea. I then perceived a poor little Swift just in front of him ; close to the surface of the water it dashed along in a horizontal direction for about 100 yards, closely pursued by the Falcon, and then twisted hither and thither for the space of a few seconds, the Shahin following its every movement, until he struck it with his talons, and, seizing it in his bill, flew past me to the cliff. These Falcons frequently sally out thus from their perch about sunset, and make a meal off the first unlucky bird that crosses their path ; and they would seem to have rather a partiality for Swifts and Swallows, for I noticed the bird I shot at the Yakka rock dart at a Swallow that was flying about the cliff. They may be always distinguished from the Peregrine on the wing, even at some little distance, by their smaller size and by the conspicuous blue-grey of the rump. I have now and then observed them perch on trees ; but I think it is the exception for them to do so, as they prefer the rocks of the precipices about which they almost entirely live. This species lives exclusively on birds ; and Jerdon remarks that in India it kills large quantities of game, partridges, quails, &c., and that it is very partial to parrakeets. He observes, further, that its habits vary according to the locality in which it lives, birds from open districts, where they require to be more on the wing in pursuit of their prey than in forest districts, being by far the best fliers and the most useful in falconry. It is more highly prized by the natives than any Falcon in the East, the Peregrine being considered even second to it.

Nidification.—But little is known concerning the nidification of this Falcon. I have no doubt whatever but that it breeds in such localities as the Yakka rock, Alagalla Peak, and perhaps in the low country in hills like Yakdessagalla, Rittagalla, Friars Hood, &c. It nests usually on inaccessible cliffs. Jerdon mentions three eyries in India—one at Rutoor, another in the Nilghiris, and a third near Mhow. It builds a nest of sticks on a projecting or receding ledge of rock, and sometimes takes possession of the old nest of another Raptor. Mr. Hume speaks of an egg taken by Mr. Blewitt in the Raipoor district as being narrow and oval, of a pale pink ground-colour, clouded with pale purplish, and finely speckled and spotted with deep reddish brown. It measured 2.0 by 1.43 inch. This egg was taken in January ; but Jerdon says it lays also in March and April.

FALCO SEVERUS.

(THE INDIAN HOBBY.)

Falco severus, Horsf. Trans. Linn. Soc. xiii. p. 135 (1822); Blyth, Ibis, 1863, p. 8; Schl. Vog. Nederl. Ind., Valkv. pp. 4, 45, Taf. 2. figs. 2, 3 (1866); Radcliffe, Ibis, 1871, p. 366; Sharpe, Cat. B. i. p. 397 (1874); Bourdillon, Str. Feath. 1876, p. 354.

Falco aldrovandii, Temm. Pl. Col. i. pl. 128 (1823).

Falco rufipedoides, Hodgs. Calc. Journ. N. H. iv. p. 283 (1844).

Falco guttata, Gray, Cat. Accipitr. Brit. Mus. p. 26 (1844).

Hypotriorchis severus, Gray, Gen. of B. i. p. 20 (1844); Blyth, Cat. B. Mus. A. S. B. p. 14 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 22 (1854); Jerd. B. of Ind. i. p. 34 (1862); Wallace, Ibis, 1868, p. 5; Hume, Rough Notes, i. p. 87 (1869); Holdsworth, P. Z. S. 1872, p. 410; Walden, Trans. Zool. Soc. viii. p. 33 (1872).

The Severe Falcon, *apud* Horsf. & Moore.

Dhuti (female), *Dhuter* (male), Hind.

Allap-Allap-Ginjeng, Java.

Adult male. Length to front of cere 10·3 to 10·5 inches; culmen from cere 0·65; wing 8·0 to 9·0; tail 4·5; tarsus 1·1 to 1·2; middle toe 1·2, claw (straight) 0·5; height of bill at cere 0·27.

In 'Stray Feathers,' vol. iv. p. 355, the wing of a male shot in Travancore is given at 9·25. This is *most exceptional*, or it is a misprint for female. Two Ceylonese examples, one of which, on account of its small size, must be a male, measure 8·6 and 9·0. Three males in the Norwich Museum, from the Philippines and Java, measure 8·3, 8·6, and 8·7; two others in the British Museum do not exceed 8·3; Jerdon, however, gives the wing of a male as 9·0, from which I have taken the above limit.

FALCO CHICQUERA.

(THE RED-HEADED MERLIN.)

Falco chicquera, Daud. Traité, ii. p. 121 (1800, *ex* Levaill.); Less. Traité, p. 90 (1831); Gould, Cent. B. Him. Mts. pl. 2 (1832); Blyth, Cat. B. Mus. A. S. B. p. 14 (1849); Sharpe, Cat. Birds, i. p. 403 (1874).

Hypotriorchis chicquera, Gray, Gen. B. i. p. 20 (1844); Kelaart, Prodrömus, Cat. p. 115; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 102; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 23 (1854); Jerd. B. of Ind. i. p. 36 (1862); Holdsworth, P. Z. S. 1872, p. 410; Butler, Str. Feath. 1875, p. 444.

Æsulon chicquera, Kaup, Class. Säug. u. Vög. p. 111 (1844).

Chicquera typus, Bp. Rev. et Mag. de Zool. 1854, p. 536; Hume, Nests and Eggs, p. 19 (1873).

Turuntia chicquera, Blyth, Ibis, 1863, p. 9.

Lithofalco chicquera, Hume, Rough Notes, i. p. 91 (1870); Anderson, P. Z. S. 1871, p. 681.

Toorunttee, Europeans in India.

Turunti, *Turuntari*, *Tutri mutri* (female), *Chetwa* (male), Hind.; *Jellayanta*, *Jelyadda*, Telegu; *Jelkat*, Yerklees (*apud* Jerdon).

Adult male. Length (from skin) to front of cere 10·5 inches; culmen from cere 0·7; wing 7·9 to 8·1; tail 5·0; tarsus 1·3 to 1·5; middle toe 1·3, claw (straight) 0·48; height of bill at cere 0·35.

Adult female. Length to front of cere 11.0 to 12.0 inches; culmen from cere 0.65; wing 9.2 to 9.7; tail 4.9; tarsus 1.3 to 1.4; middle toe 1.3, claw (straight) 0.5. The wing sometimes reaches 0.5 beyond the tail.

Iris deep brown; cere and bill at base yellow, the upper mandible and tip of the lower blackish; legs and feet yellow, claws black.

Entire face, head, hind neck, and interscapular region glossy black, paling into blackish slaty on the back, wings, rump, and upper tail-coverts; the feathers on these parts have the shafts black and the bases blackish brown, the slaty hue being confined to the tips of the feathers; on the head and hind neck there is an ashen hue; quills blackish brown, the inner webs more or less barred with rufous (in some very old birds these are almost absent or reduced to pale transverse dashes); tail slaty black, tipped finely with rufous, and in some with a subterminal band, such examples having the outer feathers with rufous or greyish bars on the inner webs. Some examples have undefined slaty bars across the whole tail.

Throat and fore neck buff, tinged with rufous, the colour running up into the sides of the neck, all beneath from the fore neck, with the thighs, under tail- and under wing-coverts, deep chestnut or ferruginous; under primary-coverts paler rufous, barred with black; the remainder of the wing-lining with black shaft-lines; sides of the chest with a few black patches, running into the black hind neck; middle of the chest usually with a few black shaft-lines.

Young. The immature bird is almost as dark above as the adult; but the exposed portions of the sides of the hind-neck feathers are more or less rufous, the central tail-feathers are crossed with greyish markings, and the inner webs of the remaining feathers barred with rufous; extreme tips of the secondaries whitish; chin and throat as in the adult, the rufous of the under surface not quite so deep; the chest streaked with drop-shaped striæ of black, and the breast and flanks marked with oval central drops, the thighs and under tail-coverts with central streaks, longer and narrower than the breast-markings.

Distribution.—The handsome Indian Hobby can only be classed in our lists as a straggler, having been but twice procured in the island. The first record of it as a Ceylonese bird is contained in Mr. Holdsworth's Catalogue (*loc. cit.*), from a specimen shot by Mr. Bligh, at Catton Estate, Haputale; but from recent investigation, as noticed in the preceding article, I find that Layard killed another example, which is, in all probability, referable to his *Falco peregrinator* shot at Gillymally; and he therefore must be looked upon as the discoverer of the species in Ceylon. I imagine that both these specimens were killed during the cool season, and that without doubt the species is migratory to Ceylon, as it is to South India.

This Hobby is a bird of fairly wide distribution, being found throughout the whole of the Indian peninsula

Adult female. Length to front of cere (from skin) 13.0; wing 8.5 to 9.1; tail 6.5 to 6.8; tarsus 1.6 to 1.7. Weight 8.5 oz. (*Hume*).

The above measurements are from N. Bengal and Nepaul specimens.

"Iris rather light brown; orbits yellow; bill greenish yellow at base, bluish black at tip; legs and feet pure (slightly orange) yellow." (*Hume*.)

Head, back, and sides of neck cinnamon-rufous; a moustachial streak of a paler hue than the head, between which and the eye is a blackish streak; a dark superciliary line; back, rump, scapulars, and wing-coverts bluish slate, paling gradually towards the tail, and blending somewhat into the hue of the neck; the feathers of these parts with dark shafts; wing-coverts at the point of the wing barred with blackish grey; feathers along the ulna edged with rufous, and beyond this the edge of the wing is buff-white; primaries deep brown, the inner webs barred narrowly with white, not reaching on the terminal half to the edge of the feather; primary-coverts and secondaries slate-grey, the inner webs albescent and barred with blackish grey; tail pale bluish grey, lighter than the coverts, deeply tipped with greyish white, and crossed with a broad subterminal black band, the remainder crossed with narrow widely separated rays of blackish grey.

Chin, throat, sides of the face, and under surface white, barred from the breast downwards with blackish grey or dark slate-colour, and the markings on the centre of the breast somewhat pointed at the middle of the feather; flanks more heavily barred than the breast; under wing-coverts white, the external feathers with dark mesial lines, the inner ones barred like the chest.

Females that I have examined in the British Museum have the under wing-coverts more darkly barred than males. The tail-band appears to fade very much in this species, turning brown when the feathers become old.

from the Himalayas to Travancore, and likewise in the Malayan peninsula, whence it extends through the whole Asiatic archipelago by way of Celebes and New Guinea to the Philippines. I have seen specimens of it from Java, Salwati, Borneo, and Makassar; and it in all probability inhabits many of the smaller islands in the Malayan region. In India it is chiefly confined to the Himalayas; but it is not very numerous even there, and does not extend to the north of this range. A few visit the plains in the cool season, and it is often killed in the neighbourhood of Calcutta. Colonel Radcliffe procured it near Futteghur in 1866; and Mr. Bourdillon in Travancore, where it is a winter visitor only. It does not appear to have been detected often, if at all, in Burmah, as I can find no record of its occurrence there in 'Stray Feathers'; it has, however, been found further south in the peninsula, and it will very likely be met with some day in Tenasserim or Pegu.

Habits.—This stout little Falcon frequents mountainous country, dwelling chiefly about heavy jungle and

Distribution.—I assign my notice of this bird as belonging to the Ceylonese ornis to a footnote for the same reason as in the case of the Sparrow-Hawk, viz. that its occurrence on the island is not a matter of absolute certainty. Layard writes (*loc. cit.*), "I saw this pretty Hawk in the flat country near Pt. Pedro, but could not get a shot at it; I cannot, however, be mistaken in the bird, as I long watched it with my telescope." He writes me from New Caledonia, "You may safely include *Hypotriorchis chicquera*;" and I therefore do so in the way I have adopted for the treatment of those species which have not been actually procured. There is no reason whatever against inferring that this little Falcon now and then visits the northern shores of Ceylon, as it is found in the extreme south of the peninsula. Jerdon says that it is spread throughout India from north to south, but is rare in the forest-districts, as it chiefly affects open country in the vicinity of cultivation. It does not appear to be procured so often in the south as in the northern parts of India and on the outskirts of the Himalayas—the province of Nepal, to wit. Captain Hayes Lloyd found it common in the Kattiwar district, Western India; and further north in the northern Guzerat region, Captain Butler writes, in 'Stray Feathers,' "it is not very common, but appears to be distributed pretty evenly throughout the plains." In the eastern parts of the peninsula it is not so common. Mr. Ball says that it is of very rare occurrence in Chota Nagpur, and that he only once observed it in the Satpura hills."

Habits.—This pretty little Merlin is a most courageous bird, and appears to be a general favourite with sportsmen in India on account of its boldness, powers of flight, and interesting habits. It frequents compounds, groves of trees, the edges of isolated woods, or even single trees in open country, whence, Jerdon remarks, it "sallies forth, sometimes circling aloft, but more generally, especially in the heat of the day, gliding with inconceivable rapidity along some hedge-row, bund of a tank, or across some fields, and pouncing suddenly on a Lark, Sparrow, or Wagtail." It often hunts in pairs, and sometimes hovers for a few seconds like a Kestrel. It feeds on small birds almost entirely, but will occasionally kill the smaller mammals, Mr. Hume recording that he has found the remains of squirrels in their stomachs; they have also been known to fly at Bats in the dusk of the evening. It is occasionally used by falconers, and flown at small game and also at the Roller and at Pigeons. Jerdon writes, "In pursuit of the Roller it follows most closely and most perseveringly; but is often baulked by the extraordinary evolutions of this bird, who now darts off obliquely, then tumbles down perpendicularly, screaming all the time and endeavouring to gain the shelter of the nearest tree or grove." Captain Butler gives a most interesting account (*loc. cit.*) of the performances of one of these brave little birds, which I subjoin here:—"Upon one occasion I remember shooting into a small flock of *Cursorius gallicus*, wounding two and killing a third. One of the wounded birds, before falling, flew 'pump-handling' for some distance close to the ground, and the other one towered. One of these beautiful little Merlins at once appeared on the scene, and followed in pursuit of the towering bird to a height of 300 or 400 feet. As soon as the Courier became aware of his presence he closed his wings and dropped to the ground like a stone, followed of course by the Turumti, who stood erect by his side on my arrival, staring at him as if it was the first bird he had ever seen. On my approaching the spot the Courier again took wing followed by the Merlin; and thinking he might fly some distance, I shot him. The Merlin took no notice whatever of the report of the gun, but made a stoop at the falling bird and accompanied it to the ground. I then walked up to the spot and drove him away.

"After picking up the Plover I turned round and, to my unutterable surprise, I saw the Falcon on the top of the other wounded bird. I ran up to them, and found a desperate struggle going on; and it was not until I nearly knocked the plucky little fellow over with a stone that I induced him to leave his intended meal."

The cry of this species is a shrill angry scream.

forest, which furnish it with a supply of small birds, on which it is said chiefly to feed. Mr. Bligh's specimen was shot hawking after dragonflies; and no doubt the bird feeds as well on lizards, which form a large proportion of the food of most Indian Raptors, from the Hawk-Eagle downwards. It is said to be crepuscular in its habits. Mr. F. Bourdillon, in 'Stray Feathers' (vol. iv. p. 354), says that its cry is shriller and weaker than that of the Kestrel; he is also of opinion that it breeds in Travancore. Wherever it does it must be in remote or inaccessible forests, for nothing appears yet to be known concerning its nest and eggs. Jerdon remarks that it nidificates on trees; and Mr. Thompson, as quoted in Mr. Hume's 'Rough Notes,' says that it breeds in Kumaon. He writes, "These birds regularly resort to the dense forests on the lower ranges of Kumaon and Gurhwal about April. In June I watched a female bearing a small bird away, but could not find where she took it to. I infer from this that she must have had a nest of fledged young ones, as there were lots of fine trees standing close to where she passed me, and where she might have stopped to pluck her quarry. Later observations confirm me that the bird breeds about April in our lofty and dense forests."

Nidification.—The Toorumtee nests exclusively on trees, making its own nest, and building a fresh one every year. It is neatly built of both stout and fine twigs closely put together, and lined with fine roots and vegetable fibres, mixed sometimes with straw, feathers, or pieces of rag, which are firmly interwoven with the body of the nest. It is generally fixed in the fork of the top branch of a large tree, such as a mango, peepul, or tamarind, where these are to be found; but where they do not exist, it is placed in small trees, sometimes not more than 10 feet above the ground. The eggs are usually four in number; but sometimes three and five are laid. They vary from "a pale yellowish brown, with just a few reddish-brown specks, to a nearly uniform dark brownish red, obscurely mottled and blotched with a somewhat darker red." Sometimes there is a ring of feeble blotches round the large end, and at others a zone of darker markings round the middle. They average 1.66 inch in length by 1.27 in breadth. The breeding-season lasts from January till May.

ACCIPITRES.

FALCONIDÆ.

FALCONINÆ.

Genus CERCHNEIS.

Bill shorter and more suddenly curved than in *Falco*; wings as in that genus, but the 1st quill shorter, and the 1st and 2nd notched on the inner web. Tail longer than in the last; tarsi longer and more feeble. Lateral toes nearly equal, the scales rectangular up to the base of the toes.

Of small size. Sexes generally differing in coloration. Sternum weaker than in *Falco*.

CERCHNEIS TINNUNCULUS.

(THE COMMON KESTREL.)

Falco tinnunculus, Linn. Syst. Nat. i. p. 127 (1766); Gould, B. of Europe, i. pl. 26 (1837); Yarr. Brit. B. i. p. 52 (1843); Schl. Vog. Nederl. pls. 9, 10 (1854); Sharpe & Dresser, B. of Eur. pt. 2 (1871); Newt. ed. Yarr. Brit. B. p. 79 (1872).

Falco alaudarius, Gm. S. N. i. p. 279 (1788).

Cerchneis tinnuncula, Boie, Isis, 1828, p. 314; Sharpe, Cat. Birds, i. p. 425 (1874); David & Oust. Ois. de la Chine, p. 36 (1877).

Tinnunculus alaudarius, Gray, Gen. Birds, i. p. 21 (1844); Blyth, Cat. B. Mus. A. S. B. no. 69, p. 15 (1849); Kelaart, Prodromus, Cat. p. 115 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 102; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 13 (1854); Gould, B. Gt. Brit. pt. ii. (1862); Jerdon, B. of Ind. i. p. 38 (1862); Tristram, Ibis, 1865, p. 259; Hume, Rough Notes, i. p. 96 (1869); Holdsworth, P. Z. S. 1872, p. 410; Du Cane Godman, Ibis, 1872, p. 165; Hume, Nests and Eggs, p. 21 (1873); Legge, Ibis, 1874, p. 10; Scully, Str. Feath. 1876, p. 120; Brooks, Str. Feath. 1876, p. 228.

Cerchneis alaudarius, Hume, Str. Feath. 1876, p. 460.

L'Epervier des Alouettes, Briss. Orn. i. p. 279 (1760).

La Cresserelle, Briss. Orn. i. p. 393 (1760).

"Windhover," "Stonegall," popularly in England; *Cernicalo*, *Primilla*, Spanish (Saunders); *Francilho*, Portuguese; *Sweef*, Moorish (Drake); *Narzi* (female), *Narzanak* (male), Hind. (Jerdon); *Khurmutia*, *Kurumtia*, *Karontia*, Hind. (Blyth); *Nardunak*, Scinde; *Gytthin*, *Tondala-muchi gedda*, lit. "Lizard-killing Kite," Tel. (Jerd.); *Kurganak*, Turkestan (Scully). *Ukussa*, *Kurullagoya*, Sinhalese; *Walluru*, Ceylonese Tamils.

Adult male. Length to front of cere 12.5 to 13.5 inches; culmen from cere 0.6; wing 9.6 to 10.2 (9.7 to 9.9 being the average); tail 6.5 to 7.0; tarsus 1.4 to 1.6; mid toe 1.05 to 1.15, claw (straight) 0.45; height of bill at cere 0.35. In a large series examined in the British Museum I find that Asiatic examples measure as much as, if not more than. European, the largest specimen, having a wing of 10.2, being from Behar.

Iris dark brown ; cere and eyelid chrome-yellow ; bill adjoining cere and at the base beneath paler yellow, darkening to bluish at the tips ; legs and feet chrome-yellow, claws black.

Head, back, and sides of neck, together with the moustachial stripe, ashy bluish, the feathers with dark shafts ; lower part of hind neck, back, and wing-coverts cinnamon-rufous, with an arrow-headed blackish-brown spot, more or less broad, at the tip of each feather, developing on the tertials into a subterminal bar ; quills and their coverts ashy brown, the inner webs with bar-like indentations of rufescent white, and all with pale tips ; rump, upper tail-coverts, and tail clear ashy blue, with a broad subterminal blackish bar across the latter ; edge of forehead, lores, throat, and the space between the cheek-stripe and the ear-coverts buff-white, the latter more or less shaded with ashy ; beneath, from the throat, rufescent white, in some specimens isabelline grey, the feathers of the chest and upper breast with dark brown striæ, and those of the breast and flanks with terminal drop-shaped spots ; the lower parts and under tail-coverts unspotted, the thighs being, as a rule, more rufous than the abdomen ; under wing-coverts marked with pointed central spots.

The above is a description of a fully-aged bird, in which a bluish cast often pervades the entire upper surface.

In a slightly younger stage of adult plumage, and one in which most birds are procured in Ceylon, the head is more or less washed with rufous, the markings of the back and wing-coverts are larger, and the rectrices, though blue, present in various degrees a certain amount of barring ; in some this appears on the central feathers, either at the base or down most of the web, in others these are devoid of any markings, while the inner webs of the outer feathers are crossed with narrow transverse lines. In this stage, however, the head is very variable, being not always tinged with rufous as above stated, but, at times, as blue as in the oldest birds.

Young. In the bird of the year the wing averages from 9·5 to 9·8 inches in the male, and slightly more in the female. Soft parts much the same as in adult ; cere slightly greenish in some ; legs and feet not so bright in hue.

Head and upper surface dusky rufous, usually paler on the hind neck and rump than elsewhere ; feathers of the head and hind neck with broad brown striæ, and the back, rump, and wing-coverts crossed with broad bars of brown, the shafts being of the same colour ; quills brown, tipped pale, most deeply on the secondaries, the inner webs partially crossed from the edge with rufous or rufescent yellow ; tail dark rufous in some, yellowish rufous in others, with continuous or interrupted bars of blackish brown, and a broad terminal band of the same, the outer feathers paler than the rest ; forehead and round the cere fulvous, with dark shafts to the feathers, a broad, dark, moustachial stripe crossing the gape from the lores ; ear-coverts fulvous-grey, shading off into brownish ; throat and under surface rufescent white, palest on the abdomen and under tail-coverts, which, with the chin and gorge, are unstreaked ; chest, breast, and flanks streaked with brown, the markings on the chest being broader than on the breast, on the lower part of which they diminish to mesial lines ; under wing-coverts buff-white, lined and spotted (on the longer feathers) with dark brown. In a large series no constant variation can be found between male and female, notwithstanding that females appear sometimes to have the thigh-coverts and lower parts more striated than the other sex.

In the next stage towards the mature dress the tail, after moult, becomes ashy blue, completely barred with brown, the upper tail-coverts changing at the same time to bluish, and the bars on the back and wings fading out. Birds are occasionally found with the tail composed, in the same moult, of the adult blue and immature red feathers.

Adult female. Length, including culmen, 14·0 to 15·0 ; wing *averaging* more than the male's, but seldom exceeding the highest of the above dimensions. In an immature example shot at Colombo it measures 10·5.

Upper plumage of a browner rufous than the male ; in very old birds the head with a bluish cast, the stripes and bars respectively of the head and back narrower and darker than in the young, and the latter slightly spear-shaped ; in some birds, as in the male, a faint ashy hue is perceptible on the upper surface ; upper tail-coverts bluish ashy, with either spear-shaped streaks or narrow mesial stripes on the longer feathers, or the whole crossed with narrow bars ; tail bluish ashy at the base and down the centre of all the feathers, the edges shading into rufous and crossed on both webs with narrow bars of blackish brown, incomplete at the base of the central feathers ; tip as in the male ; under surface a paler, but generally finer rufescent than in the male, and more boldly streaked on the chest and spotted on the breast ; in examples which are heavily barred above the flanks have transverse markings. Birds not fully adult betray their youth in the greater amount of rufous on the tail and its coverts.

Obs. It has lately been ascertained that the female Kestrel is capable of acquiring a somewhat masculine plumage, a pair having been shot at the nest at Aldenham, Hertfordshire, in 1874, in which the female had the tail bluish, barred with black. An account of this remarkable occurrence is given by Mr. Sharpe in the 'Proceedings of the Zoological Society,' 1874, p. 580, pl. 68.

Distribution.—This well-known bird, the "Windhover" of the English farmer, migrates, in the cool season,

freely to Ceylon, remaining in the island until the usual time of departure, the coming-in of the following south-west monsoon, when it takes wing for its breeding-haunts in more northern climes. It spreads over the whole island, without respect to locality or elevation, frequenting the entire seaboard, the low country of the interior, and the elevated plateau of the main range, while the intermediate coffee-districts come in for an equal share of its patronage. It is commonly met with about Colombo, frequenting the cinnamon-gardens and cocoanut-groves along the Galle road; at the southern port it always takes up its quarters in the huge ramparts fronting the esplanade; and at Trincomalie it is numerous in the season, dwelling in the lofty precipices and mural rocks encircling the Fort, and sallying out to the extensive esplanade in search of food. In the Jaffna peninsula and round the north coast of the island generally it is plentiful, and it is likewise common on all the adjacent islands of Palk's Straits. Although abundant in Ceylon, it never occurs there in flocks similar to those that have been seen by Blyth near Calcutta, or by Captain Shelley in Egypt.

The permanent habitat of the Common Kestrel is the entire continent of Europe and Northern Asia, whence it migrates in the winter into Northern Africa, the Indian peninsula, and North China, and it occasionally wanders into South Africa and even into the Seychelles. Although it leaves India for the most part in the breeding-season, it remains in the Himalayas in considerable numbers, and on the other side of the chain it is, according to Dr. Scully, a permanent resident in Turkestan. It appears to be only a winter visitor to Burmah, as neither Capt. Feilden nor Mr. Oates record it as remaining there in the hot season. The latter gentleman says that it is common in the Pegu plains; but it does not continue its migration as far south as Tenasserim, for I do not find any mention of it in either the first or second list of birds from that province contained in 'Stray Feathers.' Blyth found it very common in Lower Bengal, where it was seen by him in parties of twenty or thirty together. In Chota Nagpur Mr. Ball says that it is tolerably abundant in most parts; the same remark applies to nearly all parts of the Indian peninsula, for this little Hawk is dispersed throughout the whole of it, irrespective of elevation; there are, however, some districts in which it is not so numerous, for Mr. Hume found it numerically scarce in the plains of Sindh. Mr. Bourdillon remarks that it is a winter visitor to the Travancore hills, and that it breeds there; on Mount Neboo, 7000 feet high, in the Palani Hills, which form an eastern offshoot of the same range, Mr. Fairbank observed it until June, and remarks that he thinks it resides permanently there. It has also been found to be a permanent resident in some parts of the Nilghiris; but Mr. Hume says these southern birds belong to a "smaller and markedly deeper-coloured race," which is perhaps peculiar to the south of the peninsula, and may merit entire specific separation from its ally, which is migratory to the whole country as well as to Ceylon, the latter place forming the southernmost limit of its wanderings. It is certainly remarkable that while a vast stream of Kestrels overruns annually the whole of the region in question, there should exist a certain quantum which, in addition to a different character of plumage, should possess the peculiar habit of remaining stationary and breeding in the hills of the extreme south of the peninsula. This peculiarity in the Kestrel's economy is not, however, confined to South India; the same occurs in Madeira and in Abyssinia; and Mr. Sharpe solves the difficulty by pointing out that there is undoubtedly a *dark resident* form of this species to be found in certain localities along the southern limit of its habitat. As regards South India, I imagine that the Kestrels found in the low country of this region belong to the migratory class, as they certainly do in the island of Ramisserum, where they are very numerous during the north-east monsoon. Mr. Hume remarks that the Kestrel is the commonest Raptor in the cold season at the Laccadive group, and that the specimens he obtained "were all of the European type," which is, of course, the case with those in Ceylon.

In the northern part of the sister continent of Africa, the Kestrel locates itself in great numbers during the winter. Captain Shelley found it swarming in Egypt, and once saw as many as one hundred together in a clump of palm trees, attracted there by the clouds of locusts which were passing them. In Tangier and Eastern Morocco, Mr. T. Drake found it common; and beyond this, towards the Atlantic, it wanders sometimes into Western Africa. Mr. Godman found it, however, common in the Canaries and in Madeira, the birds in the latter place being resident and belonging to the dark race. With regard to Europe and Northern Asia, the permanent habitat of the species, my limited space compels me to pass over its distribution there; and I would merely remark that Canon Tristram found it especially abundant in Palestine, inhabiting every variety of locality, and breeding gregariously in the ruins characteristic of that country. Mr. Sharpe remarks that the Japan Kestrels are the largest and darkest of any of the races of this species.

Habits.—As in England so in Ceylon, the Kestrel prefers open to wooded country, taking up its abode near commons, pasture-land, brush-covered plains, large tracts of dried-up “paddy-field,” and any locality on which its prey (lizards, mice, and small mammals) is exposed to its view. It takes up its quarters on high rocks and precipices, always returning to the same roost, and is very regular in its hours for coursing over the surrounding country in quest of food. Two or three pairs lived annually in the ramparts and cliffs at Trincomalie; in the morning they sallied out, returning for their midday rest about 10 o’clock, and passed the heat of the day under some projecting points in the lofty mural sea-face, now and then flying round the Fort, or alighting on the pretty parade-ground, surrounded with fine old trees, in which they often engaged in fierce and quarrelsome harangues with one or two Goshawks (*Astur badius*), who objected strongly to the annual invasion of their territory by the smart little Kestrels. In the afternoon, about 3 o’clock, they departed again on their rounds, and were to be seen until evening about the esplanade or among the Suriah trees (*Ibiscus*) lining the public roads. The Kestrel has a rapid flight, sustained with quick beatings of the wing, and is capable of making sudden and very swift stoops on its prey. It, however, usually hovers over such animals, reptiles, and insects as it feeds on in the remarkable manner for which it is so well known, and drops suddenly down, extending its talons as it reaches the ground, and then usually devours what it has captured on the spot. The skill with which it poises itself, after hovering for some seconds, its wings perfectly motionless and its body suspended, as it were, from the heavens by an invisible thread, is marvellous. I have seen it in such a position in a strong wind, not precisely facing the direction of the current of air, but with one wing pointed up to it—the primaries of which, yielding to the force of the wind, every now and then would give back, but as quickly spring forward into their normal position, while the rest of the body remained unmovable!

Its principal food consists of lizards and large beetles in Ceylon; but in Europe it is an inveterate destroyer of field-mice, although it is not generally accredited with such useful habits, but rather believed to be an enemy of the game-preservers, and frequently pays the usual barn-door penalty at the hands of ignorant keepers. Professor Newton remarks, however, in his late edition of ‘Yarrell’s British Birds,’ that “it does occasionally kill and devour small birds, and at times the young of larger ones.” Concerning this assertion I have only to remark that I feel convinced such occurrences are exceedingly rare, and that in Ceylon I am sure it is entirely an insect- and reptile-feeder. It has been known to catch cockchafers on the wing, seizing them in its claws and devouring them while flying. It doubtless kills the locusts, on which it is said to feed in Egypt, in the same manner. Of its habits in Yarkand and Turkestan, generally, Dr. Scully writes:—“It feeds chiefly on mice, lizards, and *grasshoppers*; the Yarkanders add frogs and, in winter, sparrows. In the stomach of a Kestrel killed at Yepchan, I found, among other things, a rat’s tail 6 inches long.” Messrs. Sharpe and Dresser, in their admirable work on the Birds of Europe, quote from the remarks of Dr. E. Hamilton, on the habits of this species, the following passage concerning its vermin-killing propensities:—“I have trained the Kestrel myself to come to the lure, but never could get it to swoop at birds, although I have starved it almost to death; but put a mouse before it, and it would immediately take it. Birds, when given, were always left half plucked or half uneaten, as if distasteful.”

Notwithstanding the evidence I have adduced to show my readers that this favourite little Falcon is in the main harmless as regards bird-life, it cannot be entirely absolved from all such offence, for it has been known to suck the eggs of the Missel-Thrush, and also to carry off very young Partridges in England; but it must be said that the latter crime seems very unnatural when taken in conjunction with Dr. Hamilton’s evidence as to its distaste for bird-flesh. As has been shown above, this Kestrel is somewhat gregarious when it becomes very numerous in a locality; but it is not so much so as the next species. In some parts of Asia its tameness and sociability are remarkable. Dr. Scully remarks, in his interesting journal of his trip to Turkestan, “a couple of Kestrels (*Tinnunculus alaudarius*) seem to have taken up their abode here; they fly about from the rafters of the verandah to the poplar trees just outside my room.”

Nidification.—The Kestrel was formerly supposed not to breed within Indian limits; of late years, however, since so much attention has been paid to the subject of ornithology, it has been found nesting in the Himalayas and outlying districts in Cashmere, in the Central Provinces, and in the Nilghiris. This latter locality, however, is only resorted to by the small dark-coloured resident species, which appears to be peculiar

to those hills. Its favourite situations in India for building its nest are crevices and overhung ledges in the face of high cliffs ; but it has also been found nesting in trees, and in England, as is well known, frequently takes possession of a crow's nest. The structure is sometimes bulky, and at others the reverse, the requirements of the situation no doubt determining the design. It is made of sticks and lined with small twigs and grass-roots, sometimes intermingled with pieces of rag. The eggs are usually four in number, of a brick- or blood-red ground-colour, freckled or spotted with deep red, with occasionally a few blotches or clouds of the same. The average of 19 eggs, according to Mr. Hume, was 1·57 by 1·21 inch.

In some countries the Kestrel breeds together in colonies, and even in company with other birds. Canon Tristram remarks, in his "Notes on the Ornithology of Palestine":—"It is generally gregarious, ten or twenty pairs breeding in the same ruins, and rearing their young about the end of March. It often builds its nest in the recesses of the caves which are occupied by Griffons ; and is the only bird which the Eagles appear to permit to live in close proximity to them. At Amman, too, it builds in the ruins in company with the Jackdaws ; and in several places, as at Lydda and Nazareth, large colonies are mixed indiscriminately with those of the following species (*Tinnunculus cenchris*)."

CERCHNEIS AMURENSIS.

(THE AMURIAN KESTREL.)

Falco vespertinus, Schrenk, Reis. Amurl., Vög. p. 230 (1860).

Erythropus vespertinus, Horsf. & Moore, Cat. B. E. I. Co. Mus. no. 13, p. 14 (1854); Swinh. Ibis, 1861, pp. 253, 327, et P. Z. S. 1862, p. 315; Jerd. B. of Ind. i. p. 40 (1862); Hume, Rough Notes, i. p. 106 (1869); Jerd. Ibis, 1871, p. 243; Legge, Str. Feath. 1873, p. 487; Hume, Str. Feath. 1875, p. 22.

Falco vespertinus, var. *amurensis*, Radde, Reis. Sibir. ii. p. 102, Taf. 1. figs. 1-3 (1863).

Erythropus amurensis, Gurney, Ibis, 1868, p. 41, pl. 2; Swinhoe, P. Z. S. 1870, pp. 436, 448, 1871, p. 340, et Ibis, 1873, p. 96, et 1874, p. 425; Hume, Str. Feath. 1875, p. 22.

Tinnunculus amurensis, Gray, Hand-l. B. i. p. 23 (1869).

Falco raddei, Finsch u. Hartl. Vög. Ostaf. p. 74 (1870).

Cerchneis amurensis, Sharpe, Cat. B. i. p. 445, et Str. Feath. 1875, p. 303; Legge, ibid. p. 362; Inglis, ibid. 1877, p. 6; Hume, ibid. p. 7.

Falco amurensis, Dav. & Oust. Ois. de la Chine, p. 34 (1877).

Le Kobez de l'Amour, David & Oustalet.

The Eastern Red-footed Kestrel, *Radde's Kestrel*, *The Orange-legged Hobby*, *The Red-legged Hobby*, *The Red-legged Falcon* of Indian writers; *White-clawed Kestrel*, Blyth; *Ingrian Falcon*, Lath. (*apud* Horsf.).

Karjanna, *Karjoona*, Hind. (Jerdon).

Adult male. Length to front of cere 9·8 to 10·7 inches; culmen from cere 0·5; wing 8·8 to 9·2 (in a South-African example in the British Museum, 9·5); tail 4·75 to 5·0; tarsus 1·1 to 1·2; mid toe 0·95 to 1·0, claw (straight) 0·38.

Iris brown; cere (all but the tip of bill), orbital skin, and eyelid gamboge-yellow; tip of bill dark leaden; legs and feet gamboge-yellow, claws whitish horn-colour.

Head, hind neck, back, wings, and tail dark slate, the forehead darker than the crown, and the rump paler than the back; the interscapular region, scapulars, and shoulder of the wing suffused with blackish; quills slate-grey, the shafts black and the inner part and under surface of web brownish; shafts of the tail-feathers brownish black; cheeks, cheek-stripe, and ear-coverts concolorous with the head; chin, throat, sides of neck, breast, and flanks bluish ash-colour, palest on the throat, the shafts of the breast-feathers more or less conspicuously dark; belly, thighs, and under tail-coverts dark rufous; *under wing-coverts and axillary plume white*, with dark shafts in examples which have them conspicuously so on the breast.

A younger stage of the adult phase has the throat and round the cheek-stripe whitish, and the under parts paler ashy than in the above-described old dress; the abdomen and under tail-coverts are also paler or yellowish rufous.

Adult female. Wing 9·4 to 9·6 inches.

Soft parts as in the male.

Above leaden-grey, paling to bluish ashy on the rump and tail; the head and nape suffused with brownish, and the feathers with dark shaft-stripes; bases of the hind-neck feathers rufous-yellow, showing across that part; back and wing-coverts barred with brownish black; quills blackish, the inner webs crossed with bar-like spots of whitish; tail crossed with seven or eight blackish-brown bars and a broad subterminal band of the same.

Forehead, throat, cheeks, and chest whitish buff; lores and a narrow moustachial streak blackish; the throat unstreaked, but the chest with mesial stripes, and the breast and flanks with arrow-headed bars of blackish brown; abdomen, thighs, and under tail-coverts pale rufescent yellowish, this hue extending further up the breast in some than in others; under wing-coverts white, barred and "lined" with blackish brown.

Young. In the British Museum are a pair of nestlings taken in China from the same nest—one with the wing 7·5, the other 7·6 inches. They are not sexed; but the larger of the two may be presumed to be the female.

The presumed male is the darker in colour, the ground-colour of the under surface being rufous-buff; the head and nape brownish slate, the feathers with dark shafts; the back, scapulars, and wing-coverts, as also the rump and tail, paler slate-colour, the whole crossed with blackish-brown marks, and each feather with a deep cinnamon-rufous tip; on the hind neck there is a rufescent-buff collar, formed by the lateral edges of the feathers; tail barred with interrupted bands of dark brown, and a broader one at the tip; quills slaty black, tipped with fulvous-white, and the inner webs crossed with transverse spots of white; thighs unmarked.

Cheeks and a small moustachial stripe and ear-coverts blackish; chin and throat buff-white, deepening into the more rufescent hue of the under surface; the breast with broad central drops of blackish to the feathers, which change into arrow-headed bars on the lower flanks.

The female has the tail less barred than the male, and the under surface buff, with broad spear-headed mesial marks on the chest-feathers, and the markings on the breast have the same character, instead of being plain stripes as in the male; the thigh-plumes marked with dark mesial lines.

As the bird grows older the rufous margins fade, and the barrings become more subdued, the bird of the year presenting a cinereous-brown hue on the head, hind neck, upper back, and scapulars; the feathers of the upper parts with pale margins and dark shafts, and those of the wing-coverts and scapulars fulvous-grey, while the tips of the rump and upper tail-coverts are greyish white and tolerably deep; the primaries and secondaries are tipped with white, the latter more deeply, the quills are dark cinereous brown, the inner webs crossed with white, similarly to the adult female: tail bluish ashy, with 10 or 12 narrow brown bars.

The cheeks, ear-coverts, a space behind the eye, and a more or less developed moustachial streak blackish; throat, sides of the neck, and under surface to the lower breast in some birds quite white, while others have these parts buff; the abdomen, thighs, and under tail-coverts are likewise variable from buff to almost white; forehead whitish; the throat and sides of the neck are unmarked, but the breast is striped with bold dashes of blackish brown, almost covering the feathers on the chest and upper breast; flanks often barred with the same.

The Ceylonese specimen mentioned below was a male in this stage of plumage; the lower parts were scarcely tinged with buff.

The young of both sexes at this stage much resemble the adult female, except that the under tail-coverts and abdomen are often nearly white; these latter parts vary, however, considerably in birds of the first year.

Obs. The transition in the male bird from the greyish barred upper plumage to the adult dark slate is complete in one moult; but the throat in several examples that I have examined has remained white, probably not acquiring the bluish ash-colour until the next season. The distinguishing character in this species consists in the white under wing-coverts, which suffice to separate it from the western Red-footed Kestrel, which has those parts dusky bluish grey: this character was first pointed out in 1863 by Radde, previous to which time the two species were confounded: and the bird spoken of by Jerdon, Horsfield, and others must be referred to the eastern race, and not to *E. vespertinus*, the western form. This latter has not been found nearer India than the Tumlienshian Steppe, Western Siberia. There Radde procured it, and, travelling eastwards, met with no species of Red-footed Kestrel until *C. amurensis* appeared in Amoorland.

Distribution.—The occurrence of this pretty little Kestrel in Ceylon is perhaps one of the most interesting in the history of Ceylon ornithology. The solitary example procured by myself at Trincomalie in December 1872, and recorded as *Erythropus vespertinus* (*loc. cit.*), is the only one that has yet been found in the island or in any part of Asia so far to the south. It was a straggler which found its way under the influence of the north-east wind to the shores of Ceylon; and, judging by the thin state of its body, had only just terminated its flight across the briny deep or down the east coast of India.

The eastern Red-footed Kestrel has its head-quarters in Amoorland and North China, and in the cold season performs, perhaps, the most singular migration of any known bird, encroaching on the path of its near ally, *Cerch. vespertina* (with which it was long confounded, until Radde discovered the differences between the two species), and actually reaching the southernmost regions of Africa. It passes from its home in North China into Burmah, Nepaul, and other sub-Himalayan provinces, Lower Bengal, Central India, and terminates, as a rule, its Indian migration in the Nilghiris, in which hills Jerdon killed it, but where, I imagine, it is very rarely seen. Mr. Hume has received it from Madras. From the north of India the migratory stream sets westward through Asia to the east coast of Africa, along which it flows to the Zambesi district, and thence southward to Natal, Damara Land, and Cape Colony. It was first known from Natal, whence Mr. Ayres

sent specimens to Mr. Gurney in 1867, having found it numerous in that province; subsequently he observed numbers in the Transvaal, in December 1870, but did not meet with them in that district on any other occasion. It was procured in the Cape Colony by Mr. Andersson, and there are specimens in the national collection from Zambesi, presented by Dr. Livingstone and Dr. Kirk. It does not appear to have been yet observed in Egypt, which leads to the inference that it passes into Africa by way of Arabia, probably entering the continent in Abyssinia, and thence passing along the east coast to the south. It is at times numerous in Cachar, where it arrives, according to Mr. Inglis, in October, and disappears after February; during the former month, in 1875, he met with a flock of some hundreds of them hawking on a new tea-plantation. In Upper Pegu, Capt. Feilden has procured it, or met with it, in January and February; but it does not appear to wander down the Malay peninsula; for it has not yet been recorded from Tenasserim. About April it returns from its migrations to China, Mr. Swinhoe recording its arrival in Chefoo in that month, and at the same time Père David says it makes its appearance in the plains of China and Mongolia.

Habits.—This Red-legged Hobby has most of the habits of its near ally *C. vespertina*, resembling it in its gregarious tendencies, its crepuscular manner of hawking, and its insectivorous diet, while it also has somewhat in common with the ordinary Kestrel of Europe, hovering like it over its prey, though not in the same motionless manner peculiar to the "Windhover." During its migrations from Northern China to other countries, it associates in large flocks to an extent unusual in the Falcon tribe. As mentioned above, Mr. Inglis observed this habit in Cachar; and in South Africa, Mr. Ayres "found a lot of these pretty Falcons hunting with much assiduity; they were crossing backwards and forwards over the driest end of the swamp with an exceedingly rapid flight, and were taking insects on the wing." The favourite food of this bird appears to be grasshoppers, cockroaches, beetles, &c., to the first of which it is most partial. Its love of insect diet leads it to frequent open commons, plains, downs, dry marshes, and such like. It likewise feeds on white ants, which, indeed, do not seem to come amiss to any Indian bird, from the long-winged Kite down to the fruit-eating Barbet. The example I shot in Ceylon was frequenting the dried-up esplanade at Trincomalie; it constantly hovered near the ground, and then descended, proceeding, on alighting on the grass, to jump on the grasshoppers which attracted it, seizing them in its talons and devouring them on the spot. Contrary to its usual habit, it was very tame, the cause of which doubtless lay in its meagre frame; for though its stomach was distended with grasshoppers, it had but little flesh to boast of. The late Mr. Swinhoe is the only writer who speaks of this species killing birds, which it appears to do in China; and it is even trained at Chefoo to hawk small birds, which, it must be remarked, is somewhat unusual for a Kestrel.

Nidification.—The Amurian Kestrel breeds in China in the nests of Magpies, which build in tall trees of avenues or gardens near dwelling-houses. Swinhoe found it laying in the nests of the two species which inhabited the vicinity of Chefoo, viz. *Pica media* and *Cyanopoliis cyanus*. The former builds a domed nest, and the latter, the Blue Magpie, an open one; but both come in for the patronage of this little Kestrel. The time of breeding is in May; but no information is given concerning the eggs, as the nests were in inaccessible trees, or, at any rate, such as baffled the attempts of the Chinese coolies to climb them. I am unable to discover any additional reference to these birds breeding beyond that contained in Swinhoe's notes from Chefoo to which I have alluded, and which are contained in 'The Ibis,' 1874, p. 428.

ACCIPITRES.

Suborder PANDIONES.

Differs structurally from Falcones in having the outer toe reversible. Plumage very close and compact, otherwise as in Falcones.

Genus PANDION.

Tip of upper mandible much lengthened, curved at right angles to the commissure and very acute; lobe variable in development. Wings long and pointed, exceeding the tail; the 3rd quill generally the longest. Tail of 12 feathers and even. Tarsi short, stout, reticulated, as are also the toes to the last joint. Soles of the feet prickly, and the claws *rounded beneath*, much curved; outer toe reversible. Feathers wanting the accessory plumule.

PANDION HALIAETUS.

(THE OSPREY.)

Falco haliaetus, Linn. S. N. p. 129 (1766).

Pandion fluvialis, Sav. Descr. Egypte, Ois. p. 272 (1809).

Aquila haliaetus, Meyer in Mey. u. Wolf, Tasch. i. p. 23 (1810).

Accipiter haliaetus, Pall. Zoogr. Rosso-As. i. p. 355 (1811).

Balbusardus haliaetus, Flem. Brit. An. p. 51 (1828).

Pandion haliaetus, Less. Man. d'Orn. i. p. 86 (1828); Gould, B. of Eur. pl. 12 (1837); Gray, Gen. B. i. p. 17, pl. 7. fig. 5 (1845); Blyth, Cat. B. Mus. A. S. B. p. 29 (1849); Bp. Consp. i. p. 16 (1850); Schleg. Vog. Nederl. pl. 30 (1854); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 52 (1854); Jerd. B. of Ind. i. p. 80 (1862); More, Ibis, 1865, p. 9; Tristram, Ibis, 1865, p. 253; Hume, Rough Notes, i. p. 234 (1869); Gould, B. of Gt. Brit. pt. xvii. (1870); Newton, ed. Yarr. Brit. B. i. p. 30 (1871); Holdsworth, P. Z. S. 1872, p. 412; Shelley, B. of Egypt, p. 203 (1872); Sharpe, Cat. Birds, i. p. 449 (1874); Dresser, B. of Eur. pt. 49 (1876).

Pandion alticeps, Brehm, Vög. Deutschl. p. 33 (1831).

Pandion carolinensis, Audub. B. N. Am. pl. 81, et Orn. Biogr. i. p. 415 (1831).

Pandion indicus, Hodgs. in Gray's Zool. Miscel. p. 81 (1844).

The Fishing-Hawk, Catesby, N. H. Carol. i. pl. 2 (1731).

Le Faucon pêcheur de la Caroline, Briss. Orn. i. p. 362 (1790), also *Aigle de Mer*, Briss. ibid. p. 440.

Le Balbuzard, Buff. Pl. Enl. i. pl. 414.

“*Fish-Hawk*,” popularly, America and England; *Fischaar*, *Fischhabicht*, German; *Fisch-*

Arend, Dutch; *Aguila pescadora*, Spanish; *Aguia presqueira*, Portuguese; *Halász-Sas*, Transylvania. *Mesago*, Japanese (Blakiston).

Machariya, Hind.; *Verali addi pong*, Tam. (Jerdon); *Matchmoról*, Beng.; *Macharang*, Nepaul; *Wonlet*, Arracan; *He-pew*, "Fish-Tiger," Chinese (Swinhoe).

Adult female. Length to front of cere 20.0 to 23.0 inches; culmen from cere 1.5 to 1.65; wing 19.5 to 20.5; tail 8.0 to 9.0; tarsus 2.2 to 2.3; longer anterior or middle toe 1.7 to 2.0, its claw (straight) 1.15; height of bill at cere 0.55. Weight 3½ lb. (*Jerdon*).

Male. Wing 18.0 to 19.0 inches; tarsus 2.0 to 2.2; middle toe 1.6 to 1.8.

The above measurements are taken from a series of Asiatic examples, one from Beloochistan being the largest.

Iris yellow; cere plumbeous; bill black, paling to bluish at the gape and base of under mandible; legs and feet greenish in some, yellowish in others; claws black.

The colours of the legs and feet are variously given as greenish and yellowish. An example shot in Ireland, May 14, 1878, and examined in the flesh by myself, had the soft parts as follows:—Iris reddish yellow; cere dark plumbeous; bill blackish horn-colour, paler at gape; legs and feet pale bluish, slightly tinged with green.

Head and hind neck white, the feathers on the centre of the crown, above the eye, a postorbital band running over the ears and down the side of the neck, as also the terminal half of the occipital crest blackish brown, but less in extent in very old birds; some of the feathers on the side of the nape with dark shaft-stripes; lower part of hind neck, back, scapulars, and wing-coverts glossy pale brown, with a purplish lustre in newly-plumaged birds; longer primaries (from the first to the fifth) black-brown; the remainder and the secondaries paler brown, tipped with dull white; the inner webs white towards the base, with the brown hue partially divided into bars; upper tail-coverts tipped with white; tail sandy brown, tipped with whitish, and crossed, except in very old birds, with subdued bars of a darker hue; inner webs of the lateral feathers white; the shafts of the rectrices white; beneath white.

The cheeks striped with brown, and the chest washed with fulvous, with streaks of brown in many examples; flanks streaked partially with brown; under wing-coverts barred with brown and tipped with fulvous, those beneath the edge of the wing browner than the rest.

Obs. The brown colour of the chest seems to be an individual variation, independent, in some cases, of age, although it appears to be, as Mr. Sharpe remarks, generally more marked in the old birds, which are plainly distinguishable by their unbarred tails. In these latter, however, it varies in extent and character, being accompanied, when very marked, by an encroachment on the throat of the side-neck stripe. In some examples the underlying crest-feathers are often rufous, this being a remnant of the immature plumage, which appears to remain in such birds; in other specimens the wing-coverts retain a certain amount of pale edging.

Young. Mr. Sharpe (*loc. cit.*) describes the nestling as being "covered with down of a sooty-brown colour, except along the centre of the back, along the carpal bend of the wing, on the breast and flanks, where it is dusky white; all the feathers of the back are dark brown, with a broad tip of ochraceous buff; crown and ear-coverts blackish; eyebrow and throat white."

*Bird of the year**. Above chocolate-brown, the back, scapulars, and wing-coverts with sharply defined white tips to the feathers, separated from the brown by a buff margin; the wing-coverts more conspicuously edged than the back; the postorbital stripe broader than in the adult, and terminally edged with fulvous; the white sides of the nape and the back of the neck not striated as in the adult; primaries and secondaries deeply tipped with fulvous-white; upper tail-coverts margined and tipped with fulvous; tail barred with six or seven narrow bands of brown, conspicuous on the central rectrices; fore part of crown dark brown; crest-feathers often edged with fulvous; beneath white, chest sometimes unmarked, at others washed with fulvous and streaked with brown as in old birds.

Distribution.—This cosmopolitan bird of prey, as a matter of course, takes the island of Ceylon into its range, visiting its northern parts in fair numbers during the cool season, a few birds continuing their course to the extreme south. Although previously received by Lord Tweeddale from Ceylon, Mr. Holdsworth, in his catalogue (*loc. cit.*), was the first to include the Osprey among the birds of the island, having observed it on a

* A Tangier example and one from Nootka Sound, North America, are identical in plumage.

solitary occasion in Galle harbour, in which locality I myself saw it in March 1872. During the period of its stay it is tolerably common on the Jaffna lake and about the shoal water surrounding the adjacent islands and skirting the coast as far south as Manaar. In this latter island, Mr. Simpson, of the Indian Telegraph Department, who resides there, informs me it is to be met with all the year round. Should this gentleman be correct in his observations, it is in all probability a resident likewise in the neighbouring island of Ramisserum, where I have seen it in January and March in greater numbers than anywhere else. Lord Tweeddale's specimens were procured in the north of the island. At Trincomalie I observed it on several occasions during two successive seasons, and in February 1877 I met with an example near Morotuwa, at the head of the Panadura lake, and not ten miles from Colombo. I have no record of the Osprey having been seen on any of the large inland tanks in the north of the island, and I believe it confines itself exclusively to the sea-coast in Ceylon.

The Fish-Hawk, although nowhere very numerically abundant, inhabits suitable localities throughout the entire globe, with the exception of the island continent of Australia, its adjacent islands, including New Zealand, parts of the Malay archipelago, and all but the northern parts of South America. There are certain places in which it is not found, and some from which it is unaccountably absent, such as the Black Sea, from which, according to Mr. Dresser's remarks of Prof. Nordmann's experience, it has not yet been recorded. In Palestine its absence from one spot is noteworthy; Canon Tristram remarks (*loc. cit.*), "In spite of the amazing abundance of fish in the Lake of Galilee, we never noticed this bird there, probably because of the absence of suitable cover." In other places it was always common in winter and in spring, and on the lagoons near the mouth of the Kishon it was to be seen perched on the naked stumps projecting from the water, a similar habit to that which I have observed in the north of Ceylon. It does not appear to be very common in Spain. Lord Lilford says that it is found about Valencia; and Mr. H. Saunders discovered it nesting in May on a crag, 700 feet above the sea, on the island of Dragonera. In Corsica and Sardinia it is more often met with in winter than in summer. It inhabits the extreme north of Europe, and breeds as high as Archangel, near which Messrs. H. Brown and Alston observed one of its eyries on the top of a gigantic blasted pine. It used to be a common bird in the British isles; but the constant robbery of its eyries has in the end tended effectually to drive it from its accustomed haunts. It still breeds in a secluded spot in Invernessshire, is occasionally met with in different places round our coasts, and now and then pays unexpected visits to some of our inland waters—an account of one of which to the large reservoirs of the Paddington Canal, in Bucks, is given in 'The Ibis' for 1865, by the Rev. H. Crewe.

Turning to the New World, we find it recorded from many parts of the northern portion of the continent, both on the seaboard and far inland, from many parts of the States, from Honduras, from the Antilles, and from the northern parts of S. America. In Africa it is not so plentiful. Captain Shelley found it frequenting the rocks on the banks of the Nile. Mr. Taylor met with it commonly in Egypt, and Mr. Drake did the same in Tangiers. Finsch and Hartlaub record it from the eastern parts of the continent, and Layard from South Africa. Governor Ussher, however, did not procure it on the Gold Coast, and it is, no doubt, less common on the western side of the continent than on the eastern. It is found throughout the northern parts of Asia, down the eastern coasts to Formosa, and occurs in Central Asia from Siberia to the Himalayas, which brings us to the closer consideration of its distribution in India, in which empire it is, during the cold season, as common as anywhere in the world. Jerdon remarks, "It is spread over all India, most abundant, of course, along the coast, where there are numerous backwaters and lagoons, but common along all the large rivers, and generally found at most of the larger lakes and tanks, even far inland." Mr. Hume, in his 'Rough Notes,' says, "The Osprey is found throughout the lower ranges of the Himalayas in the rocky gorges of all the larger streams, and along the course of the Ganges and the Jumna from their mouths almost to their sources. I have, from time to time, observed it in Cawnpore, Etawah, Agra, and Allyghur districts. I met with it also on the Sutledge, at the Sambhur Lake, and the Nugjufgurh jheel; and I recently shot a very fine one close to Saharunpore, on the western Jumna canal." He likewise found it, though not in any considerable numbers, on the Indus and larger sheets of water in Sindh; but on the coast, particularly in Kurrachee harbour, it was much more common. From these remarks it will appear evident that the Osprey is well distributed throughout northern India; but in the southern part it is apparently chiefly confined to the sea-coast; it is common enough at Ramisserum Island, and I have no doubt is equally so on both coasts of the peninsula; but I find no record of its having been noticed of late years in the inland districts. On the opposite side of the Bay of Bengal it

is rare. It is not mentioned in Mr. Armstrong's list of the birds of the Irrawaddy delta; it is a scarce winter visitor in Tenasserim, and has not been noticed at all in the Andaman Islands. It has not been observed in either Sumatra, Java, or Borneo, and to the south-east is replaced by the closely allied but smaller Australian species, *P. leucocephalus*.

Habits.—In Ceylon the Osprey frequents the sea-coast, salt lagoons, the estuaries of rivers, and land-locked brackish lakes; but in the several continents of the globe is also found on great rivers throughout their course and on large freshwater lakes. It feeds entirely on fish, and is a most persevering fisher and skilful captor of its finny prey. Its mode of precipitating itself headlong from a great height, with an almost unerring aim, sometimes even disappearing under water in the force of its downward plunge, and emerging with its well-caught prey, has been the admiration of all lovers of nature acquainted with this fine bird. It seizes with its talons, suddenly darting out its legs as it reaches the surface, and doubtless, when striking at a fish swimming somewhat beneath the surface, having thrown all its strength into the effort and acquired its maximum amount of momentum, it is unable to check its progress, and consequently disappears for a moment. The fact of its using its talons in taking its prey militates against all capability of pursuing it under water; and although an instance has been known, as cited by Professor Newton at page 31 of his edition of 'Yarrell's British Birds,' of an Osprey having been caught in a fishing-net, it is evident that this must have been spread just beneath or, more probably, on the surface of the water. When flying about not in search of food, the Osprey proceeds at a moderate speed with tolerably quick and regular beatings of its long wings, and does not exhibit any great powers of flight. When in pursuit of fish, however, its actions are very different. On one occasion, near Trincomalie, I was startled, while intent on getting within shot of some Turnstones, by a booming noise above my head, and on looking up perceived an Osprey on its headlong course into the lagoon; launching out its legs, it dashed into the water, throwing up a quantity of spray, and immediately rose again, appearing to have missed its aim. Sir John Richardson remarks that should the fish have moved to too great a depth, it "not unfrequently stops suddenly in its descent, and hovers for a few seconds in the air like a Kite or Kestrel, suspending itself in the same spot by a quick flapping of its wings." I have seen it soaring at a considerable height, and could always recognize it at a distance from the Sea-Eagle in Ceylon by its long wings and quickly-performed circling; on descending again, it would often perch on the top of a dead tree, or make off to its favourite perch, the "guide-posts" of the channels in the shoal waters of the Jaffna peninsula. On such posts in the Paumben channel it may also be seen perched on any day in the cool season. At Manaar it roosts on the tops of dead and denuded palmyra trunks, coming to the same spot every evening some time before sundown, and flying about the palm-grove until dark. The reversible outer toe, which is so peculiar in the Osprey, and which exists to a limited extent in the Fish-Eagle, is no doubt a provision of nature to enable these birds, by an onward stroke, to strike or "rake" into the flesh of their quarry with their powerful hind claws, while with the anterior claws they clutch the fish which has been struck. It is stated that the Sea-Eagle (*Haliaetus leucogaster*) frequently robs it of its prey, pursuing it until it lets fall its well-earned prize, when the robber Eagle swoops down and bears it away.

Nidification.—In the opinion of many ornithologists, the Osprey breeds within the Indian limits; but I am not aware that its eggs have been taken south of the Himalayas. Mr. Hume has seen its nest in Kumaon, and Mr. Thompson believes it to breed on the Ganges above Hurdwar. Dr. Jerdon says, in his 'Birds of India,' that it breeds "in this country on trees;" but he does not seem to have procured its eggs. Elsewhere, in Europe, America, and Africa, its nest has frequently been found, examined, and described by naturalists. Mr. Wilson, writing of it in America, says that it is "externally made of large sticks, from half an inch to an inch and a half in diameter, and two or three in length, piled to the height of four or five feet, and from two to three feet in breadth; these were intermixed with corn-stalks, seaweed, pieces of turf in large quantities, and lined with dry sea-grass, the whole forming a mass observable at half a mile distance, and large enough to fill a cart, and formed no inconsiderable load for a horse." These materials are so well put together as often to adhere in large fragments after being blown down by the wind. During the time the female is sitting, the male frequently supplies her with fish, though she occasionally takes a short circuit to the sea herself, but quickly returns again. The Fish-Hawk lays in April, May, and June in northern climes. The number of

eggs is nearly always three. Mr. Dresser remarks that in a large series he has found most of the eggs to be white, richly spotted and blotched with deep chestnut-red, and sparingly marked with a few purplish-grey underlying blurs or markings; in one or two the deep red blotches were so close as almost to hide the ground-colour.

The specimen figured in Hewitson's 'British Birds' Eggs,' pl. iii., has the larger markings in the form of softened clouds of brownish red in a zone round the large end, while the rest of the surface of the shell is tolerably profusely covered with linear blotches of a paler hue. The average dimensions are 2.5 inches by 1.9. The singular fact is recorded by Wilson, that "the most thriving tree will die in a few years after being taken possession of by the Fish-Hawk;" and he remarks that this is attributed to the fish-oil and to the excrement of birds, but is more probably occasioned by the large heap of wet salt materials of which the nest is composed. The Osprey, if it really does remain all the year round in the island of Manaar, may perhaps breed on some of the gigantic Baobab-trees (*Adansonia digitata*) which are common there, and supposed to have been introduced by Arabs centuries ago.

Suborder STRIGES.

Outer toe reversible. Eyes directed forwards and encircled by a facial disk. Nostrils generally hidden by stiff bristles. Plumage soft and fluffy. Tibia more than double the length of tarsus. Tail with twelve feathers. (*Sharpe*, Cat. B. ii. p. 1.)

Fam. BUBONIDÆ.

Hinder margin of sternum always deeply cleft, two or more notches being present; furcula free; inner margin of middle claw not serrated. (*Sharpe*, Cat. Birds, ii. p. 1.)

Subfam. BUBONINÆ.

Head usually furnished with two large tufts at the sides of the forehead; facial disk imperfectly developed above the eye; ear-conch small and without an operculum. Tarsus stout, nearly always feathered.

ACCIPITRES.

STRIGES.

BUBONIDÆ.

BUBONINÆ.

Genus KETUPA.

Disk undeveloped above the eye. Bill very powerful. Nostrils oval, situated at the anterior margin of the cere, and covered by the long loreal bristles. Head very large, and furnished with two long ear-tufts. Wings ample, falling considerably short of the tail; the 5th quill the longest, the 3rd and 4th slightly shorter. Tail moderate. Legs and feet very powerful. Tarsus longer than the anterior toes, feathered in front slightly below the knee, the rest bare and the toes finely reticulate. Claws stout, rather straight, the inner anterior one only trenchant beneath; soles furnished with fine spicules.

KETUPA CEYLONENSIS.

(THE BROWN FISH-OWL.)

Strix ceylonensis, Gm. S. N. i. p. 287 (1788).

Strix leschenaulti, Temm. Pl. Col. ii. pl. 20 (1824).

Scops leschenaulti, Steph. Gen. Zool. xiii. pt. 2, p. 571 (1825).

Scops ceylonensis, Steph. l. c. p. 54.

Strix hardwickii, J. E. Gray, Ill. Ind. Zool. ii. pl. 31.

Cultrunguis nigripes, Hodgs. J. A. S. B. v. p. 364.

Cultrunguis leschenaulti, Jerd. Madr. Journ. x. p. 90.

Ketupa ceylonensis, Gray, Gen. B. i. p. 38 (1845); Blyth, Cat. B. Mus. A. S. B. p. 37 (1849);

Kelaart, Prodromus, Cat. p. 116 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii.

p. 107; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 77 (1854); Jerdon, B. of Ind. i.

p. 133 (1862); Tristram, Ibis, 1865, p. 261; Hume, Rough Notes, p. 379 (1870);

Swinhoe, P. Z. S. 1871, p. 343; Holdsworth, P. Z. S. 1872, p. 417; Hume, Nests and

Eggs, p. 64 (1873); id. Stray Feath. 1873, p. 431; Legge, Ibis, 1874, p. 11; Ball,

Str. Feath. 1874, p. 382; Hume, ibid. 1875, p. 38; Legge, ibid. 1875, p. 198, id. Ibis,

1875, p. 279; Sharpe, Cat. B. ii. p. 4 (1875); Armstrong, Str. Feath. 1876, p. 300;

Inglis, ibid. 1877, p. 16.

Great Ceylonese Owl, Brown, Ill. Zool. pl. 4; *Ceylon Eared Owl*, Latham, Gen. Syn. i. p. 120;

Great Brown Owl, *Great Horned Owl*, Europeans in Ceylon.

Amrai-Ka-ghughu, Ulu, Hind.; *Utum*, Beng.; *Teedook*, Arracan.

Bakamūna, Sinhalese, lit. "Fish-Owl"; *Anda*, Ceylon Tamils; *Oomuttanloovey*, Tamil (*apud* Layard).

Adult male and female. Length to front of cere 19.5 to 20.0 inches; culmen from cere 1.4 to 1.65; wing 14.5 to 15.8, expanse 51.0 to 54.3; tail 7.0 to 8.0; tarsus 2.5 to 2.8; mid or outer anterior toe 1.5 to 1.85, claw (straight) 0.6 to 0.85; height of bill at cere 0.5 to 0.67.

The above measurements are taken from a series of seven Ceylonese examples. Specimens of both sexes vary in size *inter se*; but males appear to be as a rule the larger of the two. Three males measure in the wing 15.3, 15.9, 14.5; four females 14.4, 14.5, 15.0, 14.5. In the size of tarsus, foot, and bill there is not the same preponderance in favour of the males.

Iris fine clear golden yellow; cere dark olivaceous green; bill olivaceous green, in some greyish green; a dark brownish-green patch on the sides of the mandible; under mandible usually paler than the upper; tarsi and feet olivaceous greenish, the skin between the reticulations yellowish; in some examples the entire tarsus is yellowish, with the joints and toes greenish.

Above light vinaceous brown, darkest on the interscapular region and upper scapulars, and palest on the rump and upper tail-coverts; the feathers of the head, sides and back of neck with broad mesial streaks, increasing on the back and scapulars to drop-shaped patches of dark brown; the light portions of the hind-neck feathers cross-rayed with brown; shorter lateral scapulars with white outer webs and dark shaft-stripes; wing-coverts dark brown, the lesser series edged with light tawny; the greater zone of secondary coverts crossed with interrupted bars of fulvous whitish; the outer feathers of this and the series above it with large white patches at the tips of the outer webs; the inner feathers, as well as the tertials and longer scapulars, pale at the outer edges and tipped and mottled in a bar-like form with buff; primary-coverts, primaries, and secondaries dark brown, barred and tipped with dusky buff, paling to white on the outer webs of the longer primaries, and subdued with a brownish hue on the inner webs of all the quill-feathers; basal portion of the inner webs white; rump and upper tail-coverts with narrow mesial brown lines, the feathers faintly edged with fulvous; tail concolorous with the secondaries, and tipped and crossed with four bars of dusky buff, paling to whitish at the base of the inner webs of the lateral feathers; face tawny brownish, the base of the loreal plumes white and the terminal portion of the shafts black; an orbital fringe of bristly blackish feathers; ear-tufts concolorous with the crown.

The feathers of the lower cheeks and at the side of the throat with narrow dark shaft-lines; throat more or less white (in some more than in others), with narrow shaft-stripes of brown; breast, flanks, and under surface delicate fawn-colour, darkest on the upper breast, and paling considerably in some on the belly and longer thigh-plumes; each feather with a deep-brown lanceolate shaft-stripe, and crossed with fine, wavy, brown rays, which are more conspicuous on the lower parts than on the breast; thighs pale tawny, unmarked; under tail-coverts lightly striped; lesser under wing-coverts fulvous tawny, with dark brown shaft-stripes widening at the tips; greater series white at the base, with the terminal portion blackish brown; white basal portions of the primaries tinged with yellow, as also the under surface of the adjacent bars.

Obs. The white throat-patch varies in size independently of the general light or dark hue of the under surface, specimens which have markedly fulvous breasts having the white gorge as large as any other. This, then, being a variable character is (although such has been maintained) of no value whatever as a distinguishing feature in the Ceylonese birds from any others. The latter are, however, as a rule smaller than some North-Indian and Burmese specimens; but this is a *constant character* of Ceylonese representatives of Indian species. That the Brown Fish-Owl varies in size in India will be seen from the following measurements:—Three males, wing 15.0 to 15.7 inches, three females 16.5 to 18.0 (*Hume*, 'Rough Notes'); two males, wing 16.2 and 16.0 (Chota Nagpur, *Ball*); several females 14.9 to 15.7 (Irrawaddy delta, *Armstrong*); one female 15.6 (Burmah), and two examples unsexed, 15.3 and 14.8 (Burmah and N. Bengal; measured by myself in British Museum). Two of these last three coincide exactly with Ceylonese specimens in general hue, white throat-patch, and transverse breast-striations; the third presents an individual peculiarity in its very rufescent character throughout, and almost total absence of chest-striations like *K. flavipes*. Lastly, a Cochin-China example in the national collection is quite similar to those from Ceylon.

Distribution.—This Fish-Owl is very generally diffused throughout the low country, where localities suitable to its habits occur; but it does not appear to ascend much above the level of the deep valleys of the Kandyan Province. In the western and southern portions of the island it is found near the banks of all the large rivers, and very often about wet paddy-fields; but it is not so numerous in that division as on the eastern side or in the forests of the northern half, where its chief haunts are the borders of all the inland tanks, both large and small, and the forest-lining of the large rivers. It is found on the sea-coast where the jungle clothes the actual shore, as it does round the magnificent harbour of Trincomalie and at many other localities. In the Seven Korales it is very abundant; I have met with it there, in every sort of locality, from the

insignificant water-hole ornamented with a solitary banyan, to its favourite haunt the huge Koombook-tree spreading its massive arms over the dried-up, sandy river-bed.

In the Kandyan Province it follows the banks of the Mahawelliganga from the low country into the valley of Dumbara, being a well-known bird about Peradeniya, and occurs in the valley of this river, as well as in those of its affluents up to about 3000 feet. Mr. Laurie has procured it in Kalebokka, about the same elevation, and it is likewise found in the Badulla district. In the southern ranges I have met with it up to 2000 feet, and I have no doubt it occurs generally, though not in any numbers, throughout that hill-district.

Elsewhere the Brown Fish-Owl is found throughout India in suitable spots, from the Himalayas to the extreme south, ranging into Assam, Arakan, and Burmah, as far south as the province of Tenasserim, beyond which it ceases to extend, being replaced in the Malayan peninsula by the smaller species *K. javanensis*, which likewise inhabits the Burmese kingdom. Concerning the Irrawaddy-delta district, Mr. Armstrong writes that this Owl is tolerably abundant in the thin forest-jungle surrounding the jheels between Elephant Point and China-Baker. In Cachar, Mr. Inglis records it as rather common; and about Thayetmyo and Tonghoo, Messrs. Feilden and Oates remark that it is also common. From Chota Nagpur Mr. Ball records it, and Mr. Fairbank from the Sahyadri mountains. Jerdon says that it is found in the Nilghiris to a considerable elevation, being not rare in Otacamund. Mr. Fairbank likewise has it from the Palani hills, although it has not yet been procured in the Travancore range. It does not appear to be found either in the Deccan or in Sindh. Beyond the limits of the Indian region Mr. Swinhoe has procured it near Hongkong; and in an equally remote locality to the west, viz. Palestine, Canon Tristram has found it. Its occurrence in these widely distant places is very remarkable. As regards the Holy Land, Canon Tristram writes, in 'The Ibis' for 1865, "We can only point to one locality as the certain residence of this bird in Palestine." It "was found by us in the wild wooded glen of Wady el Kurn, running up from the Plain of Acre. We discovered it accidentally, and at first took it for the *Bubo ascalaphus*, when it bolted out of the dense foliage of a great Carob-tree under which we were standing; we thus put up no less than four individuals in two days."

Habits.—This large Owl loves the vicinity of water, haunting the banks of rivers, tanks, inland salt lagoons, the borders of sea-bays, and woods surrounding rice-fields. All who have visited the tanks in the north and east of Ceylon must be familiar with this fine bird, which is so often surprised napping in the lofty trees growing on the embankments or so-called "bunds." Its powers of vision in the day are not quick, but they are tolerably clear; on hearing the footsteps of man, it raises its large ear-tufts, and, bending down its head, stares stolidly down from its lofty perch among the green boughs, and as soon as it becomes aware of the nature of the intruder on its retreat, hastily launches itself out of the tree, and is not easily approached a second time. It is much more common in wild forest country combined with water than in cultivated districts. It sallies out in the evening with great regularity. As soon as the sun begins to sink behind the surrounding forest, it may be noticed, flapping noiselessly round some secluded cheena, or leisurely crossing the lonely tank, resounding at the hour of sunset with the booming of innumerable frogs, to the nearest conspicuous tree, and there gives out its sepulchral groan. This gloomy salutation is usually responded to by its mate, who perches close at hand, and answers by a double note, the two lonesome sounds resembling the words *gloom, oh-gloom*. At night I have often heard these notes repeated by a pair without intermission for many minutes. Layard remarks that when alarmed during the day they utter a loud hiss, subsiding into a growl. They appear to have an accustomed place of roosting, for Mr. Holdsworth notices that they "perched day after day on the same branch." This is very often in an exposed situation, and it frequently falls to their lot to be mobbed by a flock of garrulous Bulbuls, King-Crows, and other Owl-hating small birds. Fish is the favourite food, and, in fact, the usual diet of this species; but when this is not procurable, small mammals, reptiles, and even insects are devoured by them. In the stomach of one example I found a snake (*Haplocercus ceylonensis*) and some large beetles. As a proof of their miscellaneous diet, and also of their voracity, I may mention that a pair of Fish-Owls which were kept by Sir Charles Layard in the same aviary with a Brahminy Kite, fell one night upon their luckless companion, and, after slaughtering him, forthwith proceeded to devour him completely. Further, Mr. Hume records, in 'Nests and Eggs,' finding the remains of quails, doves, and mynahs in the nest of a pair on the Jumna; and in 'Stray Feathers,' vol. v. p. 16, Mr. J. Inglis writes as

follows concerning the food of this species :—"I once surprised a pair of them feeding on the carcase of an alligator which I had shot a few days previously."

Nidification.—In Ceylon the Fish-Owl breeds from February until May. It nests in hollow trees or in crevices in rocks near water. The nest is scanty, consisting of a few sticks, and when placed in holes of trees of nothing but the bare wood or, perhaps, a few leaves. The eggs are usually two in number, broad ovals in shape, tolerably glossy in texture, and pure white. Two that I examined from the Kurunegala district measured 2.29 by 1.72 and 2.3 by 1.78 inch.

In India this Owl sometimes tenants the deserted nest of a Fishing-Eagle, carefully lining it with grass and feathers, and occasionally constructs its own nest in the recess of a large upright fork.

Genus BUBO.

Head and disk much as in the last; bill slightly longer; nostrils more oval; ear-conch rather small. Wings moderately short; 4th and 5th quills subequal and longest, and falling short of the tail by more than the length of the middle toe. Tail moderate, even. Tarsus rather short, very stout, and feathered down to the foot. Feet very large; inner toe subequal with the middle one, the outer very short; inner claw very large and long.

BUBO NIPALENSIS.

(THE FOREST EAGLE-OWL.)

Bubo nipalensis, Hodgs. As. Res. xix. p. 172; Sharpe, Cat. B. ii. p. 37 (1875).

Huhua nipalensis, Hodgs. J. A. S. B. vi. p. 362; Jerd. B. of Ind. i. p. 131; Blyth, Ibis, 1866, p. 254; Jerd. Ibis, 1871, p. 346; Blyth, Ibis, 1872, p. 89; Hume, Rough Notes, p. 378 (1873); id. Str. Feath. 1873, p. 431, and 1874, p. 468.

Etoglaux nipalensis, Hodgs. J. A. S. B. x. p. 28.

Bubo orientalis, Blyth, Cat. B. Mus. A. S. B. p. 34 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. no. 80 (in part), p. 72 (1854).

Ptiloskelos amhersti, Tickell, J. A. S. B. xxviii. (1859) p. 448; id. MS. Ill. Ind. Orn. vol. ii.

Huhua pectoralis, Holdsw. P. Z. S. 1872, p. 416.

Huhu, *Huhu chil*, Nepalese (*apud* Hodgson).

Loko Bakamūna, Sinhalese; *Peria-anda*, Tamils in Ceylon.

Adult female. Length to front of cere 23·0 to 24·0 inches; culmen from cere 1·7 to 1·9; tail 8·3 to 9·5; tarsus 2·75; mid toe 2·0, claw (straight) 1·75; height of bill at cere 0·8. Expanse of one with a wing of 17·2, 56 inches.

Male. Wing 15·3 to 17·0 inches.

The following are individual measurements of a series of seven examples:—

	Wing. in.	Tail. in.	Tarsus. in.	Weight.	Museum or Collection.
♀. Kalebokka	18·0	8·3	2·75	....	T. Butler, Esq., Clapton.
♀. Haputale	17·2	9·5	2·75	3·75 lb.	Norwich.
♀?. Kandy district	17·2	9·2	2·50	....	Norwich.
Juv. ♂. Kandy district	17·0	8·5	2·50	....	Colombo.
♂. Maskeliya	16·0	7·4	2·50	....	R. Cobbold, Esq., Ardleigh.
♂?. Kandy district	16·2	8·1	2·50	....	British Museum.
♂. Kandy district	15·3	....	....	....	E. Holdsworth, Esq.

Iris “yellowish brown” (*Bligh*, in epist.); bill olivaceous brown; cere olive; feet brownish, claws dark brownish horn.

Forehead, crown, and all above glossy sepia-brown, barred on the head and hind neck with narrow cross rays of fulvescent white, and on the back, scapulars, and wing-coverts with broader bars of buffy, including a terminal band of the same, which, on the longer scapulars and greater wing-coverts, is mottled with brown; inner webs of ear-tufts (which vary from 2·5 to 3·0 inches in length) barred with buff-white; outer webs of the lateral scapulars buff, the inner barred with mottled bands of a paler hue; outer webs of the anterior wing-coverts conspicuously banded with buff; primary-coverts crossed with pale mottled bars, duskiest on the inner webs; primaries and

secondaries banded with smoky grey across both webs, the inner paling to buff at the edges; tail deeply tipped and crossed with fine narrow mottled bars of dusky buff; these widen and are paler towards the base.

Lores and facial disk greyish; chin, throat, and under surface whitish, washed here and there on the breast with buff; chin and ruff-feathers barred narrowly with brown; fore neck and chest banded with regular bars of the same, the distance between which increases on the upper breast; on the breast, pectoral plumes, flanks, and under tail-coverts the bars increase in width, take a pointed or slightly spear-shaped form, and are very far apart, but are three in number, as on the chest; bars of the under tail-coverts paler and narrower than those of the breast; tarsi narrowly barred with brown; under wing-coverts buffy white, marked with bar-like spots and pointed bars of brown.

Obs. The above is a description of the largest and most mature bird* I have met with. One, probably in the plumage of the second year, has the barrings of the upper surface more buff and generally broader, the markings of the head and hind neck, especially, showing a more yellow hue than in the old bird; the scapulars have more of the buff hue on the inner webs, the markings of the wing-coverts and barring of the tail show the same characteristic; the bands on the throat and round the edge of the disk are more coalescent, those on the chest closer together, and there is a more sudden increase in the width of the interspaces on the breast than in the above example; tarsi not so strongly barred.

Young. The nestling has the iris brown; bill fleshy white; feet dull yellowish, claws dusky.

Above and beneath white; the head and hind neck narrowly barred with brown; the back, scapulars, and wing-coverts openly banded with the same and tinged with rufescent buff, the edges of the bars whitish, contrasted with the buff ground-colour; quills dark brown, with handsomely mottled bars of smoky grey; tertials whitish, barred similarly to the scapulars; forehead and disk white; orbital fringe dark; tail smoky grey, banded with blackish brown; beneath, the under surface is tinged with greyish, and marked throughout with narrow, wavy, blackish-grey cross bars; legs white, unbarred.

Bird of the year. After putting off the nestling dress, the bill becomes more olivaceous; the upper surface is light glossy sepia-brown, with all the pale markings bolder and yellower than in the adult; the bars on the head, hind neck, shoulder of the wing, and least wing-coverts are greyish buff; on the scapulars and greater secondary wing-coverts they are rich buff, broad and mottled conspicuously with brown; primaries and secondaries tipped and barred with pale brownish, paling on the inner webs into brownish buff; basal portion of primaries buff; tail brown, tipped deeply and banded with four bars of buff, mottled with the ground-colour.

Lores, face, and ear-coverts greyish, the former with blackish shaft-lines, and the latter with indistinct cross lines of brown; fore neck and sides of throat whitish, changing on the breast and under surface into buffy white; ruff and neck as far as the centre of the chest barred with brown more closely than in the adult, on the breast the space between the bars increases gradually to the lower parts, and on the flanks and pectoral plumes the markings are pointed; legs barred narrowly with undefined marks of brownish; under wing-coverts buff, barred like the under surface.

Obs. The distinctive characteristic of the immature bird is the difference in width of the chest and breast interspaces, giving the appearance to a casual observer of a coalescence on the former region. Whether this character or not led to the distinctive name *pectoralis* of Jerdon for the South-Indian bird I am unable to say; it is common to nearly all Ceylonese young birds, the only exception to the rule that I know of being that of the young male (?) in the collection of Mr. Holdsworth. The ground-colour of the under surface in this is more fulvescent than in other birds which have come under my notice; the bars are not spear-shaped on the lower parts, and approach gradually from there up to the chest, where they are very close together. Mr. Hume observes ('Stray Feathers,' vol. i. p. 431) that the markings on the chest are variable in Himalayan birds also.

As regards the supposed distinctness of the Nepaul form from the Ceylonese, after giving considerable time and attention to the subject, and examining the specimens of the former in the British and Norwich Museums, I must support Mr. Hume in considering them identical. Ceylonese birds are, doubtless, as a rule smaller than northern; and guided by this, together with the peculiar feature exhibited in the widely-separated pointed bars of the lower parts, I was disposed for some time to follow Mr. Holdsworth in diagnosing them as *H. pectoralis*; but the fact of the old birds, such as the fine example shot by Mr. Laurie, and two others which I have seen in Messrs. Whyte and Co.'s establishment, coinciding exactly with Himalayan examples, settles the matter, I think, beyond dispute. In such the character of the under-surface barring, the coloration of the scapulars, and even the diminishing of

* In the possession of Mr. T. Butler, Knighton House, Clapton; shot by Mr. Forbes Laurie in Kalebokka.

the transverse markings of the head to marginal indentations are precisely similar to the like conditions in the Himalayan bird. Should further investigation, aided by the examination of a larger number of *fully* adult birds than I have been able to get together, lead to the discrimination of the insular race as altogether a smaller one than the North-Indian, I would propose the specific name of *blighi* for the former, as Mr. Bligh was, I believe, the first to procure, or, at any rate, to bring to the notice of ornithologists, the species in Ceylon. An inspection of Jerdon's figure of *H. pectoralis* in the 'Madras Journal,' 1839, vol. x., and a perusal of the description in the text of the lower plumage, does not strengthen the conviction of its identity with the Ceylon bird. The drawing shows a band across the chest, formed by a brownish *ground-colour*, and not by a coalescing of the bars, such as is never seen in the youngest of Ceylonese specimens. The description (p. 89) is in part as follows:—"Beneath white, feathers barred with brown, numerous on the throat, less so on the belly and vent, and the bars are larger and take an arrow-headed form; a *narrow pectoral band of brown with a golden tinge, and edged buff as above.*" The latter characteristic is not represented in Ceylon specimens, and reads as if it had been an abnormal one in Jerdon's bird. With regard to the superior size of Himalayan *nipalensis*, 3 adult examples in the British and Norwich Museums, irrespective of sex (which is not recorded on the labels), measure in the wing 17·5, 18·0, and 18·2 inches. In the Norwich example there is an extra bar on the feathers of the lower surface, which peculiarity likewise exists in Mr. Laurie's bird, described above.

Distribution.—This splendid Owl, the largest and most powerful of its tribe in Ceylon, is a pretty general inhabitant of the mountain-region of the island from about the level of the Dumbara valley to the upper ranges. I have never met with any examples of it from the southern coffee-districts, but have no doubt that it occurs there, and that it may have not unfrequently been killed on the estates in that part of the island. In the Kandyan Province it has been procured in the districts of Matale, Kalebokka, Dumbara, Pusselawa, Maskeliya, and Haputale. It is, however, a comparatively recent addition to the avifauna of Ceylon, having been added to the list of birds by Mr. Holdsworth in his catalogue dated 1872. The specimens brought under his notice were procured by Mr. S. Bligh in 1867 in the Kandyan district; and this gentleman has therefore the credit of discovering this fine addition to the Ceylon Strigidæ. Among the several fine examples which have been procured since Mr. Bligh's first specimens are a female in magnificent plumage shot by Mr. Forbes Laurie in Kalebokka, an equally fine bird killed by Mr. C. Cobbold in Maskeliya, an adult female procured by Mr. Bligh at Lemastota, and a male killed by coolies on his estate at Catton, in addition to all which not a few specimens have found their way to the establishment of Messrs. Whyte and Co. in Kandy. An immature example from this source is now in the Colombo Museum, and another in the British Museum. I have no information of this species having ever been shot in the low country; but doubtless on more extended research it will be found tolerably low down in the Peak forests, and I should not be at all surprised to see it occur in the ranges just above Gillymally. Elsewhere the Eagle-Owl is found in the Himalayas and the Nilghiris (if Jerdon's *pectoralis* should prove not to be a good species). Eastward of India proper it ranges into Tenasserim.

Habits.—This fine bird, as its English name implies, is a denizen of woods and forests; in Ceylon, however, it is, on the whole, more partial to isolated patna-woods than to the gloomy interior of the large jungles, and is doubtless attracted thither by the abundance of bird-life in these cool and retired ravines. It is usually found roosting in shady trees in the most confined portions of patna-dells, down which sparkling streams tumble, shut in by steep wooded banks. Should its retreat, as is often the case, border a coffee-estate, the Eagle-Owl levies contributions on the pigeons and poultry of the neighbouring bungalow, and falls a victim to the gun of the *Doré*. In such manner one of the above-mentioned examples was killed from the roof of his house by Mr. Cobbold in Maskeliya, after it had, as I am informed, decreased the population of the adjoining dove-cot. It is said to feed principally on birds, and very likely also preys on the large squirrels (*Sciurus tennantii*) common in the hill-jungles, occasionally perhaps killing hares, which are plentiful on most of the patnas in the Central Province.

In the Himalayas Hodgson asserts that it kills pheasants, and sometimes fawns of the smaller species of deer. Its exceedingly powerful talons and massive legs would certainly enable it to capture as large animals as most Eagles. I believe it to be strictly nocturnal in its habits; and Doctor L. Holden, formerly of Deltota, who observed something of its habits, informed me that it was very shy, quickly taking flight in the day when

its haunts were invaded. The note of *H. pectoralis* is said by Jerdon to be a "low, deep, and far-sounding moaning hoot," and most probably resembles that of the present species. The vocal powers of the latter are, however, not restricted to a hoot; for Major Fitzgerald, R.A., in writing to Mr. Gurney in November last, and as quoted in 'The Ibis' (January 1878) by the latter gentleman, remarks of a caged bird that he had kept for years:—"In confinement the bird became quite tame, and would utter cries of pleasure at recognizing the hand that fed it. . . . It was, I think, a female; and during the period which might probably be its nesting-season, was in the habit of uttering a peculiar and incessant cry."

Nothing is known of the nidification of this species. It probably builds a stick-nest in the hollow of some large trunk, or on a deep and capacious fork between two limbs overshadowed by thick foliage, or perhaps it may deposit its two eggs in holes in large trees, merely on the rotten wood generally found at the bottom of the cavity. I commend the subject to my ornithological friends in Maskeliya, Haputale, and other likely districts in the Ceylon hills. A knowledge of this bird's breeding-habits would be a grand acquisition to the ornithology of the island.

Genus SCOPS.

Of small size. Cere prominent, the nostrils oval and pierced in the anterior margin; margin of the bill curved throughout. Ear-tufts large. Wings long and ample, reaching to the tip of the tail in some; the 4th quill the longest, 3rd and 5th slightly shorter. Tail moderately short and rounded at the tip. Tarsus long, nearly always feathered to the foot. Toes generally naked, the anterior toes subequal; the inner posterior toe rather short, finely reticulate except at the tips, which are covered with two or three transverse scutes; claws well curved and acute.

SCOPS BAKKAMUNA.

(FORSTER'S SCOPS OWL.)

Strix bakkamuna, Forster, Indische Zoologie, 1781, p. 13, pl. iii.; Lath. Ind. Orn. i. p. 56 (1790).

Otus indica, Gm. S. N. i. p. 289 (1788).

Scops griseus, Jerd. Madr. Journ. xiii. pt. 2, p. 119.

Ephialtes lempigi, Kelaart, Prodromus, Cat. p. 116 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 106; Jerdon, B. of India, i. p. 138 (1862); Legge, Ibis, 1874, p. 11.

Ephialtes bakkamuna, Holdsworth, P. Z. S. 1872, p. 417; Hume, Str. Feath. 1873, p. 433; Legge, J. A. S. (C. Branch), 1874, p. 17; Ibis, 1875, p. 279.

Scops bakkamuna, Hume, Nests and Eggs, p. 69 (1873).

Scops malabaricus, Sharpe, Cat. Birds, vol. ii. p. 94 (1875).

Die Horn-Eule Bakkamuna, Forster.

The Ceylon Hawk-Owl, also *The Little Horn Owl*, of Pennant; *The Little Eared Owl* of some;

The Lempigi Owl, Kelaart; *Koorooi*, Portuguese in Ceylon (Layard).

Punchi-Bassa, Sinhalese, lit. "Small Owl;" *Sin-anda*, Tamil; *Motu* (*apud* Layard).

Adult male and female. Length 7·8 to 8·1 inches; culmen 0·6; wing (usually) 5·7 to 6·0, expanse 19·5 to 21·0; tail 2·5 to 2·7; tarsus 1·4 to 1·5; mid toe 0·65 to 0·8, claw (straight) 0·4 to 0·43; height of bill at cere 0·3 to 0·32.

A specimen in Layard's collection, now at Poole, measures 6·4 in the wing, and another in the British Museum 6·2: these are very exceptional dimensions. Between the sexes (that is, in Ceylonese examples, which alone are here treated of) there is no constant difference in size; two males in my collection measure 5·9 and 6·0 inches; three females 5·7, 5·8, and 6·0 inches. Examples from the Kandy district are, I think, as a rule, larger than low-country ones.

Iris reddish yellow, sometimes mottled externally with chestnut-brown, in others chestnut of various depths; cere olive-brown; bill greenish horn-colour, pale at the base and dark brown at the tip; feet brownish olive, in some greenish, soles sickly yellow, claws dusky pale at the base.

General hue of back, tail, wing-coverts, tertials, and secondaries earth-brown, with blackish-brown mesial stripes to the feathers, particularly on the back and scapulars, and both webs marked with transverse spots of dusky fulvous and

also mottled with brownish grey, on the secondary wing-coverts the fulvous or buffy markings are chiefly conspicuous on the outer webs; outer webs of external scapulars and a more or less defined collar across the hind neck rich buff, mottled with brown; crown, nape, hind neck, and ear-tufts rich blackish brown, more or less spotted with ochraceous; forehead, region above the eyes, and inner webs of ear-tuft feathers greyish buff, pencilled with brown; primaries darker brown than the secondaries, mottled with ochraceous grey at the tips, with a series of dark-edged fulvous or buffy white spots on the outer webs and corresponding palish bars on the inner; secondaries crossed with mottled bars of ochraceous grey, changing into buff at the inner edge; tail with 5 or 6 wavy mottled bands of the same; lores concolorous with the forehead, the terminal portions of the shafts black.

Facial plumes and cheeks buff-grey, crossed with dark pencillings; chin buff-white, unmarked; general hue of throat, chest, and under surface buff, richest on the chest, and paling to whitish on the abdomen and lower thigh-plumes; the feathers of the ruff boldly tipped with blackish; the throat and chest with fine transverse pencillings of brown; feathers of the breast, flanks, and sides of abdomen with clearly-defined blackish-brown shafts, branching off into cross vermiculations of ochraceous brown; thighs and upper part of tarsi more or less marked with brown, lower part almost unmarked, and in some examples the entire tarsus devoid of marking; under wing-coverts very variable in some, buff, unmarked, in others, tipped and spotted with sepia-brown; edge of the wing whitish buff.

Obs. The hue of the head and hind neck varies in depth; some examples, fully mature, have these parts but little darker than the back; it may, however, be laid down as a general rule that the oldest birds have the darkest heads, and this is usually accompanied by a richer tone in the buff markings of the upper surface and the ground-colour of the chest and flanks. Some birds have the breast-feathers crossed with yellowish-buff markings.

The large example above referred to as in the British Museum is very dark on the upper surface, and has the light markings but slightly tinged with buff; the under surface, which is conspicuous for its whitish ground-colour, has the breast-feathers very openly pencilled with transverse rays. Several examples which I have examined from the hill-districts are decidedly greyer in their light markings than low-country birds, and show an absence of the buff tinge on the breast, which is unusual in the latter.

Rufous varieties of this Owl are occasionally met with in Ceylon. A living specimen, which I had for some time at Galle, had the iris chestnut-brown, the bill fleshy brown with a dark tip; feet vinous brown. The portions of the upper surface which are buff and greyish in ordinary birds were rufous in this, and the under surface was also a rich rufescent buff.

Young. Iris in some brownish yellow, in others reddish yellow; bill dusky horn-colour, under mandible bluish; feet brownish grey. The iris darkens with age, and the bill loses its plumbeous tint, the bill and feet in yearlings resembling those of the adult, but slightly less olivaceous.

The nestling has the plumage fluffy and the upper surface whitish, closely and indistinctly barred with brownish, the amount of each colour being about equal; the head, however, is lighter than the back, being the reverse of the adult character; wing-coverts brown, with irregular buff markings, the brown hue pencilled with greyish, the greater wing-coverts darker than the rest; quills pale brown, crossed with wavy mottled bars of fulvous; the bars on the centre of the outer webs and those at the base of the inner webs unmottled; lores greyish, mottled with brown; beneath greyish white, entirely crossed closely with wavy lines.

A pair of nestlings from the same nest, which differed even in the colour of the irides, were clothed in this whitish garb. In other specimens the character of the plumage is buff or ochraceous. A bird of the year before me has the head, neck, chest, and breast buff-yellow, the crown and hind neck closely crossed with blackish; back and wing-coverts dark grey, much mottled with buff, the dark shaft-lines but little developed; lesser coverts dark brown, forming a dusky patch above the ulna; quills with the bars wider than in the adult, and the dark portions more mottled; tail as in the adult, the ground-colour towards the base not so dark; the face, throat, and fore neck with close transverse lines of brown. On the sides of the breast the adult dark-striped feathers are appearing; the abdomen and legs are whitish, and the under wing-coverts and edges of the wing are buffy white.

Obs. With regard to the specific name of this Owl, there can, I think, be no doubt that Forster's figure, in his 'Indische Zoologie,' refers to a Ceylonese bird, and is meant to illustrate his description in the text, notwithstanding that the drawing is not very like the original, and is given in a work which, though it professes to deal only with the ornithology of India, contains birds from other parts of the world. It is stated by the author that the Owl comes from Ceylon; and there is no other species in the island which could be meant to do duty for the present. In part the German description is as follows:—"Die Ringe von Federn um das Auge sind sehr hellgrau, und der äussere Ring bräunlich gelb. Der Rücken ist braun; die Brust ganz blass gelblich mit schwarzen pfeilförmigen Flecken besät."

But that which clearly defines the Plate to be a representation of a Ceylonese bird is the faithful drawing of the well-known plant, the *Gloriosa superba*, which is depicted (not in conformity, however, with its nature) as entwining the dead tree on which the Owl is perched. In a footnote at p. 13 is contained a lengthy dissertation on the poisonous properties of the *Gloriosa superba* root, proving that Forster was dealing, both as regards bird and botany, with that which pertained to Ceylon.

Mr. Hume considers the Ceylon bird identical with the Indian species entitled *S. griseus* by Jerdon, and which is united with *S. malabaricus* of the same author by Mr. Sharpe.

Distribution.—This Scops Owl, which, next to the Fish-Owl, is the commonest of its family in Ceylon, is widely diffused throughout the island. It is, however, located more numerous in the western and southern portions than elsewhere, and wherever it is found is commoner near the sea-coast than in the interior. At Negombo, Colombo, and Galle, and the districts adjacent to these localities, it is, for an Owl, decidedly numerous. About the capital it is so common that it may be heard nightly, by those acquainted with its note, about the cocoanut-plantations in Colpetty and Slave Island, and even frequents the Fort. A little colony, which divided their quarters between the large trees in Queen's House Gardens and the old Suriah's which formerly stood in front of the new buildings in Chatham Street, several times came under my notice while I was stationed at Colombo. In the Fort of Galle it likewise frequented the most public places, being often seen in the rows of trees near the Master Attendant's house. Throughout the Galle district, as far inland as the Hinedun Pattu, it is common. In the South-east and Eastern Province it is less frequent, and further north, at Trincomalie, it is not at all common. Layard records it from the Jaffna peninsula, whence I have myself seen skins. Mr. Holdsworth found it at Aripu, in the Manaar district. In the lower hills about Kandy, and localities from there to about 3000 feet elevation, it occurs; but I do not think it has been noticed much above that height.

On the continent this species of Scops Owl inhabits various parts of the peninsula of India, being common in the south. It does not appear to extend eastward into Burmah and Malayana, where it is represented by the allied species *S. lempigi* of Horsfield. It is included by Captain Butler in his list of birds from the Mount Aboo district; but it does not appear to be found further south in the Khandala and Western Deccan region. In the northern parts of India it is abundant, according to Mr. Hume, who remarks, in 'Nests and Eggs,' "that it is widely distributed throughout the Punjab, the North-western Provinces, Rajpootana, the Central Provinces, and Oudh." I observe, however, that Mr. Ball does not record it from Chota Nagpur, which province bounds the Central Provinces on the north-east.

Habits.—Forster's Scops Owl frequents cultivated country and the neighbourhood of towns and villages. It is found in the plantations of the natives, in their cocoanut-gardens, in low jungle, bamboo-thickets, and even in old buildings. About Colombo it is well known, being frequently heard from the verandahs of the Colpetty and Slave-Island bungalows uttering its monosyllabic note in the surrounding cocoanut-trees. In the country it takes refuge in thickets and low jungle, and is partial to the deep shade afforded by "bamboo cheena." In this latter it roosts on the horizontal branches of the "bataliya," beneath a thick canopy of tangled branches; while in the vicinity of human habitations it hides in holes of trees or in old buildings. It sleeps heavily, and has but limited powers of vision by day, for it may be approached within a few yards before perceiving that it is observed; when thus roused it flies off swiftly, quickly realighting, and turning round its head in the direction of its disturber, erects its ears and regards him with a fixed stare. It is by no means shy at nights, allowing itself to be shouted at when seated in a shady tree, uttering its monotonous *whok* note before taking flight. It usually frequents thickly-foliaged trees at night, about which it captures moths and beetles, taking them, according to Layard, on the wing. I have found its stomach to contain lizards as well as Coleoptera. It is strictly nocturnal in its habits, not issuing forth from its hiding-place before dusk, and it then resorts to the shade of thick trees and utters its monosyllabic note for some time. Layard says that this is changed "when flying to *wāh-hā wāh-hā*, quickly uttered and mingled with a tremulous cry." A pair of nestlings, referred to above, which I had for some little time displayed several interesting habits. They huddled together in one corner of their box, and when awakened during the day made a rapid stamping with their feet, consisting of some half a dozen blows delivered with such rapidity that there was no appreciable

duration of time between them. During the night, when hungry I presume, they made a snoring and hissing noise, and continued it for hours at a time. I have heard this note in the early evening in the *Hibiscus*-trees in the Galle Fort, and infer that it is the result of hunger. When looking at me, both this pair and the rufous bird already referred to oscillated their bodies to and fro, and moved their heads awry with the most comical aspect. They held their food in their talons, two toes in front and two behind, in the same manner as the Ceylon Wood-Owl, and after nibbling at it, paused, as if considering the expediency of the measure, and then quickly bolted it whole. Mr. S. Bligh had a tame bird at Kandy that would follow him round the room, alight on his shoulder, and nestle itself in his beard.

Forster's name for this Owl, as Mr. Holdsworth has shown in his catalogue, was ill-chosen; the term *Bakamūna* applies to the large Fish-Owl, signifying that it is a fish-eater, which the subject of this article certainly is not. I have, however, myself heard Ceylonese villagers, perhaps without thinking, apply the name *Bakamūna* instead of *Bassa* to the smaller Owls; and some such mistake probably led to Forster's adoption of the name.

Nidification.—In the southern parts of the island this Scops Owl breeds in February and March. It nests in hollow trees or in holes made by Woodpeckers in palms. A nest found at Odogamma during my stay at Galle was placed in the hollow between the frond and the trunk of a Kitool-palm (*Caryota urens*). A few leaves or grass-stalks usually line the hole in which the eggs are deposited. These are from two to four in number, spherical in shape, and of a pure glossy white, and average, according to Mr. Hume, 1.25 inch in length by 1.05 inch in breadth. Mr. Blewit is mentioned by Mr. Hume as having found nests in holes of trees, which were lined with leaves and straw. The parent bird is said to fight vigorously when her retreat is invaded.

SCOPS SUNIA.

(THE RUFOUS SCOPS OWL.)

Scops sunia, Hodg. As. Res. xix. p. 175; Blyth, J. A. S. B. xiv. p. 182; Jerd. Ill. Ind. Orn. pl. 41 (1847); Sharpe, Cat. B. ii. p. 67 (1875).

Ephialtes sunia, Gray, Cat. Mamm. &c. Nepal, Coll. Hodg. p. 51; Kelaart, Prodromus, p. 96, et Cat. p. 116; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 106; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 70 (1854); Holdsworth, P. Z. S. 1872, p. 418.

Scops aldrovandi, Blyth, Cat. B. Mus. A. S. B. p. 36 (1849).

Ephialtes pennatus, Jerd. B. of Ind. i. p. 136 (1862); Hume, Rough Notes, p. 386 (1870); Jerd. Ibis, 1871, p. 347.

Ephialtes bakkamæna, Blyth, Ibis, 1866, p. 255; Jerd. Ibis, 1871, p. 347.

Scops pennatus, Gould, B. of Asia, part 22 (pt.); Hume, Nests and Eggs, i. p. 65 (1873).

The Indian Scops Owl, apud Jerdon; *Choghad Rusial*, *Sunya Rusal*, Nepal; *Chitta guba*, *Yeria chitta guba*, Tel. (Jerdon).

Bassa, *Punchi-Bassa*, Sinhalese.

Adult female (Ceylon).—Length (estimated from skin) 6·8 inches; culmen from cere 0·5; wing 5·0; tail 2·4; tarsus 0·75; mid toe 0·7, its claw (straight) 0·34.

The above measurements are taken from an adult specimen shot in the Kandy district. The dimensions of a “*reddish Owl*,” shot in Haputale last January, concerning which Mr. Bligh writes me, which may appertain to this species (though more probably referable to the rufous phase of the next), are as follows :—Length 6·2 inches; wing 4·8; tail 2·25; tarsus 0·9. Weight $2\frac{1}{4}$ oz.

Iris “bright yellow; bill ‘horny,’ darker at tip” (*Whyte*); feet fleshy green; cere olive-brown.

Head, entire upper surface, sides, and lower part of throat fine rufous-chestnut; forehead and part of crown and ear-tufts with broad black mesial stripes, diminishing to narrow lines on the occiput and hind neck; back and lower scapulars with irregular black shaft-lines and transverse pencillings of the same hue; least wing-coverts with the concealed bases of the feathers blackish, the median and greater series with narrow pointed central stripes; lateral scapulars with most of the outer webs white, and a black terminal patch confined to the outer web; a few of the outer feathers of the median and greater wing-coverts with white lateral patches; edge of carpal joint white; outer webs of primaries and secondaries crossed with wavy black marks, developing on the inner webs into broader but ill-defined bars, the basal portions of the webs much mottled with blackish; tail crossed with fine, skeleton, wavy bars of blackish, those on the inner webs of the 3 lateral feathers being darker and more complete than the rest.

Most of the loreal plumes and some of the feathers at each side of the forehead white at the base; terminal portions of the loreal shafts black; chin fulvous; ruff-feathers with deep black tips, forming a prominent border; the uppermost series white at the centre; chest-feathers with broad mesial stripes; ground-colour of the breast and flanks white, each feather with a black mesial stripe of varying width at the centre, breaking up into transverse pencillings on a rufous ground patch, these markings so arranged as to have an incomplete and clear white bar across the centre of the feather; underlying abdominal plumes, thighs, and under tail-coverts buffy white; knees and front of tarsus rufous, posterior part of tarsus whitish; a few longitudinal dark marks on the tail-coverts; under wing mingled buff and rufous, the outer feathers marked with black.

Young. An immature male shot in the cinnamon-gardens in May last, and which is just beginning to acquire its yearling plumage, measured as follows in the flesh :—Length 6·0 inches; wing 5·0; tail 2·25; tarsus 0·75.

Iris bright yellow.

Above a paler rufous than the adult, the feathers of the forehead and crown with narrow mesial lines of black as in the adult, and all the feathers of the body with indistinct white terminal margins, preceded by a blackish but inconspicuous and narrow bar. The shorter lateral scapulars have the outer webs white, but not so pure as in the adult; the longer series with central blackish markings; the winglet with white spots on the outer webs of

the feathers, but the primaries *without them*, the entire feather being rufous, with skeleton black bars on the outer webs, and broad bands of the same on the inner; tail crossed with blackish lines.

Throat and fore neck paler rufous than the back, barred obsoletely with brownish; breast and lower parts mostly white, the feathers with mesial black lines and cross rays branching off from them; under wing white, the exterior feathers dashed with rufous and marked with black.

The least wing-coverts in this specimen are those of the full yearling dress and are dark rufous, contrasting as a band against the paler hue of the rest of the wing. Jerdon remarks of the young of Indian examples that they are duller red than the adults, with the feathers more black-shafted, and that there is much white on the lower surface.

Obs. The adult example above described, and which has lately been sent home to the British Museum by Messrs. Whyte and Co., corresponds well with the series of *Scops sunia* in the national collection, its distinguishing features being the uniform rufous upper surface and the striated head, which are characteristic of the specimens from Malacca and India with which I have carefully compared it. This marked uniformity of coloration prevents the Ceylonese specimens, now to hand, of this species from being confounded with hepatic examples of the next (*Scops minutus*), notwithstanding that there is but a very slight disparity in size between the two.

One of Hodgson's specimens from Nepal measures, wing 5.5, tarsus 0.85; another from Madras, wing 5.2, tarsus 0.85; a third from Pinang, wing 5.5, tarsus 0.9. There are slight differences in these from the Ceylon bird, which it may be as well to notice here, and which are as follows:—Nepal: tail less barred, the central feathers almost wanting the bars, and those on the remainder fainter and more widely separated than in the Kandy specimen; the upper breast uniform with the chest, the white ground-colour commencing lower down. Madras: tail and breast similar to the Nepal bird. Pinang: tail almost the same as in the Ceylon bird, the rufous colouring of the chest extending further down the breast. The upper surfaces and facial markings of all correspond with those of the Ceylonese example.

Distribution.—This little Owl was first recorded as a Ceylonese bird by Dr. Kelaart, who, however, gives no particulars of its habitat beyond remarking, at page 96 of his 'Prodromus,' "*Scops sunia*, a very small, reddish-yellow, Eared Owl, is occasionally seen in the very highest parts of the mountains." Since the publication of this note, the species does not seem to have been identified with certainty until now. Layard did not meet with the bird, simply remarking, in his 'Notes,' that it was procured at Nuwara ELLIYA by Kelaart. Mr. Holdsworth, writing 19 years after, has but little additional evidence to adduce; he quotes Kelaart, and says, "I have some recollection of seeing a specimen from the hills which I believe was the bird Kelaart referred to, and I think the species may be included in the Ceylon list." The example from which my description is taken was caught alive at Kattakelle, near Kandy, and is the only adult bird that I myself have seen from the island. An immature bird, described in this article, was killed close to Colombo in that well-known locality the cinnamon-gardens, proving that the species is widely distributed in Ceylon, inhabiting the low country on the seaboard as well as the mountainous districts. I am unable to state with certainty that the example spoken of by Mr. Bligh in a recent letter to me belongs to this species; but I have no doubt it will be found to inhabit the Haputale as well as the Nuwara-ELLIYA district, in which latter Kelaart seems to have made its acquaintance.

Jerdon remarks that it is found in India in forests and well-wooded districts, but is not very common. He procured it at Madras, and likewise obtained it in the Eastern and Western Ghats, but not in Central India. In the sub-Himalayan districts it is by all accounts a fairly common bird. Mr. Thompson found it so in the Gurwhal forests, and Captain Hutton met with it frequently in Northern India. It extends into the Malayan peninsula as far south as Pinang, of which island it is an inhabitant.

Habits.—The Rufous Scops Owl is said to be an inhabitant of wooded districts and the edges of forests. In the Kandyan Province of Ceylon it has been met with on all occasions, I believe, on the outskirts of the jungle, either resorting to the vicinity of bungalows in search of food, or, like other Owls which have been so killed, hiding in detached trees, having wandered during the night far from its accustomed habitat. Mr. Whyte writes me that his specimen was caught by a coolie perched in a mango-tree, its plumage so saturated with rain that it was quite unable to fly. I do not find much concerning its habits in the writings of Indian naturalists. Jerdon remarks that the first specimen he ever procured was found dead outside his house at Madras, and had probably been killed by the crows; he says that it has a low mild hoot, which is

often heard soon after dark, and further that all he examined had fed on insects. Such is the food of most of our small Owls in Ceylon, the coleopterous class coming in for the greatest share of patronage; and doubtless the present species is as much an insect-feeder in the latter island as in India.

Nidification.—In India this Owl breeds, according to Mr. R. Thompson, from March until August, in holes of trees, usually at no great height from the ground. Unfortunately this gentleman never took the eggs, though he says the bird was common in the Gurwhal forests.

Captain Hutton states that it breeds in hollow trees, "laying three or four white eggs on the rotten wood," in March.

SCOPS MINUTUS. (THE LITTLE SCOPS OWL.)

(Peculiar to Ceylon.)

Glaucidium malabaricum!, Whyte, Str. Feath. 1877, p. 201.

Scops minutus, Legge, Ann. & Mag. Nat. Hist. 1878, i. p. 175.

The Little Owl of Planters in Ceylon.

Punchi-Bassa, Sinhalese.

S. minimus: similis *S. malayano*, sed minor et saturatio, subtus obscurior et brunneo magis vermiculatus: colore rufescente dorsi gulæ et præpectoris absente.

Adult. Length to front of cere (from skin) 6.0 inches; culmen from cere 0.55; wing 4.75 to 4.85; tail 2.1 to 2.3; tarsus 0.7 to 0.8; mid toe 0.75, claw (straight) 0.3; height of bill at cere 0.25. Weight $2\frac{1}{2}$ oz.

Iris yellow; cere greenish; bill olivaceous brown; feet fleshy brown; claws dusky.

Above dark brown, the feathers of the head, back, rump, scapulars, tertials, and wing-coverts crossed at the centre with transverse spots of ochraceous, spotted finely and closely vermiculated on the rest of their surfaces with greyish and ochraceous grey, surrounding transverse irregular markings of blackish; feathers of the hind neck crossed with bold wavy markings of whitish, and margined with rufescent buff; outer scapulars white externally, with terminal black spots and oblique central bars of the same, edged with rufous; the primary and outer secondary coverts have their dark markings mingled with rufous patches, and set off with white spots near the tips of the outer webs; primaries and secondaries brownish rufous, mottled with blackish brown, and the inner webs banded broadly with the same; the outer webs of the first five primaries crossed with five white, blackish-margined bars, the tips paler than the rest of the feather and mottled with dark brown; tail brownish, washed with rufous on some of the feathers near the base, mottled with blackish brown and crossed with five or six bars of buff-white with black edges.

Ear-tufts concolorous with the head, and rufous at the base of the feathers; loral plumes black, with white bases; facial disk grey, pencilled with blackish; ruff pale rufous, the feathers edged and centred with blackish brown; chin whitish; fore neck and under surface, together with the flanks, closely stippled with iron-grey on a white ground, the feathers with broadish central stripes of blackish, and crossed on their concealed portions with fine, wavy, transverse, black marks; on the lower parts the stippling is more open, the under tail-coverts being chiefly white, with the markings confined to the tips; legs rufescent, with wavy brown transverse marks; under wing-coverts whitish, shaded with rufescent, and crossed with irregular markings of brown.

The above is a description of the type specimen in the British Museum. A second, killed near Kandy, is slightly larger, having the wing 4.85 inches. It has the markings both above and beneath bolder and more open on the back, the transverse white spottings are larger, and the black markings take the form of shaft-lines; the ruff is rich buff and much more deeply tipped with black, and the under surface from the breast downwards is whiter and not so closely stippled, the markings taking the form of open vermiculations, with bold mesial stripes on most of the feathers.

Another example in the Colombo Museum, kindly loaned to me by the authorities of that institution, is in a rufous phase of plumage; whether this is the result of youth or not, I am unable with certainty to say, as it has no signs of nestling attire about it. Wing 4.82 inches. Iris yellow.

Upper surface, in the distribution of its markings, similar in most respects to the second example above treated of, but the mesial-striæ not pronounced, the tips of the feathers mottled with blackish grey and fulvous, and the webs across the centre rufous; the lateral scapulars have the outer webs chiefly white, tipped with mingled black and rufous, the anterior quills with rufous-white marginal spots on the outer webs; the lower ear-tuft feathers and those of the ruff a decided rufous, the latter tipped with black, anterior to which is a fulvous-white patch on each feather; the breast and flanks rufescent white; the feathers of the sides of the breast and flanks with mesial black stripes and blackish mottlings at the tips; some of the striæ with a rufous edge, and some of the feathers rufous at their bases.

Young. A young bird in nestling plumage, which I had in confinement for a short time at Trincomalie, appears to



1 GLAUCIDIUM CASTANEUM
SCOPS MINUTUS

belong to the present species; and should time and a more extended acquaintance than I have been able to cultivate with this little Owl prove that I am right, it will be apparent that some examples assume a rufous phase, and perhaps retain it through life.

The dimensions of this specimen prove, I think, that it is too small to belong to the last species.

Wing 4·7 inches; tail 2·0; tarsus 0·75.

Iris yellow; bill greenish horn; cere olivaceous; feet brownish.

The general hue of the upper surface is rufescent fulvous (the back and median wing-coverts more rufous than the rest), mottled throughout with greyish, and faintly cross-rayed or pencilled with blackish; forehead and crown with not very perceptible shaft-lines of black; lateral scapulars white, with black terminal patches: inner webs of the greater wing-coverts mottled with blackish, the outer webs of the foremost series indented with white; outer webs of the first five primaries deeply indented with white, with a black edge to each indentation; inner webs mottled and crossed with dark shadings, vermiculated with the rufous ground-colour; ground-colour of the tail rufous-grey, mottled and cross-rayed with black; outer web of the lateral feathers indented with white.

Terminal portion of loral plumes white; face and edge of forehead greyish, cross-rayed with dusky, and beneath the eye with fulvous; ruff-feathers rufous, with fine dark tips; throat and chest mottled with yellowish buff and dark grey on a white ground; breast, flanks, and lower parts white, with cross-pencillings of dark sepia-brown and rufous, the dark markings on the flanks developing into indistinct shaft-lines. Under wing buff-white, clouded with dark brown and rufous near the edge; under tail-coverts whitish, pencilled with dusky; exterior side of tibia and tarsus marked with transverse lines of rufous.

Obs. This little Owl, in its ordinary brown plumage, approaches nearer to *Scops malayanus* than to any other Asiatic member of the genus; in size and in its rufous phase it comes close to *Scops sunia*. The closely stippled under plumage peculiar to the present species does not exist in the Malayan bird, which likewise has the ground-colour of the back to a considerable extent rufous, as also the sides of the breast-feathers. It is a much larger bird, the wings of a male and female in the Norwich Museum measuring 5·7 and 5·5 inches respectively. Rufous examples of *Scops minutus* will, I think, always be distinguished from ordinary specimens of *Scops sunia* by their smaller size, and by the less uniform character of the upper-surface plumage.

Distribution.—This small Owl, which is peculiar to the island, appears to be widely diffused throughout the hills of the Central Province, while it occurs rarely in various parts of the low country. Numerically speaking it is a rare bird, very few examples having as yet been procured. It is not possible to say whether Kelaart ever met with it or not; in continuation of the paragraph I have quoted in the last article, referring to *Scops sunia*, he speaks, at page 96 of his ‘Prodrum,’ of “the allied species, *Scops pennata*, being a low-country bird,” which seems to imply that he was acquainted with a second small *Scops* Owl, none of which genus inhabit the island, with the exception of the present one.

To Mr. Bligh must be given the credit of obtaining the first authenticated example, which is the type of the species now in the national collection. It was caught in the chimney of his bungalow at Kotmalie, at an elevation of nearly 4000 feet. He writes me to say that he has met with four examples in all, the most of which I know are referable to the Haputale district. In May 1874 another specimen, referred to by Mr. Whyte under the name of *Glaucidium malabaricum* (the Malabar Wood-Owl), was shot by Mr. J. R. Hughes on the Kitlamoola Estate; a further individual was killed by Mr. Macefield on the Deltota Estate, in April last year; and some time previous to this another in the rufous stage was shot near Colombo, and preserved in the new museum. The natives who brought me my young specimen at Trincomalie stated that it was a well-known bird to them; but I am, of course, unable to say that their remarks may not have referred to the last species. In the early part of 1876 I once or twice observed a very small Owl frequenting the trees in the Queen’s House Gardens, which may probably have been this species. It will be seen, therefore, that though this species inhabits the low country, it is evidently more partial to the hill-districts, affecting the higher ranges as well as the upland valleys round Kandy.

Habits.—This species appears to be an inhabitant of the outskirts of woods, gardens, isolated jungles, thickets, &c., in the vicinity of forest. Mr. Bligh, who has had more experience of it than any one else, has generally observed it in the neighbourhood of his bungalow; the type specimen found its way into the chimney, and fell down into the fireplace stupified by the smoke. Another, to the best of his belief, took up its abode for many months near his house, testifying to its existence there by bringing into the verandah of the

bungalow its quarry, and devouring it in that peculiar locality—the remains of Bats, Finches (*Munia kelaarti*), “Bush-creepers” (*Zosterops ceylonensis*), and even those of a Robin Flycatcher (*Erythrostera hyperythra*) affording ample testimony to the meals the little depredator had silently consumed in the dead of night! It was at last shot, and at the time had taken up its abode in a thicket of passion-flowers, out of which it sallied each evening, and resorted to a neighbouring grove of tall trees.

Since this article was written, I have heard again from my friend concerning one of these interesting little birds. He writes, “I have had the pleasure of seeing another of these little Owls several times of late by the bungalow; it is no doubt the mate of the one I lately shot: it generally alights on a thick branch, and unless you see it move, you would take it to be only a knot of wood, and it keeps, as a rule, perfectly still for some minutes at a time. It has a very feeble call, different in compass to any of the smaller Owls which I am acquainted with, though similar in character; it is like a short and feeble ‘woot,’ as it were jerked out. It is by no means a noisy or shy bird.”

Besides small birds, the food of this Owl consists of moths and Coleoptera. In confinement it has much the same manner as Forster’s Scops Owl. I kept my bird in a box, and when I approached it, it threw its head back, and staring up at me oscillated its body to and fro with a low growl of alarm.

It is scarcely necessary for me to remark that the cleverly-drawn lesser figure in the Plate accompanying this article represents this little Owl. It is from the type specimen in the British Museum.

Genus NINOX.

Head small, with the disk almost obsolete. Bill short, cere tumid. Nostrils oval, and near the anterior margin. Wings long and pointed, the 1st quill falling short of the 3rd, which is the longest, by more than the length of the tarsus. Tail moderately long. Tarsus stout, slightly longer than the anterior toe, scantily feathered to the base of the foot. Toes covered with hairy plumes to the tips, which are covered with one or two transverse scales.

NINOX SCUTULATA.

(THE BROWN HAWK-OWL.)

Strix scutulata, Raffl. Tr. Linn. Soc. xiii. p. 280 (1822).

Strix hirsuta, Temm. Pl. Col. i. pl. 289 (1824).

Athene malaccensis, Eyton, Ann. Nat. Hist. xvi. p. 228.

Athene scutulata, Gray, Gen. B. i. p. 35 (1844); Kelaart, Prodrumus, Cat. p. 116 (1852); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 68 (1854).

Athene scutellata, Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 106.

Ninox scutulatus, Blyth, Cat. B. Mus. A. S. B. p. 38 (1849); Jerdon, B. of Ind. i. p. 147 (1862, in pt.); Hume, Rough Notes, p. 420 (1870); Armstrong, Str. Feath. 1876, p. 303.

Athene hirsuta, Bp. Consp. i. p. 41.

Ninox hirsutus, Bp. Rev. et Mag. de Zool. 1854, p. 543; Hume, Str. Feath. 1874, p. 151; id. 1875, p. 40.

Ninox hirsuta, Holdsworth, P. Z. S. 1872, p. 418; Ball, Str. Feath. 1874, pp. 333 & 383; Bligh, J. A. S. (Ceylon Br.), 1874, p. 66; Legge, Ibis, 1875, p. 279; id. Str. Feath. 1875, p. 368.

Ninox scutulata, Sharpe, Cat. B. ii. p. 156 (1875); Hume, Str. Feath. 1875, p. 285.

Ninox scutellata, Inglis & Hume, Str. Feath. 1876, p. 373.

The Brown Wood-Owl, Tickell, J. A. S. B.; *The Hairy Owl*, G. R. Gray.

Choghad besra, Hind.; *Kulpechak*, Beng., lit. "Death-Owl;" *Paini ganti vestam*, Tel.; *Tangki perchiok*, Lepch. (Jerdon); *Kheng-Boop*, Arracan; *Raja wali*, Malacca (Horsf.).

Bassa, *Punchi-Bassa*, Sinhalese; *Anda*, Tamils in Ceylon.

Adult male and female. Length to front of cere 9·8 to 10·3 inches; culmen from cere 0·55; wing 7·5 to 8·3; tail 4·5; tarsus 1·0 to 1·1; middle or outer anterior toe 1·1, its claw (straight) 0·53; height of bill at cere 0·27.

The above measurements are taken from eight Ceylonese examples. The average length of wing is about 7·8; one example in my collection measures 8·0, and another of a pair in the Poole collection 8·3, quite an abnormal dimension.

Iris golden yellow; cere dusky greenish; bill blackish blue on the sides of the upper mandible, the tip and the lower mandible paler; feet dusky yellow, the soles richer yellow than the upper surface of the toes; claws blackish, bluish at the base.

Above glossy chocolate-brown, the hue of the head, back, and sides of neck darker than the rest and pervaded with a cinereous tint; lower scapulars, greater wing-coverts, and rump slightly paler than the back; the outer scapulars marked with a largish concealed white patch, chiefly on the outer webs of the feathers; the tertials barred on

their concealed portions with white, the terminal bands generally showing; edge of the wing white; least wing-coverts darker brown than the rest; primaries, their coverts, and the secondaries rich deep brown, the margins of the longer primaries fulvous, and the inner webs of all the quills crossed with narrow bars, which, near the tip, are faintly lighter than the ground-colour, and near the base fulvescent buff; tail drab-brown, crossed with five deep brown bars and tipped pale, the basal bar being concealed beneath the coverts.

Edge of the forehead and base of the loreal plumes white, shafts and tips of the loreal and chin-plumes black; upper throat whitish, the feathers with dark shafts; sides of the face and ear-coverts concolorous with the head; chest, breast, and flanks rich chocolate-brown; the chest and upper breast-feathers margined laterally with fulvous-yellow: the centre of the breast, belly, flanks, and the lengthened tibial coverts crossed with a broad bar of white on the centre of each feather, and a patch of the same at the base; on the lower flanks some of the bars are usually interrupted at the centre; vent and under tail-coverts white, the latter sometimes barred or streaked slightly with dark brown; legs rufous-brown; the thighs spotted with buff; bases of the tarsal feathers whitish; bristles of the feet brown; lesser under wing-coverts chocolate-brown, spotted and margined with fulvous; primary under-coverts dark brown, scantily barred with buff.

Examples (even those which are adult) from Ceylon vary to a certain extent in the depth of the upper-surface colour, some being much darker on the back than others. The hue of the tail varies considerably, the oldest birds probably having the ground-colour less smoky or more cinereous than others. The yellow edgings of the chest-feathers extend down the sides of the breast in some examples, and the edges of the white bars on the under surface are conspicuously tinged with ochraceous yellow. The specimen mentioned below, from Maskeliya, and another I have seen from the Central Province are very dark above, and have the primary-coverts almost blackish brown; they are likewise very large birds.

Young *. A nestling, taken from the nest by Mr. MacVicar, is described to me as very like the old bird in general aspect, clothed with fluffy brown feathers above, and having brown-centred white-margined feathers on the lower parts. At two months its plumage greatly resembled that of an adult. There are, however, slight differences which will be noticed in the following description of a yearling bird in my collection:—Upper surface lighter brown than the adult, with the lower head and hind neck contrasting more with the colour of the back; upper tail-coverts with pale tips; greater wing-coverts paling into rufous-brown at the edges, which are very finely margined pale; longer primaries with white indentations at the outer edges; secondaries edged near the tips with whitish; tail light drab, deeply tipped with greyish, and barred with five bands of a lighter brown than in the adult; beneath the coverts there is a sixth band.

Cheeks paler than the crown; chin white; chest and breast pale chocolate-brown, the former margined with whitish, and the latter barred very broadly with white; the feathers of the lower breast and belly tipped with white; lengthened tibial plumes, vent, and under tail-coverts unmarked white, the latter of which are in the *fluffy* stage.

Obs. The Ceylonese Hawk-Owl was considered by Temminck, who described it in 1824 from the island, as distinct from the *Strix scutulata* of Raffles, from Sumatra. The specific name of *hirsuta* has accordingly been applied by most writers to the Ceylon species, as the type of *N. scutulata* was not forthcoming for purposes of comparison and discrimination. Mr. Sharpe, in his catalogue of the Owls, has given an exhaustive series of comparative descriptions of the Hawk-Owl from the Indian Peninsula, Ceylon, Malacca, Labuan, various parts of China, Japan, and Formosa, and considers them to be identical. The race from Sumatra was not then represented in the collections he examined, and this important link was wanting to complete the chain of evidence as to the widely-spread species being the *S. scutulata* of Raffles. Lord Tweeddale has, however, since received an example from Sumatra which may fairly be considered to represent Raffles's bird. It is said to correspond well with Malaccan birds, as Mr. Sharpe suggested would one day be found to be the case; and the latter I find are not separable from our Ceylonese race. In size they compare well with our birds, the wings of four which I have examined varying from 7.7 to 7.9; another individual from Rangoon, and two from Labuan, the latter slightly smaller (7.4 in the wing), are likewise not to be separated as regards plumage from Ceylon birds. The hue of the upper surface, the dark cinereous tinge of the head, and the barring of the flanks and sides of the abdomen are the same in all. Whatever the birds from Northern India, Cachar, China, and Japan may be (and it is not my province, in a local work such as this, to go into the vexed question of this species), those from Southern India, Ceylon, Sumatra, the Nicobars,

* I find that I was in error, at page 280, 'Ibis,' 1875, in my description of the immature plumage; further investigation and experience have tended to show that the iris is variable in the adult, of which the bright fulvous edgings to the throat-feathers is also a frequent character.

Labuan, and Malacca represent the one species to which the oldest applied name of *scutulata* must be applied. With regard, however, to *Ninox lugubris*, which Mr. Sharpe separates from the present bird, I would remark that an immature specimen from Ceylon is quite as pale as any that I have seen of *lugubris*.

Distribution.—The Brown Hawk-Owl is widely distributed throughout the low country, and is also found in the mountain-zone at a considerable elevation. It is not uncommon in the wooded portions of the Western Province, extending from the Pasdun Korale northward through the Raygam and Three Korales to Kurunegala. It has been obtained as near Colombo as Kaesbawa and Kotté. In the forest and jungle-clad country south of the Bentota river it prefers the vicinity of rivers to the interior of the woods, and on the banks of the Gindurah it is quite common. In the Wellaway Korale and throughout the Eastern Province it is pretty generally dispersed, frequenting the borders of most of the tanks and the forests beneath the Hewa-Elliya Hills. Near the sea, between Batticaloa and Trincomalie, I found it at most halting-places along the coast-road, particularly at the Virgel and Topoor. It is to be found throughout the northern forest-tract, but not so plentifully as in the Trincomalie district, appearing in the Eastern Province to be always more common near the sea-coast than in the interior.

From the hills I have it from Maskeliya, whence Mr. E. Cobbold has kindly sent me a specimen, killed at about 4000 feet elevation; in Kotmalie Mr. Bligh procured it, that being the only hill-locality this gentleman has found it in. I have never heard its hoot in the Upper hills, and infer therefore that it does not inhabit so great an elevation; it would therefore, on the whole, be considered a rare species in the Central Province, and especially as regards Dumbura and the vicinity of Kandy, which is an excellent locality for some of its family. It appears to have successfully eluded the pursuit of our energetic ornithological pioneer, Layard, for he did not meet with a single specimen until he had been nearly eight years in the island.

Elsewhere the Brown Hawk-Owl is found in various wooded districts throughout India, extending into Burmah and Siam, and down the Malay Peninsula to the Straits, taking in the Nicobar Islands in its range to Sumatra. To the south-east it is found in Labuan and the west coast of Borneo, onwards to Celebes and the Moluccas. Turning to the north again we find it, as the *N. japonica*, inhabiting China, Formosa, and Japan. Touching its distribution in India, Mr. Bourdillon records it from the Travancore, where it confines itself to an elevation of above 2000 feet; Jerdon, who combines it with *N. lugubris*, says he has seen it in the Carnatic, Malabar coast, and Central India, and that it is rare in the Deccan and North-west Provinces. Concerning these latter, Mr. Hume says that it is almost unknown there, as also in the Punjaub and Rajpootana. In Chota Nagpur, Mr. Ball records it as not common. Capt. Feilden writes of the specimens he sent Mr. Hume from Thayetmyo, and which Mr. Hume identifies as *N. hirsutus*, that it is not common in that place. The note, he remarks, is like the mew of a small kitten; but our Ceylon bird has no such cry as this. In the Irrawaddy Delta, at Elephant Point, Dr. Armstrong found it abundant amongst clumps of trees and thin jungle near the coast. His specimens are, however, larger than the true *scutulata*, and perhaps are the same as the Cachar birds, which Mr. Hume separates as *N. innominata*.

Habits.—This Hawk-Owl has a marked preference for the vicinity of water; it is an insect-feeding species, and finds an abundance of such food near the borders of tanks and on the banks of rivers flowing through forest. It takes up its abode by day in thick jungle, particularly that description which is found growing to a height of about 30 feet at the upper borders of tanks, and which is densely matted at the top, forming a most suitable canopy from the rays of a tropical sun. Here the Brown Owl roosts, and, sleeping with "one eye open," does not admit of an easy approach; directly his haunts are invaded, out he shoots as sharply as any shy diurnal bird, and, taking sometimes a considerable flight, retreats into the most suitable cover he can find. In the hills it seems to frequent the interior of the forest, as Mr. Bligh informs us (*loc. cit.*) that he found three sitting together on a branch in "dense jungle," proving that it is more than usually sociable for a bird of its ilke. It hoots in the evening just after sundown, and is much more loquacious on moonlight nights than when it is dark. About 10 o'clock, after feeding, it recommences its not unmelodious hoot, resembling *whōō-wuk, whōō-wuk*, and which Layard not inaptly likens to the lowing note of the Bronze-winged Pigeon (*Calophaps indica*). On a fine night it may be heard at a long distance in the almost unbroken stillness of the Ceylon forest, accompanied occasionally by the deep bay of the Sambur deer or the

complaining cry of the Loris (*Stenops gracilis*). In the morning it calls until a late hour, appearing to be regardless of the scorching rays of an eight o'clock sun, at which time I have seen it in an exposed situation on the banks of the Gindurah giving out its last matutinal cry. These Owls feed almost exclusively on beetles, moths, and grasshoppers, and seem to take their food until retiring in the morning, the stomach of a bird I killed in the Wellaway Korale at two o'clock in the afternoon being filled with undigested Coleoptera. They capture insects on the wing, and have the movements of Goatsuckers while hawking. Mr. Davison records of the allied Andaman species (*N. affinis*), that he observed it at Camorta, Nicobars, *hovering* in front of a cocoa-nut-palm, taking short circular flights from its perch, from which it would now and then dart suddenly up to a height of 15 or 20 feet. The singular cries attributed by Tickell and Dr. Hamilton to the North-Indian species are not applicable to our Ceylon bird. These writers liken them to the noise made by a strangling cat or a hare when caught by hounds. Besides the well-known hoot which I have referred to above, it is possible that this species is the author of a singular note which I have heard in the north-east and south-east of Ceylon, but which I never succeeded in identifying. It may be likened to the syllables *whok—chok-korok*, uttered in moderately slow and even time and repeated for a long interval.

Nidification.—This species breeds in the early part of the year. Layard records shooting a female in November with the ovaries distended with eggs; and a nest found at Kaesbawa in the first week of April by the taxidermist of the Colombo Museum, Mr. Hart, contained one egg. This was pure white, of course, round in shape, and measured 1.45 by 1.27 inch. Another nest, containing one nestling, was found by Mr. MacVicar in April 1873, near Bopé. It was situated in a hole in a mango-tree, about 15 feet from the ground; at the bottom of the cavity there were no materials, the chick reposing simply on the dead wood of the tree.

Genus GLAUCIDIUM.

Of small size. Bill short, rapidly curved from the cere. Cere tumid. Nostrils circular. Facial disk obsolete, the loreal plumes very long. Wings short, rounded, falling short of the tail by more than the length of the tarsus; 1st quill short, as in *Ninox*, 4th and 5th quills subequal and longest. Tail moderate. Tarsus stout, longer than the anterior toes, well feathered. Toes covered with hairy plumes, claws rather long and acute.

GLAUCIDIUM CASTANONOTUM.

(THE CHESTNUT-BACKED OWLET.)

(Peculiar to Ceylon.)

Athene castanoptera, Blyth, J. A. S. xv. p. 280 (1846, nec Horsf.).

Athene castanotus, Blyth, Cat. B. Mus. A. S. B. p. 39 (1849); Kelaart, Prodrum, Cat. p. 116 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 105; Blyth, Ibis, 1866, p. 259.

Tænioglaux castanonotus, Bp. Rev. et Mag. de Zool. 1854, p. 544.

Noctua castanonota, Schl. Mus. P.-B. *Striges*, p. 34 (1862).

Athene castaneonotus, Blyth, Ibis, 1867, p. 295; Hume, Rough Notes, p. 412 (1870).

Athene castaneonota, Gray, Hand-l. B. i. p. 39 (1869); Holdsworth, P. Z. S. 1872, p. 418.

Athene castanonota, Legge, Ibis, 1874, p. 11.

Glaucidium castanonotum, Sharpe, Ibis, 1875, p. 259; id. Cat. Birds, ii. p. 215 (1875).

The Ceylon Chestnut-winged Owl, Kelaart, Prodrum; *Chestnut-winged Owl*, Europeans in Ceylon.

Punchi-Bassa, Sinhalese; *Sin-Anda*, lit. "Small Owl," Tamils in Ceylon.

Suprà castaneo-rufus, scapularibus extus nigro et fulvo fasciatim notatis, interdum sed rariùs albo maculatis: tectricibus alarum extus obscurè nigro transfasciatis, majoribus vix fulvo apicatis notatis: primariis fusciscenti-nigris, extus rufescenti-fulvo indentatis, secundariis castaneis obscurè nigro transfasciatis: supracaudalibus et rectricibus nigricantibus, angustè fulvo apicatis et 9-fasciatis: pileo cum nuchâ et collo postico, colli et capitis lateribus nigricanti-brunneis, angustè rufescenti-fulvo transfasciatis, interscapulio quoque paullò nigricanti fasciato: torque collari albo indistincto, plumis quibusdam longitudinaliter et irregulariter albo notatis: plumis anteocularibus albidis, scapis elongatis nigris: plumis oculo circumdatis albidis: mento albo, utrinque ad genas anticas triangulariter extenso: maculâ jugulari magnâ albâ: plagâ latâ gulari nigricanti-brunneâ fulvescenti-albo transfasciatâ: pectore summo et laterali nigricante, castaneo lavato et rufescenti-fulvo transfasciato: pectore medio, abdomine et subcaudalibus purè albis, his medialiter nigro notatis: hypochondriis rufescenti-brunneo longitudinaliter maculatis: tibiis et plumis tarsalibus albis brunneo maculatis et fasciatis: margine alari albido: subalaribus et axillaribus albis flavo vix lavatis, illis conspicuè subterminaliter nigro notatis: rostro pallidè olivaceo, rictu et cerâ plumbeis: pedibus olivaceis: iride lætè flavâ.

Adult male and female. Length to front of cere 7.0 to 7.4 inches; culmen from cere 0.6 to 0.62; wing 4.9 to 5.55; tail 2.3 to 2.6; tarsus 0.9 to 1.1; middle or outer anterior toe 0.8, its claw (straight) 0.55; height of bill at cere 0.3. Expanse 18.7 inches; weight 4 oz.

The above measurements are taken from a series of seven examples, in which the males exceed as a whole the females, although one of the former has the wing 4.9 inches.

Iris primrose-yellow, in some slightly mottled with brown at the outer edge; eyelid dark olive-brown; cere and gape dusky greenish; bill greenish horn-colour; feet olivaceous, in some "woody" green, soles yellowish; claws brown, pale at base. Layard erroneously describes the iris of this species as reddish brown.

Head, sides, and back of neck, down to the interscapular region, cheeks, throat, chest, and sides of breast dark brown, everywhere narrowly barred with whitish, more or less tinged with buff, particularly on the head and back of neck, where the markings, in some, are rufous-white; back, scapulars, upper tertials, and all the wing-coverts reddish chestnut, with indications, more or less distinct, of dark bars across the feathers; primaries, with their coverts, and secondaries brown, pervaded with a chestnut hue, and barred with the hue of the back, which, towards the base of the inner webs, turns into fulvous-buff and spreads over the feather; the outer terminal bars of the primaries pale fulvous; edge of the wing pure white; upper tail-coverts and tail brownish black, the former barred with buff-white or pale rufescent, and the latter tipped and crossed with seven narrow non-corresponding bars of white.

Loral plumes black, the lower ones barred with whitish; a patch beneath the cheeks, a large space in the centre of the fore neck, centre of the breast, and all the lower parts white, the feathers on the sides of the breast, belly, and thigh-plumes with broad shaft-streaks of rufous-brown, or in some blackish brown; under tail-coverts in some unmarked white, in others marked with a few dark streaks; legs whitish posteriorly, the thighs barred with blackish brown; bases of the tarsal feathers blackish, showing on the surface; plumes of the feet greyish; secondary under wing-coverts white, the feathers beneath the point of the wing spotted with dark brown and ochraceous; base of the primaries yellowish white.

Obs. Scarcely any two specimens of this Owl are marked alike, the amount of indistinct dark barring on the chestnut mantle differing in almost every example. Some birds have the feathers at the lowermost portion of the hind neck boldly barred with white, others have them marked with spear-shaped centres of white; and in some, again, the rufous hue of the back obscures the light bars for some distance up the hind neck. The most singular variation, however, exists in the casual occurrence of white feathers in the scapulars. I have observed this on two examples, one of which forms the subject of the figure in the Plate. In this the outer webs of the lateral scapulars are white, surrounded by a blackish-brown edging. In this characteristic the species shows an inclination towards *G. castanopterum*, the Javan Owlet, which has the outer feathers of the greater wing-coverts, as well as the lateral scapulars with the outer webs, white; the lower breast and flanks are likewise boldly dashed with broad longitudinal streaks of rufous-brown in this latter species. It is also a larger bird, measuring from 5.7 to 6.1 in the wing. It is worthy of remark that the example delineated in the Plate has the stripes of the lower parts exceedingly rufous, approaching in this respect also to the Javan bird.

Distribution.—This pretty little Owlet, one of our peculiar Ceylonese forms, was considered by Kelaart to be confined to the hill-zone. It was discovered by Dr. Templeton, and described by Mr. Blyth of Calcutta, from specimens forwarded to him by the Doctor in 1846. It is found chiefly in the mountains of the island and the low country of the western and southern portions. It is tolerably common in Saffragam and in the Hewagam, Pasdun, and Raygam Korales, and is not unfrequent near Colombo. I have obtained it at Galkisse, and Layard speaks of it as being very common near Colombo in 1852, but remarks that for nine years previously no specimens had been procured in the neighbourhood. This was, perhaps, from want of search, for it breeds not far distant from there. It occurs in the Kurunegala district and also in the south-western wooded hills. It is found in the jungles at the base of the Haputale hills and on the north side of the hill-zone at the foot of the Matale ranges, but how far north it extends I am unable to say. I have never met with it in the northern forest-tracts, nor on the coast from Batticaloa northwards; it has been procured on the west coast as high up as *Madampe*, beyond which I am not aware that it has been traced. In the Kandyan Province it is a common bird and widely distributed, being well known in all the coffee-districts, among which may be mentioned, more particularly, Dumbara, Kalebokka, Haputale, and Maskeliya. It is not uncommon in the main range, in which I have met with it as high as Kandapolla, 6300 feet, and Dr. Kelaart has it in his list of birds from Nuwara Eliya.

Habits.—The Chestnut-winged Owl inhabits by choice forest and thickly-wooded country, but it by no means confines itself to jungle, for in the Western and Southern Provinces it is fond of the areca-palm and jack-tree groves, among which the Sinhalese build their habitations, close to the doors of which I have sometimes heard it, and on one occasion killed it. It perches in the top branches of tall trees and is very shy. It is crepuscular as well as nocturnal in its habits, issuing from the umbrageous retreat in which it has passed the day as early as four o'clock, and flying from tree to tree in its vicinity, calling continuously until sundown. Its note, which is a repeated guttural cry resembling the syllable *kraw*, is again heard in the morning shortly after daybreak, and is sometimes continued on gloomy days until 8 or 9 o'clock. I have never heard the

Cuckoo-like call spoken of by Layard as belonging to this Owl, and am inclined to think that he, like myself, mistook the note of the Hawk-Owl (*Ninox scutulata*), which answers to his description, for that of this species. Its usual food consists of Coleoptera and lizards, the former of which it takes on the wing. My friend Mr. Forbes Laurie has seen these Owls in the Kalebokka district hawking at sundown about wooded streams, and capturing beetles. Higher game than either of these, however, is sometimes aspired to; for Mr. Cobbold, of Maskeliya, informs me that he has witnessed one of these birds attacking a squirrel, and others have known them to kill small birds, such as Finches (*Munia*) and the Hill White-eye (*Zosterops ceylonensis*). This little Owl sees well in broad daylight, and has a very acute sense of hearing.

Nidification.—This species breeds, in the west of Ceylon, during March, April, and May. It lays in a hole in the trunk or limb of a tree, the cocoanut-palm being sometimes chosen; the eggs are deposited on the bare wood, and are two in number. A pair which I examined, and which were taken from the nest by the taxidermist of the Colombo Museum, were oval in shape, pure white in colour, and measured respectively 1.41 by 1.15 inch, and 1.34 by 1.08 inch, showing a considerable disparity in size.

The right-hand figure in the Plate accompanying my article on *Scops minutus* represents the example above referred to, with more white on the scapulars than I have seen in any other. Mr. Keulemans's talented pencil has portrayed this Owl in an attitude very characteristic of the genus *Glaucidium*.

GLAUCIDIUM RADIATUM.

(THE JUNGLE OWLET.)

Strix radiata, Tickell, J. A. S. B. ii. p. 572.

Noctua perlineata, Hodgson, J. A. S. B. xi. p. 269.

Athene erythroptera, Gould, P. Z. S. 1837, p. 136.

Athene undulata, Blyth, J. A. S. B. xi. p. 457.

Athene radiata, Blyth, J. A. S. B. xv. p. 281; id. Cat. B. Mus. A. S. B. p. 39 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 67 (1854); Jerd. B. of Ind. i. p. 143 (1862); Hume, Rough Notes, ii. p. 409; id. Nests and Eggs, i. p. 70 (1873); Ball, Str. Feath. 1874, p. 383; Hume & Butler, *ibid.* 1875, p. 450.

Tænioglaux radiata, Bp. Rev. et Mag. de Zool. 1854, p. 544.

Noctua radiata, Schl. Mus. P.-B. *Striges*, p. 34.

Glaucidium radiatum, Sharpe, Ibis, 1875, p. 259; id. Cat. Birds, ii. p. 217 (1875).

Glaucidium malabaricum, Legge, Str. Feath. 1876, p. 242 (first record of species from Ceylon).

The Barred Owlet of some; *Jungli Choghad*, Hind.; *Chagad*, Nepaul; *Chota Ralpencha*, Beng.; *Adavi paine gunte*, Tel. (Jerdon).

Adult female. Length to front of cere 7·9 inches; culmen from cere 0·7; wing 5·1; tail 2·6; tarsus 1·0; mid toe 0·8, its claw (straight) 0·5; height of bill at cere 0·3.

The above measurements are taken from the only specimen procured in Ceylon. A series of North-Indian *G. radiatum* gives as follows—wing 4·8 to 5·4 inches; tail 2·5 to 2·7.

Iris pale greenish yellow; bill and cere dusky greenish, tip of the mandible yellowish; feet greenish yellow.

Entire head above, sides and back of neck, back, scapulars, wing-coverts, upper tail-coverts, and tertials a dark and somewhat ashen brown, closely and narrowly barred with rufescent white on the upper parts, and with white on the longer scapulars, tertials, and tail-coverts; the lateral scapulars with broad bars of white on the outer webs; lesser wing-coverts obscurely barred with rufescent; winglet, outer median and greater coverts dark brown, barred narrowly with rufous, the outermost median feathers with a broad white patch on their outer webs; primaries and secondaries rich hair-brown, crossed with bands of rufous, paling into whitish at the edge of the longer primaries and near the tips of the secondaries; tail darker brown than the primaries, tipped and crossed with seven narrow bars of white.

Lores blackish, the basal portions of the webs whitish; face and ear-coverts concolorous with the head, but more openly barred; chin whitish, the plumes tipped with black; beneath the cheeks a broad band of white running beneath the ear-coverts, and an extensive patch of the same on the lower part of the fore neck; across the throat a band of brown, narrowly barred with pale rufescent, blending into the markings of the hind neck; chest, sides of breast, flanks, and thigh-coverts a blacker brown than the upper surface, barred on the chest with fulvous-white, and on the lower parts with broader bands of white; down the centre of the breast, the abdomen, under tail-coverts, and legs white; outer side of thighs and upper portion of tarsus barred with brown; under tail-coverts marked with bar-like spots of the same; under wing-coverts fulvous-white, paling into white at the edge of the wing, and marked down the centre with a longitudinal band of rufous, the feathers composing it spotted with brown; under surface of base of primaries rufescent.

Obs. The example from which the above description is taken corresponds with a number of North-Bengal, Darjiling, and Nepaul examples in the collection of the British Museum, and is another of the singular instances, exemplified in *Spizactus kelaarti* (the Ceylonese race of *S. nipalensis*), *Bubo nipalensis*, and others, in which a North-Indian bird is found to extend its range to Ceylon over the heads, so to speak, of the South-Indian and neighbouring species. Not being well acquainted while in Ceylon with either *G. radiatum* or *G. malabaricum*, I naturally assigned

my bird ('Stray Feathers,' *loc. cit.*) to the latter, as it came tolerably close to it in description. It has, however, I find, no pretensions to a relationship with the southern form, which, besides its more rufous colouring, has a smaller wing—three specimens having, respectively, wings measuring 4·8, 4·9, 4·8 inches, and, as a rule, more white about the fore neck. The Ceylonese bird, however, in the less rufescent tint of the upper-surface bars, and in the somewhat blacker hue of the dark flank-bands, has some slight difference to Bengal birds, but no more than is generally the case with insular examples of northern forms. The amount of white on the outer secondary wing-coverts and the type of barring on the tail are identical in both; in fact a specimen in my collection procured by Mr. A. Anderson in North India is, with the exception of the slightly rufescent bars of the upper surface, the counterpart of the bird described in this article.

Distribution.—This curious Owlet is in reality not an uncommon bird, but it appears not to have been procured in the island by any one but myself. Guided solely by the clue to its range afforded me in its remarkable note, I think I shall not be in error when I say that it is widely distributed, but not so much so as the Chestnut-winged Owlet, being, for the most part, confined to the southern half of the island, extending up the eastern side, perhaps, to the termination of the heavily-wooded country to the south of the Virgel, and occurring in the Uva district of the Central Province. There is, however, no reason to infer that it may not exist in the northern forests, but I have never heard it in them. I first met with it in 1873, while encamped in the recesses of the extensive timber-forests in the hills on the south bank of the Gindurah. In the same year my acquaintance with its extraordinary call was renewed in several parts of the low country between Haputale and Hambantota, but no example was procured. In 1875 I came upon it again in various localities between Batticaloa and the base of the Hewa-Elliya range, and also heard its hoot in the jungles on Namooni-kuli mountain, near Badulla. From the number of birds I heard in the east of Ceylon, I infer that its head-quarters are in that part of the island; and, as a hill-bird, it may (in common with other species, which range from the eastern side into Uva only, without going west of Nuwara Elliya) be confined to the eastern portion of the mountain-zone, or, on the contrary, be found throughout the whole of it; for I have no doubt that it will some day be met with in the Peak jungles, which are similar in character and climate to those of the south-western district.

The habitat of this Owl on the mainland, according to Mr. Hume, is "chiefly the sub-Himalayan country and the lower ranges of the hills themselves as far west as Mandi." It is, however, found in widely-scattered districts throughout India. Though it does not appear to be found in Lower Bengal nor in the plains of the North-west and Central Provinces, yet Mr. Ball records it as not uncommon in Chota Nagpur. It has been procured in parts of the Madras Presidency and at Anjango on the Travancore coast. Captain Butler records it as an inhabitant of the woods at the foot of Mount Abou, though it does not occur anywhere else in the Guzerat district, nor in the Kandhala region worked by Mr. Fairbank. Dr. Cantor has procured it at a place called Keddah in Malacca.

Habits.—The Jungle-Owlet frequents lofty timber-forests (the "Mukalana" of the Sinhalese), the dense jungle generally growing in the Eastern Province, luxuriant woods in the Park country, and even low scrubby jungle near the sea-coast. In the latter situation I met with it at Tevalāmune, on the Batticaloa lake. Its habits are more diurnal than any other Owl I am acquainted with, and its curious call attracts notice wherever it is to be found. This is, for the most part, uttered by day during dull mornings and afternoons, or at any time when the bird is disturbed in the forest by a sudden sound, such as the report of a gun or the bark of a dog; at such times its loud spasmodic call impresses the hearer with the suspicion of anger in the little "bird of ill-omen" at being disturbed in its sylvan retreats! The effect of diurnal gloom on its disposition seems very marked, as it hoots at the fancied approach of night as soon as the sun is overcast with the quickly-passing showers so common in the Ceylon jungles. The only example procured by me, after many attempts to satisfy myself as to the authorship of such strange notes, was shot in the banks of the Maha-oya, on the new Batticaloa Road, about 10 o'clock on a damp August morning, when drenching showers were following each other at intervals of five or ten minutes, causing the little fellow to shout with unusual frequency, and enabling me to track him through the dripping underwood. He was continually on the move, and when overtaken was seated on a high *Euphorbia* tree beneath a dense cluster of its massive leaves. The note commences with the syllable *kāōw* slowly repeated and gradually accelerated until changed to *kāōw-whap*, *kāōw-whap*, which

increases in loudness until it is suddenly stopped. Tickell remarked of it in India that it kept up its clamorous cries during the greater part of the day. Thompson likens the note to the syllables *too-roo-roo-roo*, which does not accord with my experience of the singular Ceylon cry. Its flight is quick and straight, performed with vigorous flappings of the wings, and is very un-owl-like in character.

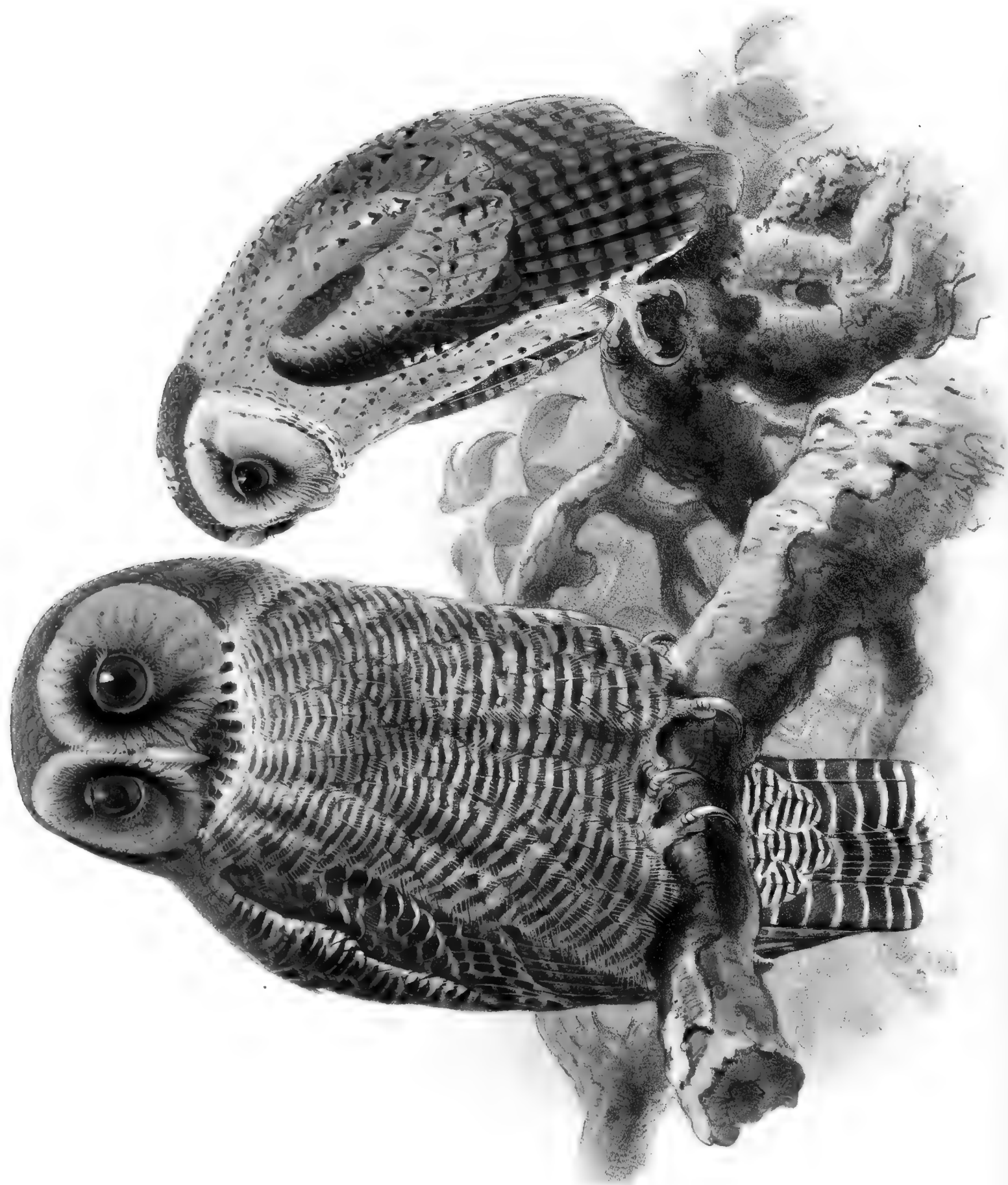
Mr. Thompson, as quoted by Mr. Hume in his 'Rough Notes,' remarks, "Its flight is both rapid and strong, with closed wings like that of the Besrah. It kills and devours all kinds of small birds, even taking them in the daytime. I had one caught which came down at a chicken three times all by itself, and killed it in the broad daylight." Notwithstanding these rapacious propensities, insects doubtless form its chief food, as will be seen from the extract subjoined below; the stomach of my specimen was crammed with beetles, a favourite food with small Raptors in Ceylon.

In Mr. Hume's notice of this species in 'Rough Notes' is contained the following interesting account of its habits. He says (p. 410), "These birds in confinement tame readily and eat raw or cooked meat. I have seen them in the daytime, in the shady verandah in which they were kept, kill and eat crickets, ants, and butterflies. A pair of sparrows made a nest on the interior cornice of the enclosed end of the verandah in which they lived. At first the sparrows teased and bothered the owls the whole day long at intervals, the owls merely retreating inside their box, chattering angrily; but one night two of the three got loose, killed both sparrows, eating their breasts and entrails, and all the young ones, of which not a trace was left*. They did not attempt to leave the place (this was at Dehra), and I let the third loose, after which they gradually grew wilder (returning, however, for some weeks for the day to their box), and at last left the house altogether, although, when I gave it up, they were still hanging about the trees in the very jungly compound. They were excessively noisy birds, both by night and even at intervals by day, in fact, at times, a perfect nuisance. Dogs were their abomination; and the way in which, menaced by a puppy of mine, who evidently thought it famous fun, they would lower their heads, set out their wings and ear-coverts, and 'curse and swear' (a mixture of hissing and chattering utterly indescribable in words) was really quite 'edifying'!"

Jerdon says that it flies actively about during the day when disturbed, and testifies to having found it rarely in small flocks—probably a young brood with their parents.

Nidification.—In India this Owlet breeds from April until May, which is doubtless the season for its nesting in the south of Ceylon. It nests, according to Mr. Thompson, in holes in small trees. The eggs have not been procured; but the young ones, which have several times been taken, are from three to four in number.

* These were evidently bolted whole.—W. V. L.



ACCIPITRES.

STRIGES.

BUBONIDÆ.

SYRNIINÆ.

Genus SYRNIUM.

Of moderate size. Bill stout, cere advanced; a well-developed facial disk incomplete above the eyes. Head without ear-tufts. Wings moderate, rounded; the 4th quill the longest, the 1st falling short of the 4th by the length of the tarsus and middle toe. Tail moderately long. Tarsus stout and thickly feathered. Toes in some thickly feathered, in others furnished with hair-like bristles, and sometimes bare; outer anterior toe longer than the inner; claws long and powerful.

SYRNIUM INDRANI.

(THE BROWN WOOD-OWL.)

Syrnium indrani, Blyth, Cat. B. Mus. A. S. B. p. 40 (1849, in part); Kelaart, Prodromus, Cat. p. 116 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 107.

Syrnium indranee, Jerd. B. of Ind. i. p. 121 (1862, in part); Holdsworth, P. Z. S. 1872, p. 415; Hume, Str. Feath. 1873, p. 429; Legge, *ibid.* 1874, p. 342; Rainey, *ibid.* 1875, p. 332; Sharpe, Cat. B. ii. p. 282 (1875).

Bulacca indranee, Hume, Rough Notes, ii. p. 347 (1870).

Syrnium ochrogenys, Hume, Str. Feath. 1873, p. 431.

Brown Owl, *Devil-bird*, Europeans in Ceylon; *Oulama Owl*, Kelaart.

Ulama, Sinhalese.

Ad. brunneus, capite et dorso concoloribus: collo postico obscure albido vel pallidiore brunneo fasciato: scapularibus eodem modo fasciatis, extus latè albo transversim notatis: tectricibus alarum brunneis ochrascenti-brunneo vel albido transfasciatis, majoribus extus latiùs albo fasciatis: supracaudalibus brunneis albido angustius transfasciatis: rectricibus brunneis albo 12-fasciatis: areâ faciali cervinâ vel ochrascenti-fulvâ inconspicuè brunneo fasciatim notatâ: plagâ superciliari albidâ, scapis plumarum latè nigris: plumis oculis circumdatis et plagâ anteorulari nigris: limbo faciali brunneo: corpore reliquo subtus fulvescente vel albido et brunneo regulariter transfasciato: pectoris lateribus et plumis tibialibus et tarsalibus obscurius fasciatis: subalaribus pectori concoloribus: remigibus subtus brunneis ochrascenti-fulvo intus fasciatis, versùs basin latiùs notatis: rostro caruleo-albicante: iride castaneâ: pedibus corneis.

Adult male and female. Length to front of cere 17.0 to 18.0 inches; culmen from cere 1.0 to 1.1; wing 11.75 to 13.5 (average of seven examples 12.75), expanse (wing 13.25) 43.5; tail 6.5 to 7.5; tarsus 2.0 to 2.3; outer anterior toe 1.4 to 1.6, its claw (straight) 0.9; height of bill at cere 0.55. These dimensions are from a series of six Ceylonese examples.

Iris chocolate-brown, or a slightly reddish brown in some; pupil, in light, bluish; cere dusky bluish or olive; bill bluish near the cere, culmen darker than the sides, tip whitish horn-colour; toes dusky bluish; claws bluish horn, darker at the tips.

Head and upper surface glossy sepia-brown, palest on the secondary wing-coverts, longer scapulars, and rump, where the feathers are narrowly crossed with wavy bars of buffy white; lower tertials fulvous-brown, and barred similarly

to the adjacent coverts; least wing-coverts uniform, like the back; winglet and primary-coverts deep brown, barred with dusky fulvous; primaries paler brown than their coverts, secondaries somewhat lighter still, the whole deeply tipped with white and barred on both webs with dusky fulvous, paling into whitish at the inner edges, and into buff at the basal portions of the longer primary outer webs; first primary darker than the rest, and unbarred on the outer web; tail deep brown on the terminal portion, paling towards the base, tipped with white and barred with narrow non-corresponding bands of buffy white.

Disk rufous tawny, changing into whitish above the eyes, in some examples faintly barred with dark wavy lines; a circle of black feathers immediately round the eye, extending more or less to the loreal plumes, which in some specimens are almost black, in others the basal part of the webs is whitish; upper part of ruff blackish brown, paling to dark brown beneath, and bounded externally by a zone of fulvous; beneath this the feathers of the throat are brownish, this colour usually taking the form of a zone across the fore neck; chest and under surface fulvous, closely barred with brown; under tail-coverts whitish, barred with darker brown than the breast; thighs, tarsi, and toes more ochraceous than the under surface, crossed with narrow, wavy, brownish bars; under wing-coverts concolorous with the breast, barred more closely and paling to buff-white at the edge of the wing; primary under wing-coverts blackish brown, paling to buff at the base; basal portions of the inner primaries and the secondaries beneath fulvescent white.

Examples from the upper hills (whether as a rule or not I cannot say) are darker on the disk, ruff, and lores than the low-country birds, and exhibit at the same time the facial barring which Mr. Hume found to be absent in his examination of the specimen on which he founded his Ceylonese race or subspecies *S. ochrogenys*. These birds have the barring of the under surface darker than the ochraceous-faced, paler-eyebrowed ones from the low country; but the ground-colour varies, being occasionally paler than in the latter.

Young. The nestling has the iris paler brown than the adult; cere and bill bluish leaden.

It is clothed with whitish down on the body, which gives place to the first or nestling feathers, which are edged with greyish buff, the scapulars, quills, and tail assuming from the first the brown hue noticed in the following description:—

Plumage on leaving the nest. Head, hind neck, scapulars, wing-coverts, lower back, and upper tail-coverts pale rufescent brown, the body-feathers broadly edged with whitish margins of a fluffy character; the scapulars and wing-coverts boldly barred with buff-white, and the greater coverts deeply tipped with the same; primaries and their coverts dark sepia-brown; the secondaries paler brown, the whole barred with pale ochraceous brown, and deeply tipped with whitish, the bars at the internal bases of the quills buff; tertials paler or more ochraceous brown than the secondaries, and narrowly barred with buffy white; back brownish; tail concolorous with the primaries, barred with narrow whitish marks, and tipped with white.

Lores and plumes between the eye and the forehead black; face ochre-yellow, darkening into rufous behind the eye; ruff and chin deep brown, the former edged with whitish; entire under surface buff-white, the feathers crossed with softened and indistinct rays of light ochraceous; under wing-coverts pale fulvous.

The above is a combined description from the example in my aviary (which was the subject of my article in 'Stray Feathers') and a second, shot in the Central Province; at this young stage even the face in the latter hill-bird is not so golden as was that of my tame, low-country one. The latter exhibited the following change of plumage during the first year:—After the lapse of a few weeks (about the 15th of June) the tips of the interscapular feathers next the scapulars and those of the lower part of the sides of the neck just above the point of the closed wing began to darken, and a V-shaped mark, having its apex about the middle of the back, was formed; this was the origin of the deep sepia-brown back of the adult. About a fortnight later the mature feathers (buff, barred with brown) began to appear on the tarsus, the fluffy plumage falling out to give place to them. In a short time the ground-colour of the tail-feathers deepened into blackish brown, and the adult feathers began to assert themselves elsewhere on the throat and parts of the breast. The tarsus and tibia took about three weeks to change, and by that time the whole of the interscapular region had become very deep sepia-brown; the downy feathers along the ulna commenced to fall out, and the deep brown edge to develop itself, while the wing-coverts kept pace with the rest, the whole wing rapidly becoming dark. In the mean time, while this moult was going on, the scapulars, quills, and tail-feathers darkened, assuming by a change in the feathers the hue of the adult. By the 31st of July the whole of the under surface was fully clothed with new feathers, the lesser wing-coverts were fully grown, the back had assumed the adult appearance, and the chin had become deep brown, the ruff extending beneath it by degrees. The facial disk had not altered at that time, but as the bird grew older it darkened into the normal yellow-rufous colour. The feathers of the head were the last to change, that part becoming dark brown about the middle of September; but it was not until the 30th November, when the bird was about 8 months old, that the last immature feather disappeared from above the right eye.

Obs. The Brown Wood-Owl, which has generally been associated with the species described by Col. Sykes from Southern India as *Syrnium indranei*, has of late been separated by Mr. Hume as *S. ochrogenys*, the grounds for so doing being that it was considered by him to have a more ochraceous disk than the Indian bird, and likewise to have that part not cross-rayed with dark lines. Sykes's type is not forthcoming now, nor are there any Southern-Indian birds in English collections, as far as I have been able to discern, from which it can be gathered what the species really is like. It is, of course, distinct from the Nepal bird (*S. newarense*), notwithstanding that some of the latter species are quite as small as Sykes's specimen was. His description, which applies well to Ceylonese examples, is in part as follows:—"Abdomine subrufo, brunneo graciliter fasciato; regione circumoculari nigrâ; disco rufo, brunneo marginato." With regard to the second point, concerning which it may be remarked that there is no evidence to show that it did not exist in the Indian bird, it will be seen that hill Ceylonese examples have the face more or less cross-marked with brown rays, though low-country birds have not as a rule. On the whole, therefore, in the absence of specimens from the districts where Sykes and Jerdon got them, it will be well to retain the Ceylon bird under its old title, until evidence is forthcoming to separate the Indian species, particularly as Mr. Hume lately writes me that he now considers the Nilgherry and Ceylonese species to be one and the same. In order to further the existing information concerning this interesting bird, and more especially for the benefit of my Ceylon readers, who are more or less interested in the so-called Devil-bird, it seems expedient to give a figure of the species, which I have accordingly done*.

Distribution.—The Brown Wood-Owl is distributed over the whole of Ceylon, inhabiting the low-country jungles of both the north and the south of the island, as well as the forests of the hill-zone up to the altitude of the Nuwara-Elliya plateau. In the Kandyan Province it is pretty generally found throughout all the coffee-districts, and is not at all uncommon in the neighbourhood of Kandy. In the upper ranges I have met with it at Kandapolla, and in the British Museum there are specimens from Nuwara Elliya. In the western parts of the low country it is a bird of local distribution, but in the wild jungles of the north and east I imagine it is everywhere to be found. I have myself met with it close to Trincomalie, and others have procured it in various parts of the Vanni. In the Colombo district it has been shot as near to Colombo as Kæsbawa, and in the scattered jungles, commencing about 20 miles inland and extending more or less to the base of the hills, it is not unfrequent. More favourable to its nature are, however, the continued woods and forests clothing the country, further south, between the Kaluganga and Dondra Head, and there it is tolerably common. Between Kalatura and Agalawatta, in a comparatively maritime part of the country, I have heard several of these Owls on a single evening hooting within a short distance of each other.

Jerdon remarks that this species is found throughout Southern India, in Ceylon, and the Malayan Peninsula. He makes mention of it as follows:—"It frequents the forest only, and is most common at a considerable elevation. Col. Sykes found it in the dense woods of the Ghâts. I procured it first on the Nilghiris, and afterwards along the Western Ghâts in the Wynaad and Coorg. It has also been sent from Goonsoor." It does not appear to have been found north of the Deccan, and does not inhabit either Burmah or Tenasserim; with regard to the Malayan Peninsula it has been procured in that region by Dr. Maingay, Lord Tweeddale being in possession of a skin sent home by that gentleman. On the authority of the late Mr. Swinhoe it has also been assigned to the island of Formosa; the specimen was described in 'The Ibis,' 1863, p. 218, under the name of *Bubo caligatus*, and was supposed by Mr. Gurney to belong perhaps to this species; but it was afterwards found to be *Syrnium newarense*, and is described as such in Swinhoe's "Catalogue of the Birds of China," P. Z. S. 1871, p. 344.

Habits.—This fine Owl, which has received the ill-omened name of Devil-bird, on account of the dire noises which the natives of the island have always ascribed to it, frequents shady forest-groves, woods of moderate extent, and portions of heavy jungle, near clearings and open places. I have met with it half a dozen times without being able to procure it, so sharp-sighted is it by day; it was, on several occasions, being most thoroughly mobbed by the Jungle-Drongos (*Buchanga longicaudata*) in company with a host of Bulbuls, who were pursuing it from tree to tree with a chattering incessant enough to bewilder a wiser bird than even an Owl! On another occasion I witnessed its persecution, in a forest near Ambepussa, by two or three pairs of

* My Plate was drawn some months prior to working out my article, and the bird was styled by Mr. Hume's name *ochrogenys*, which I have now had altered.

Racket-tailed Drongos (*Dissemurus lophorhinus*) ; so that the "Devil-bird," notwithstanding its redoubtable sobriquet, does not appear to be much respected, by the King-Crows at any rate !

There is no bird in Ceylon to which so much interest attaches, both among the European and indigenous population, as the present. If the subject of ornithology be mooted in conversation, questions are invariably asked as to the "Devil-bird," What is it? have its direful notes been heard? and so forth. Very diverse opinions have always existed as to the identity of the bird, notwithstanding that the natives of the island, and consequently those who have worked at its ornithology and gathered much of their knowledge of the habits of its birds from them, have always attributed the discordant notes uttered by some nocturnal bird to the present species. Kelaart writes, "The shriek of the Devil-bird (*S. indrani*) is truly appalling. The superstitious natives listen to these dismal cries with great horror; some death or less misfortune is apprehended when an Owl sings (?) nightly over a hut or on a tree overshadowing it." Layard follows with the information that the Wood-Owl "utters the most doleful cries, which the natives consider the sure signs of approaching evil." Sir E. Tennent writes that the Sinhalese regard this Owl "literally with horror, and its scream by night in the vicinity of a village is bewailed as the harbinger of impending calamity;" and further that there is a "popular legend in connection with it, to the effect that a morose and savage husband, who suspected the fidelity of his wife, availed himself of her absence to kill her child, of whose paternity he was doubtful, and on her return placed before her a curry prepared from its flesh. Of this the unhappy woman partook, till discovering the crime by finding the finger of her infant, she fled in frenzy to the forest, and there destroyed herself. On her death she was metamorphosed, according to the Buddhist belief, into an *Ulama* or Devil-bird, which still at nightfall horrifies the villagers by repeating the frantic screams of the bereaved mother in her agony."

I have been assured by gentlemen in Ceylon that the Owl which makes these wonderful noises is a small, whitish bird, and some have told me that they have seen it in the act of uttering them. This description would seem to indicate the next species, a bird until lately quite unknown in the island. The author just quoted publishes, in a footnote at page 248 of his 'Natural History of Ceylon,' a letter from Mr. Mitford, late of the Ceylon Civil Service, and one who took great interest in the birds of the island, from which it will appear that this gentleman was doubtful as to the identity of the Devil-bird. He says, "The Devil-bird is not an Owl. I never heard it until I came to Kurunegala, where it haunts the rocky hill at the back of Government-house. Its ordinary note is a magnificent clear shout like that of a human being, and which can be heard at a great distance, and has a fine effect in the silence of the closing night. It has another cry like that of a hen just caught; but the sounds which have earned for it its bad name, and which I have heard but once to perfection, are indescribable, the most appalling that can be imagined, and scarcely to be heard without shuddering. I can only compare it to a boy in torture, whose screams are being stopped by being strangled. The only European that had seen and fired at one agreed with natives that it is of the size of a pigeon with a long tail. I believe it is a *Podargus* or Night-Hawk." I believe myself that there is no doubt about the bird being an Owl, as none of the Nightjars in Ceylon ever utter notes at all resembling these cries. The natives, however, who brought me my young specimens of the Wood-Owl at Galle did not seem to know that they were the birds accredited with these noises, but simply called them *Bakkamūna*, or "Large Owl." Mr. Holdsworth, who was of opinion, from the description given him by natives of the Devil-bird, that it was an Owl, was fortunate enough to hear its cries one night in the Aripu district, but was unable to discern the author of them. While watching at a waterhole for the purpose of shooting bears, he was suddenly alarmed by piercing cries and convulsive screams suddenly issuing from a small patch of bushy jungle about thirty yards from his hiding-place. He says, "My hunter at first thought a leopard was there, and told me to keep quiet; but the cries increased, and became so horribly agonizing, that it was difficult to believe murder was not being committed. Before I reached the place all was silent as before, and the idea of the Devil-bird flashed across my mind. This was afterwards confirmed by the hunter, who, however, did not care to talk much about it." My readers will gather from the above summary of evidence that there does exist in Ceylon some nocturnal bird which utters very singular notes, but that it is not quite clear what the species really is. The natives at different times and different places have given me the most contradictory answers concerning the delinquent; but in many parts of the island they believe that it is the Brown Wood-Owl, and from them Messrs. Kelaart and Layard received the idea it was so, and hence the general idea current among Europeans as to the supposed

identity of this noisy bird of ill-omen. I endeavoured during my stay in Ceylon to discover whether these notes really were attributable to this bird or not; but, as regards my personal experience, I failed in finding out any thing satisfactory in the matter. My rearing up two of them (one of which I had in confinement for more than a year) did not assist me in my inquiries; for, as I stated in my article in 'Stray Feathers,' 1874, the only approach to any hoot which they made was a low growl, very seldom uttered, and a faint wheezy screech when they were very hungry; nor did they ever utter their far-sounding sonorous call, well known in the Ceylon hills, which resembles the syllables *to-whōō*, repeated at short intervals. Owls do not, as a rule, give vent to their natural calls while in confinement; and I therefore do not consider my evidence in this quarter very conclusive. Since writing on this species, however, I have been assured by a gentleman who kept a pair of these Owls, one of which is now in the Zoological Gardens, that in 1875, and during the month of March, which is about their breeding-time, the pair alarmed the inmates of his house by uttering the most dismal and wailing cries imaginable; and although these notes were not described to me as being so horrible as they have been depicted above, I think this testimony is much in favour of the idea that in the breeding-season this bird does utter loud and singular cries, which in the dead of night fall with more than their real harshness of sound upon the ear. It still remains, therefore, for some one interested in the ornithology of the island to persevere in shooting the bird in the act of making these noises, and so settle the matter once and for all. Whether it be the present or some other species it is doubtless the case that these peculiar notes are only uttered during the breeding-season. In a state of confinement this Owl is any thing but an unpleasant bird. It has the power of almost erecting its dorsal scapulars and pectoral feathers when under the influence of emotion or surprise, and looks much like a porcupine in appearance when so doing.

The habits of my tame birds were exceedingly interesting, their quaint manners, grotesque bearing, and familiar actions rendering them daily objects of admiration. I therefore take up room to subjoin the following extract from the article above referred to, in which, after referring to the singular habit of revolving their heads, with their eyes fixed on the object of their attention, and then lunging them forward in order to gain a better sight of it, is written as follows:—"When given any thing of no great size to eat, such as a *Calotes* or small bird, it invariably seized it in its foot, grasping it with the outer toe to the rear, and holding it up after the manner of a Parrot, nibbled at various parts with a view of tasting it, after which it would suddenly jerk it into its mouth, head foremost, and swallow it without any exertion whatever. On the 10th June, when only three months old, it swallowed entire a large *Calotes* lizard; but this feat, I consider, was outdone by its companion, which I reared the following year, and which bolted, at the age of six weeks, a *Dicaeum minimum* and *Cisticola schænicola* with as much ease as if they had been small pieces of meat. This peculiarity of holding its food in the foot was very interesting to witness, the bird at these times, under the influence of pleasurable emotions, presenting a highly grotesque appearance, opening and slowly shutting its large eyes, and tasting the dainty bit with every now and then an epicurean snap of its mandibles. This, by the way, is performed by pressing the under mandible against the tip of the upper, and then letting it go with a snap against the basal edges of the latter. He delighted in a good wash, and took his bath almost regularly every day, flying over to the 'chattie' generally in the forenoon, and squatting down in the water, which he would throw over him on all sides; his ablutions took sometimes more than five minutes to perform, after which it was his custom to mount on a high perch, and hang down his wings until he was dry, presenting the most ridiculous aspect imaginable. He remained sometimes more than an hour in this position, feathering and pluming himself until able to fly about. The process of feathering was performed in general with the eyes shut; and it was interesting to watch the manner in which he would seize one feather after another without ocular assistance, leading them out from base to tip, and working them with a quick movement of the under mandible. Their powers of vision were not good on a dark night, and when young this was particularly noticeable." One which I kept in a box insisted on perching on the side all day, where it slept in peace; when tired it would lower its body until its breast rested on the wood, and in this position, with its head stretched out, it would remain for half an hour at a time. At sunset it became lively, snapping its bill loudly when approached, and displayed then, as the light decreased and objects became more perceptible to its vision, the singular habit of revolving or rotating and then darting out its head in the manner already mentioned. Fish was a favourite article of diet with these birds; they bolted good-sized "sardines" whole, in the same manner that they treated birds and lizards.

Nidification.—This Owl breeds in February, March, and April, and nests in the hole of a large tree; one of my young birds was taken from a cavity in the hollow of a lofty Hora (*Dipterocarpus zeylanicus*), the rotten wood at the bottom of which formed the nest. Two eggs brought to me from Baddegama as belonging to this species were very round in shape and pure white like other Owls' eggs; but they measured only 1.45 inch in length by 1.25 in breadth, and were too small for those of this species.

The figure in the Plate accompanying this article is taken from a male specimen shot in the Kandy district, and exemplifies the less rufous and more striated disk observable in hill-birds, as distinguished from those inhabiting the low country.

Genus PHODILUS*.

Of smaller size than *Syrnium*; disk more perfect above, with a patch of stiff feathers on each side of the anterior portion. Wings rounded, reaching to the end of the tail. Legs feathered. Toes covered with hairs; inner anterior toe longer than the outer one; middle claw slightly serrated, as in *Strix*.

PHODILUS ASSIMILIS.

(THE CEYLON BAY OWL.)

(Peculiar to Ceylon.)

Phodilus badius, Hume, Stray Feathers, 1873, p. 429; Whyte, ibid. 1877, p. 353.

Phodilus assimilis, Hume, Stray Feathers (Notes), vol. v. p. 137.

The Bay Screech-Owl, apud Jerdon.

Bassa, Sinhalese.

P. similis P. badio, sed saturatio et tectricibus exterioribus nigricantibus; primariis intus nigricantibus nec rufis: plagâ subalari tectricum majorum nigrâ nec rufâ: plumis pectoralibus nigro bipunctatis.

Adult, presumed male (vide Plate). Length (from skin) 10·5 inches; wing 7·1; tail 3·5; tarsus 1·55; middle toe 1·1; claw (straight) 0·65; outer posterior toe 0·15.

Adult, presumed female (British Museum). Wing 7·8 inches.

Female. "Length 11·5; wing 8·12, expanse 27·5; tail 3·5; tarsus 2·0 (?); mid toe and claw 1·5" (*Whyte*).

"Iris dark brown; bill greenish white, with a dash of dark brown on edge of upper mandible, and dark spot on the nostrils; feet pale whitish green; claws pale ash, ridges of the scutæ of the toes of a darker green than the prevailing colour" (*Whyte*). Cere probably olivaceous.

Forehead and facial disk pallid reddish grey; loreal plumes blackish at the base, the webs about the centres of the feathers rufous-brown; ruff-feathers white, very faintly tinged with rufous, and with a terminal black bar and the external tip rufous; crown and occiput with the back, scapulars, and lesser primary wing-coverts rufous, deepest on the head and slightly brownish on the other parts; feathers of the head with dark shafts and terminal black spots; a light buff patch on the centre of the occiput, on which the terminal dark spots are larger; back and sides of neck, inner webs of the scapulars and tertials, and the centre feathers of the median wing-coverts brownish buff; the buff feathers of the neck and wing-coverts with terminal brown spots, and the rufous portions of the back, together with the rump and upper tail-coverts, with a series of central, alternating white and black spots; least wing-coverts rufous-brown; outer webs of the primaries and secondaries, excepting the first primary, rufous, barred with black; inner webs blackish grey, barred with black; outer webs of the longer winglet-feathers and of the first primary white, barred with black; second and third primaries with the interspaces near the tip white; tail rufous, narrowly barred with eight wavy blackish bars, each feather with a white terminal spot enclosing a black one.

Throat and chest buff, changing on the breast, flanks, abdomen, and thighs into delicate rufous isabelline, each feather

* This genus has hitherto been associated with *Strix* in the family of Strigidae. Professor Milne-Edwards has, however, lately pointed out, in an article in the 'Comptes Rendus,' Dec. 1877, that its affinities structurally are with *Syrnium*. The posterior margin of the sternum is deeply cleft, the structure of the tibia is similar to that of this latter genus, the clavicle is also similar, and the skull differs in its formation from that of *Strix*. Its external appearance, however, is that of this latter genus, and the claw of the middle toe is, like it, serrated.

with two central spots on a white ground-patch; tibia fulvous-buff; tarsus isabelline, like the breast; lesser under wing-coverts buff; a large patch of brown marked with rufous at the edge or beneath the metacarpal joint.

The above is a description of the bird figured in the Plate. The example in the British Museum has the point of the wing, lesser wing-coverts, and inner webs of primaries darker still; it likewise has the rufescent feathers of the forehead spotted with dusky grey. The specimen described by Mr. A. Whyte in 'Stray Feathers' (vol. v. p. 354) has 9 bands on the tail; and both have the peculiar buff occipital patch, looking like the remains of immature plumage.

Young. The unfledged nestling is clothed with dusky grey down.

Obs. This is a well-marked distinct race of the continental and Malayan *Phodilus*; the differences between the two are slight, but they are well pronounced and constant; Mr. Hume, besides noticing the dark wing-coverts and wing-lining patch and the blackish inner webs of the quills which characterize the Ceylonese bird, remarks that it is smaller. I do not know whether as a species it will prove to be so. The wings of three examples of *P. badius* in the British Museum are as follows:—India, 7.7 inches; Malacca, 8.0; Sarawak, 7.1. Jerdon gives the wing of the example he described as 8.5. In the Norwich Museum are the following:—Java, w. 7.5 inches; Borneo, w. 7.4; Borneo, w. 7.5; Java, w. 7.4; Java, w. 7.5. On the whole, therefore, the balance is in favour of the Ceylonese bird. *Phodilus badius* differs from *P. assimilis* in having the head and back brighter rufous, in having the lesser wing-coverts, primary-coverts, and winglet concolorous with the back and not rufous-brown as in *assimilis*; these parts are not mottled with blackish; the inner webs of the quills are clear rufous, like the outer; the tail has only five or six bars; the feathers of the breast and belly have only one spot instead of two, and the patch under the wing is rufous instead of brown.

History and Distribution.—The present member of the interesting and little-known genus *Phodilus* is one of the most recently discovered of the peculiar Ceylonese birds. The first specimen on record was killed by a native about the year 1871, at a place called Lewelle Ferry, some three or four miles from Kandy. It was preserved by Messrs. Whyte and Co., of Kandy, and obtained from them by Mr. H. Neville, C.C.S., who sent it to Mr. Hume. To this gentleman is due the credit of discriminating our species, on the testimony of this example, from the Indo-Malayan bird *P. badius*. In November 1876 a second example (the skin of which, through the kindness of Mr. W. Ferguson, passed into my hands, and is now in the collection of the British Museum) was captured by a coolie on the Martinstown Estate, Kukkul Korale. It was taken from the nest together with three young ones; and Mr. H. B. Hector, to whom I am indebted for much information on the subject, and on whose estate the birds were caught, writes to me that the Sinhalese brought another bird of the same species to his superintendent, but there being no accommodation for it at the bungalow it was released. In February 1877 a third specimen was procured by Mr. Reeves of Ratota, and its capture recorded by Mr. A. Whyte at p. 201 of vol. v., 'Stray Feathers;' while at p. 353 of the same vol. Mr. Whyte notices a fourth caught in the following July on the estate of Mr. Weldon, Dickoya, who states, in his letter to Mr. Whyte, that it was the second of the kind which his coolie had caught. There appear, therefore, to have been, as far as I can ascertain, six examples* of this rare Owl shot or captured in Ceylon, showing that its range extends throughout the hill-regions of the island, and that the habitat, as far as is yet known, of the bird lies between 1500 and about 3000 feet elevation. Future research will, however, doubtless reveal its presence both in the low country and in the upper hills; and it is to be hoped that hereafter all examples met with will be both preserved and recorded with data of sex and measurements in 'Stray Feathers' or other ornithological publications.

Habits.—This recently discovered nocturnal denizen of our forests has come to such a limited extent under any one's notice, that it is not in my power to place on record much concerning its economy. It has shown itself to be an inhabitant of forest-jungle, out of which it evidently strays at nights in search of food, and, like many other Owls, when unable or too late to return to its usual haunts, hides where it best can on

* Mr. Hume writes me, since this was penned, that he has received two additional specimens from Ceylon.

estates, in isolated trees or in old buildings, and, owing to its completely nocturnal habits and imperfect day-sight, falls an easy victim to any one with eyes sharp enough to discover it. Mr. Reeves's specimen was taken in an old cooly hut. Mr. Weldon writes, as above mentioned, to Mr. Whyte :—"This bird was caught by a cooly in a tree in the daytime on my estate, and is the second of the kind he has caught here. It was put on a perch in a dark room, but refused to eat, and died after two or three days' confinement." The bird brought by natives to Mr. Hector's superintendent appears to have been taken the same way, being the third instance of capture by hand during the day. Mr. Hector, in a letter kindly written to me after my departure from Ceylon, throws some light on the nature of this Owl. He says, in speaking of the brood of young birds, "there were three apparently of different ages, as the largest very much exceeded the other two, which also differed considerably in size. The largest one was about the size of our ordinary Quail, with a flattish-shaped head. It seemed a vicious bird, as it used to peck the other two continually, and one day, I found, had pulled many of the feathers out of the smallest, and seemed to be trying to tear its flesh, so that I had to separate them." Unlike most Owls, it does not seem to thrive in confinement. Mr. Hector kept the parent bird of these young ones five weeks; but in Mr. Weldon's case, his lived but two days. Mr. Reeves writes me concerning his bird that it lived about a week and was fed on lizards and small fish caught in a neighbouring stream, and preferred the latter to any thing else. With regard to the note of this species, it may or may not be the author of the hideous sounds attributed to the Devil-bird; but I have no authentic information as to any of its cries. Of the allied species, *P. badius*, Messrs. Mottley and Dillwyn, as quoted by the late Mr. Blyth in the 'Ibis' for 1866, p. 252, state :—"It has only a single note, frequently repeated, and which is much like the first note of the common Wood-Owl's cry."

Nidification.—The Ceylon Bay Owl appears to breed at the latter end of the year, nesting in hollow trees. Mr. Hector writes me that "the nest was made in a hole in a tree and composed of dry twigs, moss, and feathers." The number of eggs in this was three, so that they may be inferred to vary from two to four, as in some other species of Owls.

For the loan of the specimen figured in the Plate accompanying the last article I am indebted to the kindness of Mr. Reeves and his brother-in-law Mr. J. C. Horsfall, in whose house at Altrincham it is mounted. I was unable to figure the example presented to the British Museum, as the tail is not perfect. Mr. Keulemans has drawn this Owl with the wings slightly drooped, in order to show the characteristic dark inner portions of the quills.

Fam. STRIGIDÆ.

"Hinder margin of sternum entire, with no distinct clefts; furcula joined to keel of sternum; inner margin of middle claw serrated; inner and middle toes equal in length; between the anterior portion of the facial area a frontal patch of small stiff feathers always present and very broad."
(*Sharpe*, Cat. Birds, ii. p. 289.)

ACCIPITRES.

STRIGES.

STRIGIDÆ.

Genus STRIX.

Hinder margin of sternum entire, with no distinct clefts; furcula joined to keel of sternum.

Head smooth. Bill straight at the base, compressed, feeble, with the tip much curved. Nostrils large, oval, and oblique. Facial disk complete and entirely surrounded by a ruff of stiff feathers. Wings long in comparison to the tail, pointed, with the 2nd quill the longest, and the 1st subequal to the 3rd. Tail even. Legs long; the lower part of tarsi clothed, as the toes, with bristles. Toes long and scutellate above; claws much curved, the inner edge of the middle *serrated*.

STRIX FLAMMEA.

(THE BARN-OWL.)

- Strix flammea*, Linn. S. N. i. p. 133 (1766); Gould, B. of Eur. i. pl. 36; Blyth, Cat. B. Mus. A. S. B. p. 41 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 81 (1854); Schlegel, Vog. Nederl. pl. 41 (1854); id. Mus. P.-B. *Striges*, p. 1; Gould, B. of Gt. Brit. i. pl. 18; Sharpe, Cat. Birds, ii. p. 291 (1875); id. in Rowley's Orn. Miscellany, pt. viii.
- Strix javanica*, Gm. S. N. i. p. 295; Jerd. Madr. Journ. x. p. 85; Blyth, J. A. S. B. xix. p. 513; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 82; Jerd. B. of Ind. i. p. 117; Hume, Nests and Eggs Ind. B. p. 59; Kelaart, Prodrumus, Cat. p. 116; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 107.
- Strix indica*, Blyth, Ibis, 1860, p. 251; Hume, Rough Notes, ii. p. 342; Gould, B. of Asia, pt. xxiv.; Holdsw. P. Z. S. 1872, p. 415; Hume, Str. Feath. 1873, p. 163, et 1875, p. 37.
- The White Owl*, Albin; *Le petit Chat-huant* (Brisson); *L'Effraye*, Buffon; *The Screech-Owl*; *The Indian Screech-Owl* (Jerdon). *Lechuzo*, Spanish.
- Karaya*, *Karail*, Hind., also *Buri-churi*, lit. "bad bird;" *Chaaopitta*, Tel.; *Chaaokuravi*, Tam. (Jerdon); *Daris*, Java (Horsf.); *Serrak*, Malays (Horsf.).

Adult male and female. Length to front of cere 13·8 to 14·0 inches; culmen from cere 1·0; wing 11·4 to 11·7; tail 4·3 to 4·7; tarsus 2·4 to 2·6; mid toe 1·3 to 1·4, its claw (straight) 0·75 to 0·83.

Obs. The above measurements correspond fairly with those of Indian and Burmese birds, and are taken from a series of specimens. The measurements of six examples from the above localities are:—Total length 14·0 to 14·8 inches; wing 11·0 to 11·8; tarsus 2·5 to 2·75. The expanse of Indian birds, according to dimensions contained in 'Stray Feathers,' varies from 38·0 to 39·7.

Iris black; bill fleshy white; cere flesh-colour; bare portion of tarsi and feet fleshy brown; claws brown.

General hue of upper surface, including the tail and wings, rich tawny buff, the visible portions of the feathers profusely and finely stippled with whitish and dusky grey, and each with a terminal white spot, "pointed" above with blackish brown; on the head and hind neck the white portion of the spot is inconspicuous, and the dark very much reduced in size; on the rump, tertials, and quills the tippings are more extensive than elsewhere; edge of the wing and outer web of the first winglet-feather white; inner webs of the primaries and secondaries

whitish towards their edges, and crossed on the terminal half with broken-up brownish bars; outer webs and tips mottled like the back with traces of bars corresponding to those of the inner webs; a white, dark-edged spot at the tips of the quill-feathers, most conspicuous on the tertials; tail crossed with four narrow, wavy bars of brown, mottled with whitish; the tip white, mottled with brown, and terminated with a black-and-white spot.

Facial disk white, speckled in some with grey; a rufous patch in front of the eye; ruff (of stiff, erect feathers) glossy white interiorly, rich rufous at the tips of the exterior feathers, which are also pencilled round the edges with brown; sides of the neck concolorous with the back, the feathers with terminal greyish-bordered spots; throat and under surface white, faintly tinged here and there, and more particularly on the flanks and tibia, with delicate buff; feathers of the flanks and sides of the breast with dark triangular terminal spots; under tail-coverts in some spotted, in others entirely white. Under wing-coverts and lower surface of quills white; the lesser coverts with blackish spots and dashes of buff.

Obs. Some Ceylonese specimens are of a richer or more orange-buff than others, and in all that I have examined is the tail concolorous with the back. The spottings of the under surface are always present, in a greater or less degree, some examples having the belly and thighs as much marked as the breast. I have not seen any traces of zigzag markings in Ceylon birds, and thus they possess more affinity to the Indian than to the Malayan type of this variable species. The plumage of this Owl fades considerably with the age of the feathers and perhaps from exposure to the sun's rays. Such a specimen I possess in my collection, the appearance of which would suggest the idea that the bird had selected an exposed situation wherein to roost. The buff tint has entirely disappeared from the exposed portion of the upper-surface feathers, and the dark spots are very pale. The feathers in this example are much abraded throughout.

Young. In the European bird the nestling is covered with white down, the wing-feathers having the normal buff hue, with greyish and white mottlings.

Young bird on leaving the nest (Sharpe, Cat. Birds, ii. p. 293).—"General colour above orange, but profusely obscured with light grey, all the latter plumes vermiculated with ashy brown and having a distinct subterminal white spot margined both above and below with brown; the head and hind neck coloured like the back, but more decidedly orange, especially the sides of the neck, which are bright orange with a few bright spots; wing-coverts coloured like the back; primary-coverts orange, mottled at the tips like the rest of the coverts, but much paler externally and inclining to whitish; quills orange, mottled at the tips with greyish, and having distinct cross bars of grey mottled with white; tail pale orange, barred with greyish and mottled with the same.

"Facial disk silvery white, the feathers rufous round the eye and especially in front of the latter; ruff glistening white, the upper plumes washed with orange, and the lower ones also tipped with clear orange; feathers of the under surface pure white, tinged with orange on the chest, but not spotted."

Distribution.—This cosmopolitan and well-known bird is an inhabitant of the north and north-west coasts of Ceylon. The natives have, my friend Mr. W. Murray informs me, a tradition among themselves that it was introduced by the Dutch. I will not venture to pronounce an opinion on this point, but will simply remark that its range is extremely limited. Layard only noticed it at Jaffna, where it used to be common about the fine old Dutch fort, living in the ramparts; it was tolerably numerous there, Mr. Murray writes me, until about ten years ago; since then its numbers, which were always limited, have been thinned by people collecting, and by the birds occasionally being caught abroad in the daytime by the Jaffna Crows, and quickly treated to lynch-law by these tyrannical citizens. It inhabits some old buildings in the neighbourhood of the town, and has been met with in the fine banyan-tree on the road to Chavakacheri. It no doubt frequents other ruined buildings along the coast to Manaar, in which district Mr. Holdsworth records it from Aripu. Further south it has been found at Puttalam, where Mr. R. Pole, of the Ceylon Civil Service, informs me he has seen it. I am not aware that its range extends lower down the coast than this latter place. On the opposite coast it is not known.

The Barn-Owl inhabits India, Siam, and Malayana, and extends eastward to Arabia. As regards the other continents of the globe it may be said (now that the many races hitherto recognized have been amalgamated into the one species by Mr. Sharpe) to be found in all of them. It is generally distributed throughout Europe and Africa, extending, in its race of *S. poensis*, to the island of Madagascar and to the Cape Verds. In America the western form *S. pratincola* is distributed throughout the North-American, West-Indian, and Neotropical Regions, as far south as Chili, and extends over to the Galapagos Islands. In the Australian Region

it is represented by *S. rosenbergi* from Celebes, and by *S. delicatula* from Australia and a portion of Oceania, but not from Tasmania or New Zealand—the latter locality being without any member of the genus, while Tasmania is inhabited by the large race (*S. castanops*) of the Australian species *S. novæ-hollandiæ*.

Habits.—As in the old country, the Screech-Owl, or, as it is better known, the “Barn-Owl,” frequents, in Ceylon and India, ruined edifices, forts, wells, and buildings of every description, preferring these architectural retreats to those afforded by old and hollow trees. It, however, sometimes takes up its abode in the latter. In Jaffna Mr. W. Murray, who resided there for many years, and had abundant opportunity of noticing its habits, writes me that it “lives in the small square drains leading from the silt-traps on the bastions to the moat.” “At dusk,” he remarks, they sit at the openings overlooking the moat, and screech to one another for a good half-hour before starting on their foraging expeditions; many feed about the fort, but some fly across the Jaffna lake to the islands in search of food.” Mr. Holdsworth found them frequenting a storehouse in his compound, “each regularly perching in a dark corner under the roof, at opposite ends of the long building, and apparently living in harmony with hundreds of Bats which hung from the roof and walls around.” In India, Jerdon found them frequenting cells and powder-magazines in the vicinity of cantonments, and it therefore appears that in the East, as well as in Europe, it loves to haunt the habitations of man. In such localities it has opportunity of doing good in the capture of rats and other noxious vermin, enormous quantities of which it must destroy in a single year. Most people who take any interest at all in the natural history of birds now absolve the inoffensive and useful Barn-Owl from the sins which used to be laid at its door, and instead of accusing it of destroying birds, game, &c., are aware that it is a vermin-killer, and does far more good than harm. The old story is well known of the farmer, who, missing his pigeons one by one, laid in wait for the fancied robber, the Barn-Owl, and, having shot the unfortunate bird issuing from the dove-cot, was surprised to find a huge rat, the real depredator, in the bird’s talons. Dr. Jerdon affirms, in his ‘Birds of India,’ that he has known it more than once fly into the room in which he was sitting with open doors and windows after a rat which had entered.

The note of the Screech-Owl, as its name implies, is a loud cry or scream, which it sometimes utters on the wing, in addition to which it is said by Indian observers to utter doleful wailings and sounds, such as are generally believed to be solely the voice of the Wood-Owl (*Syrnium*). Mr. J. H. Rainey, a writer in ‘Stray Feathers’ (vol. iii. p. 333), relates that he has often been awakened “by cries which closely resembled two infants in distress,” and on following the bird has shot what he identified as the Indian Screech-Owl. These occurrences took place at the end of the cool season, before the birds began to breed, and were, doubtless, says Mr. Rainey, their amorous calls or love-notes. It is the habit of this Owl to issue out from its roosting-place at dark; but I have more than once seen English members of the species abroad before sunset even. In confinement they sleep throughout the whole day, which cannot be said of some Owls (see my remarks on the Ceylon Wood-Owl); and I have seen a caged bird outside a shop window, in one of the most crowded thoroughfares in London, fast asleep, totally unconscious of the din and roar going on around him. Mr. Holdsworth, who observed the habits of a pair that frequented a storehouse in his compound at Aripu, never observed them abroad until some time after sunset.

The habits of this Owl in confinement are very interesting. They are voracious in their appetites, and very fond of bathing. Mr. Blewitt, as quoted in ‘Nests and Eggs,’ p. 59, remarks of some he reared, that they would invariably *disgorge* the flesh of Hawks and Owls that had been given them to eat.

Nidification.—In Jaffna, I understand, this Owl breeds in June and July, nesting in the drains in the escarpments of the Fort ditch, without fear at that time of their nests being washed away. In India they breed from February to June; and Mr. Hume observes that holes in wells are the favourite localities; the nests are, however, often found in hollow trees, where there are no suitable buildings to be chosen. The eggs are usually laid on the bare surface of the cavity*, but sometimes a small stick-nest is made, which, says Mr. Hume, resembles that of a Pigeon. The number of eggs is variously stated as from three to seven, the latter being no doubt unusual. They are generally pure white, but sometimes have a

* In England I have found the eggs on the bare stone at the top of a barn wall.

creamy tinge. Mr. Hume says that the eggs of the Indian birds are more oval than those of the European. The average size is 1.69 by 1.28 inch. In Europe it is found that this Owl lays occasionally a second and third clutch of eggs before the first brood leaves the nest, these latter, as Professor Alfred Newton remarks, materially aiding the development of the unhatched chicks during the nightly absence of the parents in search of food*.

* Yarrell's 'British Birds,' 4th edition, p. 197.

Order PSITTACI.

Base of upper mandible covered with a cere, in which the nostrils are pierced, as in *Accipitres*; upper mandible vaulted, much curved, the tip overhanging the lower, which is short and rounded. Wings with ten primaries. Tail with twelve rectrices. Legs short. Feet zygodactyle.

Sternum large, much as in *Accipitres*, but narrower, and with an oval aperture in the posterior edge; cranium very large. Oesophagus dilated. Tongue fleshy. Of gay plumage.

Fam. PSITTACIDÆ.

Bill with the upper mandible wide at the base, suddenly compressed near the tip; margin with a well-pronounced lobe; under mandible short and obtuse. Wings moderately long. Tail variable. Tarsi covered with small tubercle-like scales.

Subfam. PALÆORNINÆ.

Bill moderate, the upper mandible moderately hooked. Tail very long and wedge-shaped; the central feathers far exceeding the rest, which are much graduated. Legs and feet proportionately small.

Of medium size.

PSITTACI.

PSITTACIDÆ.

PALÆORNINÆ.

Genus PALÆORNIS.

Bill rather short; upper mandible evenly curved from the base, the tip moderately produced; the margin furnished with a rounded indentation; the cere small, nostrils pierced close to the culmen; under mandible short. Wings moderately long; 2nd quill the longest, 1st and 3rd slightly shorter. Tail very long, the central feathers usually produced much beyond the next two. Tarsus very short and finely reticulated. Outer anterior toe longer than tarsus; outer posterior toe longer than the inner anterior one; claws rather straight and short.

PALÆORNIS EUPATRIUS.

(THE ALEXANDRINE PARRAKEET.)

Psittacus eupatrius, Linn. Syst. Nat. p. 140, ♀ (1766).

Psittaca ginginiana, Brisson, Orn. iv. p. 343, pl. 29. fig. 1, ♀ (1760).

Palæornis alexandri, Vigors, Zool. Journ. ii. p. 49 (1825); Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 208; Blyth, Cat. B. Mus. A. S. B. p. 4 (1849); Kelaart, Prodr. Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 262; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 610 (1856); Jerdon, B. of Ind. i. p. 256 (1862); Finsch, Papageien, p. 11 (1868); Holdsw. P. Z. S. 1872, p. 425; Hutton, Str. Feath. 1873, p. 333; Legge, Ibis, 1874, p. 14.

Palæornis eupatrius, Walden, Ibis, 1873, p. 297; Hume, Str. Feath. 1873, p. 433; Ball, Str. Feath. 1874, p. 389; Legge, *ibid.* 1875, p. 199; *id.* Ibis, 1875, p. 282.

Palæornis magnirostris, Ball, Str. Feath. 1873, p. 66; Hume, Str. Feath. 1874, p. 176.

The Ring Parrakeet, Edwards, Glean. vol. vi. pl. 292 (1760); *The Alexandrine Parrakeet*, Latham; *Grande Perruche aux ailes rougeâtres*, Buffon, Hist. Ois. vi. p. 156; *Rose-band Parrakeet* of some.

Ra-i-tota, lit. "Royal Parrakeet," Hind. in south of India; *Pedda chilluka*, Tel.; *Peria killi*, Tamils in India and Ceylon; *Chundanon*, in Maunbhoom (Beavan).

Laboo girawa, Sinhalese.

Adult male. Length to front of cere 18.0 to 19.5 inches; culmen from cere 1.55; wing 7.8 to 8.2; tail 11.0 to 12.0; tarsus 0.75; outer anterior toe 1.0, its claw (straight) 0.45; depth of upper mandible at cere 0.73 to 0.78. The bill varies in depth; in old birds the lobe gets worn away, and in others I have observed that one side of the bill is higher than the other.

Iris yellowish white or very pale yellow, with a bluish-grey inner circle; eyelid dull reddish; bill deep cherry-red, paler on the lower mandible, and the tips of both somewhat yellowish.

Legs and feet greyish sap-green, or greenish plumbeous, or plumbeous grey; claws dusky. Above grass-green, brightening to emerald-green on the forehead and lores, and darker on the wings; a faint blackish stripe from the nostrils

to the eye; occiput and cheeks pervaded with a greyish-blue tinge; a broad black mandibular stripe passing down and across the side of the neck, where it meets a rose collar which encircles the hind neck; on the secondary wing-coverts a dark red patch; 1st primary and inner webs of remaining quills dark brown, the former with a bluish and fine yellow edge; bases of secondaries washed with blue; central tail-feathers passing from the base into blue, and thence into yellowish at the tips; under surface of tail yellowish; beneath dingy or faded green, brightening on the lower flanks and sides of the abdomen; under wing and under tail-coverts pale green.

Female. Total length 17 to 18 inches; wing 7·5 to 7·8; tail 9·0 to 10·0; greatest depth of upper mandible 0·7. Iris dingy yellowish white, with darkish inner circle; bill, legs, and feet as in male. The female wants the black mandibular stripe and rose collar.

Immature male. Similar to the female in plumage, but generally larger, attaining a total length of about 19 inches in the first year. In some the rose collar is present in an imperfect state; but these are probably birds of the second year. The iris is greenish white generally.

Obs. The Ceylonese race of this Parrakeet is, like many other representatives of Indian species inhabiting Ceylon, smaller than the continental; for although very large examples of males are sometimes met with, this sex is, as a rule, shorter in the wing and tail, and possesses a smaller bill than most members of it from India, while a still greater disparity exists between individuals of the other sex from the two localities. Three adult males from peninsular India and the N.W. Provinces in the national collection measure in the wing 8·3, 9·2, and 8·2 inches, and the tail in the second attains as much as 13·4, with the bill 0·85 in height at the cere; the mandibular stripe in some Indian individuals is very broad. Mr. Ball gives the wing-measurements of 2 males from Chota Nagpur as 8·65 and 8·5, and those of the tail 11·6 and 12·0; the corresponding dimensions of two females from the same district are 8·2, 8·35, and 12·2, 12·0. In the north and north-west of India a race exists with a glaucous blue tinge on the head, and likewise larger than the Ceylonese, which Mr. Hume considers deserving of subspecific rank under the title of *Pal. sivalensis* of Hutton. In Burmah and the Andaman Islands another is characterized by its larger bill as *P. maguirostris* of Ball. This latter is no larger in the wing than Indian examples, but as regards the bill the upper mandible attains, in some instances, the great height at cere of 0·96. Lord Tweeddale, however, received individuals from this locality smaller in the bill than Ceylonese; and though Mr. Hume remarks that these were probably females, yet they must have been compared with individuals of the same sex from Ceylon.

Distribution.—This fine Parrakeet is a common and widely diffused species in Ceylon. It appears to be as much entitled to the name of Alexandrine Parrakeet, in memory of the great Emperor whose voyagers brought it from the East, as the Indian bird; for it would be difficult to assign the true locality whence it was first procured in those days of yore. The old writer Willughby, in his 'Ornithology,' published in 1678, remarks of this species, which he calls the "Ring Parrakeet of the ancients":—"This was the first of all the Parrots brought out of India into Europe, and the only one known to the ancients for a long time, to wit, from the time of Alexander the Great to the age of Nero, by whose searchers (as Pliny witnesseth) Parrots were discovered elsewhere, viz. in Gagandi, an island of Ethiopia." Edwards says that his plate was taken from a specimen brought alive to London in one of the East-India Company's ships.

To return, however, to its distribution in Ceylon, it is found throughout the north of Ceylon, from Chilaw upwards, more particularly along the seaboard round to Batticaloa, where it is very abundant indeed. In some portions of this long line of coast its presence is notably wanting; for instance, at Trincomalie it is rarely seen, although 15 miles to the north of it and on the south of the Bay it is common. In the jungles of the interior it is locally distributed. In the south-east I found it tolerably plentiful in the Wellaway Korale, from which locality it ascends in the dry season to the Haputale ranges. In the scrubby maritime district of Hambantota it is replaced by the next species. It occurs here and there in small numbers throughout the southern and western Provinces, and in the Kandyan district is not unfrequently met with in the dry season; and in Madulsima I have seen it as high as 3500 feet. Mr. Bligh has observed it on one occasion at Nuwara ELLIYA. It is tolerably numerous along the base of the Matale ranges from Dambulla to Kurunegala.

In the Peninsula of India it is found, according to Jerdon, in the forests of Malabar, in the hilly region of Central Indian, and in the northern Circars, and occasionally in parts of the Carnatic; in the extreme

south it is not nearly so common as *P. torquatus*. In Chota Nagpur it is, according to Mr. Ball, by no means universally distributed, but in the Rajmahal hills is much more common. Mr. Fairbank does not record it from Khandala, and in northern Guzerat it is rare. In the sub-Himalayan region it is common as the *P. sivalensis* of Hutton, and in Burmah exists as the large-billed race *P. magnirostris*, which extends through Tenasserim to the islands of the Bay of Bengal.

Habits.—Large colonies of this species take up their abode in districts where cocoanut cultivation borders on forest and wild jungle, which afford an abundance of fruit-bearing trees, on the berries of which the Alexandrine Parrakeet subsists. It is also found in openly timbered country and in forest. It roosts in considerable numbers in cocoanut-groves, often close to a village, pouring in about half an hour before sunset in small swiftly flying parties from all directions, which, as their numbers increase towards the time for roosting, create a deafening noise in the excitement of choosing or finding their accustomed quarters. The fronds of the cocoanut afford them a favourite perch, on which they sleep huddled together in rows. At daybreak the vast crowd is again astir, and after much ado, flying from tree to tree with incessant screaming, small parties start off for their feeding-grounds, flying low, just above the trees, and every now and then uttering their full and loud note *ke-āūr*; this sound is more long-drawn and not so shrill as that of the smaller bird, and can be heard at a great distance. Isolated birds have a habit of apparently leaving the rest of the flock and roaming off at a great height in the air, every now and then giving out a loud scream, which often attracts the attention of the traveller or sportsman for some little time before he is aware of the position of the Parrakeet, which is flying swiftly on far above his head. It is a shier bird than its smaller congener, and rather difficult of approach when not engaged in feeding or in the business of settling down for the night; at the latter time numbers may be shot without their companions doing more than flying out of, and directly returning to, their chosen trees. In the forests of the south-eastern part of the island I observed these Parrakeets resorting at evening to dead and sparsely foliated trees, the bare branches of which afford them a similar perch to that of the palm-frond.

They feed on grain as well as on the fruits and berries of forest-trees; and I on one occasion captured a fine specimen which had become entangled in a species of vetch which covered the earthy portions of a rocky islet near Pigeon Island; it had been feeding on the seeds of the plant, and while extracting them from the pod had got beneath the tangled mass and was unable to extricate itself again. In confinement this species is possessed of the usual docility peculiar to the Parrot order, and is a very favourite pet in Ceylon with both Europeans and natives; I do not think it is as often taught to imitate the human voice as the next species, but I have heard it occasionally speak native words with a fair amount of distinctness. Indian writers say that it is taught with facility to speak; but I think that as a general rule in Ceylon it is kept more as an ornament than for its powers of talking, and when newly feathered, with its tail in perfect order, is a very handsome bird.

Nidification.—Layard writes that he was informed by natives that this bird laid two eggs, building, of course, as all Parrakeets, in a hollow tree. It excavates the hole in which it breeds, generally choosing a small limb, of which the hard shell to be cut through before reaching the interior cavity is not very thick. I have never succeeded in getting the eggs, and therefore can state nothing certain concerning their size. Mr. Hume gives the dimensions of one belonging to the Northern-Indian form, *P. sivalensis*, as 1.52 by 0.95 inch, a very unusual shape for the egg of a Parrakeet, which is generally round. Mr. Rainey writes in 'Stray Feathers,' concerning the breeding of the Rose-band Parrakeet in the Sunderbunds, that "they build their nests in the hollows"—of trees with light wood—"first scooping them down perpendicularly some two and a half feet, so that it requires a long arm to be able to remove the nestlings within . . . The eggs are usually two or three and sometimes four in number, and are deposited in the end of the hollows, the scrapings of the wood being gathered below to form a soft bed for them and the young when hatched."

PALÆORNIS TORQUATUS.

(THE ROSE-RINGED PARRAKEET.)

Psittacus torquatus, Bodd. Tabl. Pl. Enl. p. 32 (1783).

Psittaca torquata, Brisson, Orn. iv. p. 323 (1760).

Psittacus alexandri, Linn. Syst. Nat. p. 141 (1760).

Palæornis torquatus, Vig. Zool. Journ. ii. p. 50 (1825); Sykes, P. Z. S. 1832, p. 96; Jerd. Cat. B. S. India, Madr. Journ. 1840, xi. p. 207; Blyth, Ann. & Mag. Nat. Hist. 1840, xii. p. 90; id. Cat. B. Mus. A. S. B. p. 4 (1849); Gray, Cat. Mamm. &c. Nepal Coll. Hodgs. p. 113 (1846); Kelaart, Prodromus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 262; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 611 (1856); Jerdon, B. of Ind. i. p. 257 (1862); Holdsworth, P. Z. S. 1872, p. 425; Hume, Str. Feath. 1873, p. 170; id. Nests and Eggs, Rough Draft, p. 116 (1873); Ball, Str. Feath. 1874, p. 389; Legge, Ibis, 1874, p. 14, et 1875, p. 282; Butler, Str. Feath. 1875, p. 457.

La Perruche à collier, Buffon, Pl. Enl. p. 551; *Alexandrine Parrakeet*, Latham; *La Perruche à collier rose*, Buffon, Hist. Oiseaux; *The Rose-collared Parrakeet*, Kelaart; *Mango Parrot* in India; *Small Green Parrot* and *Ring-necked Parrakeet*, Europeans in Ceylon.

Tiya, Bengal; *Gallar*, Hind. in N.W. Provinces; *Tenthia suga*, Nepal; *Lybar*, Mussooree; *Ragoo* and *Kerah*, Mahrattas; *Lybar tota*, Hind. Shikarees in South; *Chilluka*, Telegu; *Killi*, Tamil; *Tee-a-tota*, natives of Maunbhoom.

Rana girawa, Sinhalese.

Adult male. Length to front of cere 13·5 to 16·1 inches; culmen 1·1; total length of the latter 1·72; wing 6·0 to 6·6; tail 8·2 to 9·8; tarsus 0·5; outer anterior toe 0·95, claw (straight) 0·38; greatest height of upper mandible 0·5. Adults of this Parrakeet vary extraordinarily in size, evidently attaining the maximum dimensions when several years old. The smaller of the above measurements, which are taken from a series of Ceylonese birds, are those of an individual in fully adult dress.

Iris yellowish white or white tinged faintly with yellow; bill, upper mandible deep red, margin at gape and lower mandible blackish; legs and feet dusky bluish slate or greenish olivaceous, often with a brownish wash on the tarsus.

Above and beneath grass-green, with a greyish wash on the hind neck and chest, and the lower parts more delicate than the back; a well-defined blackish streak from nostril to eye; a black mandibular stripe, meeting on the gorge, and curving round as in the last to meet a collar of pale red on the hind neck (the black and red overlap more than in the last species); occiput and hind neck above the collar with the upper edge of the black stripe at the cheek washed with delicate azure-blue; inner webs of quills brown, with a fine yellowish edging to both webs; the central rectrices and outer webs of next pair are blue, fading towards the base to green; the rest green, washed on the inner webs with yellowish; tips and under surface of all the feathers yellowish; under wing yellowish green; tertiary under-coverts yellow.

Female. Total length about 16·0 inches; wing 6·0. Soft parts as in male.

Similar in plumage, but wants the black stripe and rose collar, in place of which latter it has a narrow emerald-green band across the hind neck.

Young. The nestling is similar to the female, and males attain in the first year a size quite equal to adults of the other sex. There is a dusky indication of the black stripe, and on obtaining the dress of maturity the feathers above the green collar become edged with rose, and a narrow edging of black begins to appear where the broad black stripe eventually is put on. At the same time the hind neck becomes tinged with azure-blue.

Obs. Ceylonese examples of this Parrakeet average smaller than Indian. I have not met with a male which exceeded

6·6 in the wing, the usual size being 6·3, while several which I have examined from various Indian localities, such as Kamptee, Mysore, Hyderabad, &c., measure as much as 6·7; they are, however, no larger in the bill than insular examples, the measurements of this organ in several being 0·45, 0·43, 0·46 (height at front). The finest specimens I have seen in Ceylon were from the north; I noticed, on the contrary, that Hambantota birds were smaller than those from other parts of the island.

Distribution.—This pretty Parrakeet is very abundant in the districts which it affects; it is an inhabitant of all the dry low-country parts of Ceylon, and is more abundant on the seaboard and the adjacent maritime regions than in the interior. It is very partial to the cocoa-nut and palmyra districts on the east and north coasts; commencing, therefore, at the Jaffna peninsula, where it is common, we find it more or less plentiful down the east coast and round the east corner of the island to the Girawa Pattu, or "Province of Parrots," beyond the western boundary of which it is rarely seen. From there up the west coast, as far as the district immediately to the north of Negombo, it is absent; here it reappears again, and is very abundant about Chilaw, where it was noticed particularly by Layard, likewise at Puttalam and throughout the Seven Korales to the base of the Kurunegala and Matale hills, along which it is tolerably numerous. Along the west coast to Manaar, and thence northward to Jaffna, it is very common. It occurs in suitable localities throughout the northern forest tract, and in portions of the Park country, as well as at the base of the Medamahanuwara, Madulsima, and Haputale ranges, but I do not know of its ascending to any elevated patnas.

This species is common throughout all India, from the south of the Madras Presidency to the foot of the Himalayas. It is a denizen of the low-lying parts of the country as in Ceylon; for I do not find it recorded from any elevation of consequence either in the north or south. Its range extends into the north-western parts of India. Captain Butler notices it as very common in Northern Guzerat, as well as on Mount Aboo, and Mr. Hume the same as regards Sindh. In Burmah it is likewise common, and extends down the peninsula to the latitude of Penang. It was introduced into the Andaman Islands by Col. Tytler, but Mr. Hume says it has now entirely disappeared. It is also found in North-eastern Africa and Senegambia.

Habits.—The Rose-ringed Parrakeet frequents openly-timbered plains, scrubby land in the vicinity of cocoanut cultivation, low jungle along the sea-coast, and, in fact, all localities where it can obtain an abundance of wild berries and fruit to subsist on. Like the last species it assembles in flocks, but of far greater number, to roost among the cocoanut-trees, often in the midst of a village, and even, as at Trincomalie, in the centre of a town. It commences to return from its feeding-grounds at an early hour; and often about 4 o'clock in the afternoon I have watched little troops of a dozen or more glancing over the tops of the trees, and sweeping across open places in the jungle, or twisting through a palmyra-grove with surprising quickness, towards their evening haunt, their light green plumage glittering in the rays of the declining sun, while the foremost of the flock uttered his shrill but not unpleasant note, as if to cheer his companions on. In the early morning it is marvellous with what celerity they spread themselves over the whole surrounding country, branching off in little parties, probably the same which returned together on the preceding evening, as if they were resolved to reach a certain spot by a given time or they would find their breakfast vanished!

They feed for about three hours, and then towards 10 o'clock settle about in twos and threes in the thick foliage of shady trees, and remain silent, suddenly darting off with a scream when disturbed. They are very difficult to see when seated thus among leaves, and unless they were to fly off on the approach of man, would with difficulty be observed. In the evening they become, like the last species, regardless of a gun, and are often shot in large numbers by the natives, who wait beneath the trees as they return to roost. They feed chiefly on berries, but they can, as Jerdon remarks, be very destructive to grain. Burgess, as noted by the Doctor in his 'Birds of India,' remarks that they carry off the ears of corn to trees to devour at leisure. When looking for a tree in fruit, I have seen them, as Jerdon noticed, "skimming close to and examining every tree; and when they have made a discovery of one in fruit, circling round, and sailing with outspread and down-pointed wings till they alight on the tree." I have often wondered at the skill with which flocks of this Parrakeet glance and twist between the trunks of a tolerably thick palmyra-grove, flying with arrow-like speed, and do not strike against them; but it appears that sometimes they are not quick-sighted enough, for it is on record that they have flown against the walls of houses and been killed. The Shahn Falcon preys on this species, and some observers say that Owls kill them at night. Its note is shriller and shorter than that

of the large bird, and is much uttered in the mornings and evenings. It is noteworthy that caged specimens in England always become noisy, even in the long summer evenings, about 5 or 6 o'clock, the exact time of going to roost in their native country.

Layard writes the following account of a large colony of these Parrakeets at Chilaw :—"Hearing of the swarms which resorted to the spot, I posted myself on a bridge some half a mile away, and attempted to count the flocks that came from one direction, eastward, over the jungle. About five o'clock in the afternoon straggling bodies began to wing their way homeward, but many of them came back again to pick up the scattered grains left on the fields near the village; about half-past five, however, the tide fairly set in, and I soon found I had no flocks to count—it was one living screaming stream: some high in the air winged their way till over their homes, when, with a scream, they suddenly dived downwards with many evolutions until on a level with the trees; others flew along the ground rapidly and noiselessly, now darting under the pendent boughs of some mango or solitary tree, now skimming over the bridge close to my face with the rapidity of thought, their brilliant green plumage shining in the setting sunlight with a lovely lustre.

"I waited at this spot till the evening closed in, and then took my gun and went to the cocoanut-tope which covered the bazaar. I could hear, though from the darkness I could not distinguish, the birds fighting for their perches; and on firing a shot they rose with a noise like the rushing of a mighty wind, but soon settled again, and such a din commenced as I shall never forget."

This is the most commonly domesticated of the Ceylonese Parrakeets, and is a great favourite with Europeans and natives; it learns to talk well, and is very often brought home to England as a pet.

Nidification.—This species breeds in holes in trees, often at a considerable height from the ground, and lays four or five white eggs on the dead wood at the bottom of the cavity. The mouth of the hole is, Mr. Hume remarks, very neatly cut, circular, and about 2 inches in diameter. The nesting-time is in March and April; and the hen bird is given to sitting very close, for Captain Butler writes that he had to push one off her nest with his hand, and even then she would not leave the hole, although there were no less than three entrances by which she might have escaped. The eggs, which are of course white, are devoid of gloss, and are broad ovals in shape; they measure as the average size, according to Mr. Hume, 1.2 by 0.95 inch.

PALÆORNIS CYANOCEPHALUS.

(THE BLOSSOM-HEADED PARRAKEET.)

Psittacus cyanocephalus, Linn. Syst. Nat. p. 141 (1766).

Psittaca bengalensis, Brisson, Orn. iv. p. 348 (1760); Gm. Syst. Nat. i. p. 325 (1786).

Psittacus indicus, Lath. Ind. Orn. i. p. 86 (1790).

Palæornis cyanocephalus, Blyth, Cat. B. Mus. A. S. B. p. 5 (1849); Kelaart, Prodromus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 264; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 616 (1856).

Palæornis rosa, Jerdon, B. of Ind. i. p. 259, et Ibis, 1872, p. 6; Holdsworth, P. Z. S. 1872, p. 425; Legge, Ibis, 1874, p. 14; Gould, B. of Asia, pt. xxvi. (1874); Legge, Ibis, 1875, p. 282.

Palæornis bengalensis, Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 208.

Palæornis purpureus, Hume, Nests and Eggs (Rough Draft), p. 116 (1873); Hume, Str. Feath. 1873, p. 433; Ball, Str. Feath. 1874, p. 390; Brooks, ibid. 1875, p. 232; Butler, ibid. p. 457.

La Perruche à tête bleue, Brisson, Orn. iv. p. 359, pl. 19. fig. 2; *Blossom-headed Parrakeet*, Latham, and Gould, Birds of Asia; *Rose-headed Parrakeet*, *The Ashy-headed Parrakeet* (Kelaart).

Faraida, lit. "the plaintive or complainer," Beng.; *Tui-suga*, Nepalese; *Tiua-tota*, Hind. in the south; *Bengali-tota*, in the Punjaub; *Rama-chilluka*, Telegu.

Battoo girawa, *Malitchia*, Sinhalese; *Killi*, Ceylonese Tamils.

Adult male. Length to front of cere 12.0 to 13.6 inches; culmen 0.8; total length varying from 13.0 to 14.0; wing 5.1 to 5.25; tail 7.0; tarsus 0.5; outer anterior toe and claw 1.0; depth of upper mandible at cere 0.37.

Iris white, pale yellowish white, or greenish white, with a dusky or greyish inner circle, which latter is divided sometimes from the pupil by a whitish ring; cere olivaceous green; eyelid olive-brown; bill, upper mandible orange-yellow, variable in depth of hue, and in some with a dusky tip, lower mandible black or blackish brown*; legs and feet dusky sap-green, claws plumbeous with dusky tips.

Head, face, and nape covered by a cap of flame- or rose-red, which is bounded beneath by a narrow black collar and overlaid gradually from the crown and cheeks downwards with delicate blue; the black collar is concealed by the overlying cap on the hind neck and widens below the cheeks, passing up by the base of the bill to the gape; below this collar the neck is encircled with verdigris-green, varying in extent, and passing into the yellowish green of the back and scapulars; wings, rump, and upper tail-coverts verditer-green, brightest on the latter parts; quills brown internally and with a fine yellow outer margin; a dark red spot on the median wing-coverts; middle pair of tail-feathers blue, washed with green at the base, and with deep white tips, the rest green with the tips yellowish and bases of inner webs rich yellow; beneath yellowish green, more verdant on the lower parts and under tail-coverts; axillaries and under wing-coverts pale emerald-green.

Individuals vary in the hue of the rump and the depth of the white tail extremities; and many that have attained the adult cap, but have not arrived at the full age of maturity†, have a greenish-yellow semi-collar below the green ring, and a more yellowish hue on the back, tertials, and under surface.

* Like other Parrakeets this species usually has the bill so discoloured that it is difficult to tell what its colour really is.

† This is difficult to define, for, as Capt. Hutton remarks from observation of caged birds (Str. Feath. vol. i. p. 344), each subsequent year after the third "only adds to the richness of colouring."

Female. Less than the male; wing 4·9 to 5·1 inches. Upper mandible yellow; lower dusky or blackish. The cap is dull plum-blue, wanting the black collar and mandibular stripe, and bounded by a yellow ring clearly defined on the sides of the neck; back brownish green; wings wanting the red shoulder-spot; chest washed with yellowish.

Young. The nestling is clothed with green feathers; the bill is at first black, changing in the male, at about a fortnight old, into yellow.

The bird of the year has the bill greenish yellow, dusky along the culmen; iris white, tinged with green; legs and feet plumbeous green.

Plumage green throughout, brightest on the rump and lower back, paling slightly on the forehead, and with the hue of the hind neck rather light, contrasting somewhat with the dark green of the nape; the central tail-feathers are rather short and washed with blue, the tips being whitish.

In the next stage the forehead becomes paler and the head bluish, with a dusky edge bordering the lower mandible; the central rectrices are blue, as in the adult, but with less of the white colour at the extremities.

Lutinos of this Parrakeet are occasionally met with. A beautiful example, in perfect luteous plumage, was given to His Royal Highness the Duke of Edinburgh by the Mudliyar Jayetilke of Kurunegala.

Obs. Ceylonese examples of this Parrakeet are, as a rule, smaller than Indian, among which northern birds seem to be the largest. The wings of five males from India are as follows—Madras, 5·3 inches; Bengal, 5·4; Bengal, 5·5; Nepal, 5·7; Nepal, 5·3: those of two females—Bengal, 5·2; "India," 5·4. The coloration of the rose and blue cap corresponds with that in the insular bird.

The Burmese bird, the *Pal. rosa* of Boddaert, founded on plate 888, Pl. Enl., which was long confounded with this species, has the head less covered with the azure hue, the axillaries and wing-lining *blue*, and the female has the red wing-spot as well as the male. Mr. Blyth, who published a remark on the subject in the 'Ibis,' 1870, appears to have brought the fact of these differences to the notice of Mr. Gould. Both species are beautifully figured in Mr. Gould's great work on the 'Birds of Asia;' but unfortunately in the letterpress the specific names have, I conclude, by a *lapsus calami* become inverted; the Indian bird is called *rosa* and the Burmese *cycanocephalus*. He remarks, in the commencement of his article on the Indian bird headed *Pal. rosa*, that it should bear the name of *P. cycanocephalus*, founded on the "Perruche à tête bleue," Brisson, Orn. iv. p. 359, pl. 19. fig. 2; so that the mistake is apparent at a glance. The Burmese bird *Pal. rosa* is, I observe, styled *Pal. bengalensis* by writers in 'Stray Feathers,' this name being in reality a synonym of *Pal. cycanocephalus*.

Distribution.—This beautiful Parrakeet is abundant in many parts of the low country, and tolerably plentiful in the coffee-districts up to an elevation of about 4000 feet. It is not, as a rule, found very near the sea-coast. In the Galle district it is first met with about 15 miles inland, and is common from there up to the Morowak Korale, wherein the country and vegetation suit its habits. In the interior of the Western Province, from Aviswella to Ratnapura and through the Saffragam valley to the district lying to the south of Haputale, as also in the Pasdun and Raygam Korales, it is a common bird. I have seen it about 10 miles inland from Kalatura. Mr. Parker writes me that it is not found nearer Puttalam than Uswewa, and northward of this it keeps to about the same distance from the sea; further inland about Kurunegala and in most parts of the Seven Korales, as well as along the base of the hills to Dambulla, it is tolerably plentiful. Beyond Anaradjapura it becomes scarcer, being only found in certain suitable localities. In the Jaffna peninsula I have not seen nor heard of it. It appears not to be found near Trincomalie, but to the south of the Virgel I once met with it, and that, too, at no great distance from the sea. It is not uncommon in the Eastern Province and about Nilgalla. In the Magam Pattu it frequents the cheenas of the natives. As regards the Central Province, it is common in the Knuckles, Pusselawa, Deltota, Maturata, and other districts round Kandy. In the vicinity of Badulla and in Madulsima it is likewise tolerably plentiful.

On the continent Jerdon says that "it is found more or less throughout India, extending into the Himalayas." It is common on the Malabar coast and in the jungles of the Carnatic and in the Eastern Ghâts. Mr. Bourdillon does not seem to have met with it in the Travancore hill-region, but Mr. Fairbank says that it is common on the Palani hillsides up to 4000 feet; the same writer remarks that it is common along the hills in Khandala, and visits the Deccan at some seasons in flocks. Mr. Ball says that it is found in most parts of Chota Nagpur, but at the same time it is somewhat local; it is likewise common about the Sambhur

Lake ; and throughout the entire north-western region of Mount Aboo and Guzerat it is found, not frequenting, however, the parched-up province of Sindh, which is only to be expected, seeing that it is a bird which loves a luxuriant country. It inhabits the plains at the foot of the great Himalayan range, extending into those mountains up to 5000 feet, but giving place as it goes eastwards to the Burmese bird, *P. rosa*, which ranges as far westward as Nepal.

Habits.—In the Central Province this Parrakeet frequents chiefly the patnas on the hillsides and the vicinity of the paddy-fields of the natives in the valleys. In the low country it is partial to wooded lands near rice-fields, open glades, cheenas, and clearings generally in the jungle. It forms one of the most pleasing ornithological features of Ceylon, what with its gay plumage and its restless disposition, leading it to dash about in small parties, which glance with the swiftness of an arrow down the valleys and ravines of the verdant forests, and make these lovely spots re-echo with its musical whistle, while its bright green attire contrasts with the many-coloured foliage of the woods. It perches much on the very tops of trees, balancing itself on the smallest leafy twig, and remains perfectly motionless until started into flight by the approach of danger. Mr. Ball remarks that the way in which these birds conceal themselves in trees is a matter of surprise, and hints that it is apparently not only the colour but the position in which they perch that accounts for their similarity to the surrounding foliage. In hot weather in Chota Nagpur they choose the Sal tree (*Shorea robusta*), and one may approach within a few feet of the birds without being able to distinguish a single individual. I have myself observed the same thing with *Palæornis torquatus*, when perching or feeding in a tree with small light-green roundish leaves, the name of which I am not acquainted with.

The present species is very fond of dead trees, which usually stand in cheenas in the low-country jungles ; it climbs actively about the branches of these, using its bill, and shows its plumage off to advantage against the charred wood. Its flight is very swift indeed, and when shooting down a ravine it proceeds with an oscillating or side to side motion, its wings half-closed, at a speed surpassed by few birds in Ceylon. Its note is a clear and high-pitched musical whistle, which is usually uttered on the wing ; it is possessed of considerable vocal powers, and can be taught, in confinement, to whistle tunes, Captain Hutton recording an instance of one which whistled many familiar airs. It is not, however, kept as a caged bird in Ceylon to such an extent as either of the foregoing species.

It is most destructive to the grain fields of the natives, devouring enormous quantities of Kurrukan, which is in many wild parts of the forests the only edible seed they cultivate ; it also attacks the brinjals and small red cucumbers which are much grown on newly burnt cheenas. Large flocks take up their quarters in these localities and resist all attempts to drive them away, returning immediately after being shot at, and settling on the tops of their favourite dead trees until they can again with safety renew their pillaging on the vegetables of the unfortunate half-starved cultivators.

Nidification.—This Parrakeet breeds from February until May in the western parts of Ceylon, nesting in holes in the smaller limbs of dead trees. I once found its nest in a mere sappling but a few inches in diameter ; at the bottom of the cavity were a number of dry pellets of earth, which made it apparently rather uncomfortable for the 4 young ones which were huddled together in it. They bore their own nest, choosing a partially decayed piece of wood, which they follow up into the centre of the branch, making the egg-cavity larger than the entrance. The eggs are laid on the dead wood, and the female is a very close sitter. The eggs are usually four in number and are pure white, the shell being devoid of gloss ; they average 1.0 by 0.81 inch.



FIGURE 1. WITH THE
FOLLOWING

PALÆORNIS CALTHROPÆ.

(LAYARD'S PARRAKEET.)

(Peculiar to Ceylon.)

Palæornis calthropæ (Layard), Blyth, J. A. S. B. 1849, xviii. p. 800; id. Cat. B. Mus. A. S. B. p. 340 (1849); Kelaart, Prodrum, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 263; Bonap. Rev. et Mag. de Zool. 1854, p. 263; Gray, List Psittacidæ Brit. Mus. p. 22 (1859); Schlegel, Mus. P.-B. *Psittaci*, p. 83 (1862); Finsch, Papageien, p. 53 (1868); Holdsworth, P. Z. S. 1872, p. 426; Layard, P. Z. S. 1873, p. 204*; Legge, Ibis, 1874, p. 14; Hume, Str. Feath. 1874, p. 18; Gould, B. of Asia, pt. xxvi. (1874); Legge, Str. Feath. 1875, p. 200; Walden, Ibis, 1874, p. 288.

Palæornis cathrapæ, Blyth, Ibis, 1867, p. 294.

Palæornis girronieri, J. & E. Verr. Rev. et Mag. de Zool. 1853, p. 195.

Psittacus viridicollis, Cassin, Pr. Philad. Acad. 1859, p. 373.

Layard's Purple-headed Parrakeet (Kelaart); *The Ceylon Parrakeet, The Hill-Parrot, Europeans in Ceylon.*

Alloo-girawa, Sinhalese, Central Province.

♂ *ad.* suprâ grisescens flavido adumbratus, capite puriùs pallidè purpurascenti-griseo, fronte, loris, regione paroticâ et facie anticâ viridibus: regione paroticâ posticâ pileo concolori, genis posticis nigris ad fasciam brevem cervicalem nigram productis: collo postico latè smaragdineo fasciam collarem conspicuam formante: alâ saturatè viridi, remigibus intùs nigris, tectricibus alarum interioribus flavicanti-viridibus: dorso postico, uropygio et supracaudalibus pallidè purpureis, his vix flavido lavatis: caudâ sordidè purpureâ, rectricibus flavo terminatis, exterioribus quoque intùs sordidè viridibus, extùs purpureis: corpore subtùs latè viridi, gutture imo et praepectore smaragdineo lavatis: subcaudalibus et caudâ subtùs flavis, illis viridi lavatis: subalaribus smaragdineis, majoribus et remigibus infrâ cinerascens: maxillâ scarlatinâ, mandibulâ saturatè rubrâ, apicaliter flavâ: pedibus fusciscenti-viridibus: iride flavicanti-albâ.

♀ *ad.* mari similis, sed mandibulâ nigrâ distinguenda.

Adult male and female. Length to front of cere 10.6 to 11.0 inches; culmen 1.05; total length of the larger about 12.1; wing 5.4 to 5.6; tail 5.8; tarsus 0.6; outer anterior toe and claw 0.98 to 1.0; greatest height of upper mandible 0.47.

Male. Iris yellow-white, or white, or greenish white, with a bluish-grey outer circle; cere dusky greenish; bill, upper mandible coral-red, yellowish at tip, lower dusky red; legs and feet dusky greenish, plumbeous green, or plumbeous. Head, nape, and cheeks faded leaden blue, changing into green on the region round the eye and at the base of the upper mandible, and blending into a broad black border below the cheeks, which extends across the throat (more so in some specimens than in others); across the hind neck a broad emerald-green collar, blending into the green of the chest and under surface; the hind neck below the collar, interscapulars, and scapulars greenish grey, with a bluish cast, changing into pale greyish blue on the back, rump, and upper tail-coverts, the latter part tinged with green on the longer feathers.

Wings green, the median secondary coverts pale at the extremities; lesser coverts just above the forearm bluish; 1st primary and inner webs of all the quills brown; tail French blue, tipped deeply with yellow, the inner webs of all the lateral feathers washed, and the outer webs finely edged with green; the tail beneath yellowish; under tail-coverts yellowish, tipped and edged green; under wing-coverts green.

* I am informed that the correct orthography of this Parrakeet's specific name should be *calthorpæ*, as the family name was Calthorp, and not Calthrop. However, Layard says here, "I have to thank Mr. Holdsworth for restoring the true reading of this name." I therefore leave the matter as it is.

The colours of this Parrakeet appear to be much affected by the sun's rays; the head and back lose their brightness, and become pervaded with a greyish hue, altering much the delicate character of the plumage. Specimens likewise fade after preservation.

Female. Bill, upper mandible black, lower blackish, tinged with reddish. The green on the lores and orbital region less in extent, and the centre of the back (as far as I have observed) more brilliant than in the male. As the coloration of the female's bill has been the subject of some controversy, I may remark that Mr. Holdsworth first pointed out that it was black. Adults of both sexes have sometimes, when in rich plumage, a slight cobalt-hue wash on the forehead and cheeks.

Young. Iris whitish; bill (male) pale orange, (female) upper mandible dusky black, lower reddish; feet and legs plumbeous.

Birds of the year are dull green above and yellowish green beneath; the head darker than the back and sometimes with a bluish tinge; there is an indication of the green collar on the hind neck; the back and rump cobalt-blue (brighter than the adult); tail green, washed with blue, tipped and edged internally with yellow towards the extremities, lower feathers of the upper tail-coverts green; some individuals have the tail bluer than others.

Obs. This species comes nearer the South-Indian Parrakeet (*Pal. columboides*) than any other, but has not even much in common with that. There is, however, a slight general resemblance in the two birds, which is in accordance with the relationship displayed between the avifaunas of the regions in question. *Pal. columboides* has the wing 5.7 to 6.0, and is therefore a larger bird, with a correspondingly longer tail. The black ring in this species completely encircles the neck, the under surface is slaty instead of green, the rump is green instead of blue, and the primaries and their coverts obscure blue.

Distribution.—The Ceylon Parrakeet was discovered by Layard, who writes thus concerning it in the 'Annals and Magazine of Natural History' for 1854:—"My first acquaintance with this lovely bird was at Kandy, where I killed a male and female at one shot from a flock flying over my head; I took them for the common *P. torquatus* until I picked them up, and then great was my delight to find such an elegant new species. It proves to be the common Parrakeet of the hilly zone, and I have traced it to all parts of it." As Layard remarks, this species is distributed throughout the hills of the Kandyan Province; but it is singularly local as regards some parts, small districts here and there appearing to be surrendered almost entirely to the last species. Of such I may mention portions of the Pusselawa, Hewahette, and Kalebokka valleys, as well as parts of Dumbara, where, in the month of November, I have met with numbers of *P. cyanocephalus*, to the almost entire exclusion of the present Parrakeet. It is numerous about Kandy and Peradeniya, and also Deltota, in Upper Hewahette, Poondoloya, most parts of Uva, Madulsima, and Haputale, while it is still more abundant in Maskeliya, Dickoya, and throughout the Peak forests at intermediate altitudes. In the south it is numerous in the Morowak Korale, and very abundant indeed in the higher parts of the Kukkul Korale, notably in the Singha-Rajah forest, concerning which region I wrote, in my paper "On the Distribution of Birds in the Southern Hill-region of Ceylon" ('Ibis,' 1874), that I considered it more abundant there than in any other part of the island, a conclusion to which I still adhere.

It was thought for many years to be an inhabitant only of the hills, an idea which obtained on account of the very imperfect exploration of the forests round the base of the central zone, and the repeated working of naturalists over certain beaten tracks. In 1870 I first met with it in the low country, down in the valleys adjacent to the Hinedun Kanda or Haycock Hill, and was somewhat surprised at finding it there, while I had not seen nor heard it in the Odogamma or Opaté forests, a district lying higher than the one in question. My next meeting with it was in the park-like woods lying between "Westminster Abbey" and Kollunpitiya, on the new Batticaloa road, and which are studded with those remarkable rocky hills so characteristic of the Eastern Province. I subsequently found it about Nalanda, and all round the base of the Matale Hills, from Dambulla to Kurunegala: beneath the Ambokka range it is abundant. The greatest extent of low country, however, over which it is spread lies in the Western Province, between Ruanwella and Pelmadulla. I found it close to Ukawatta, about 26 miles from Colombo, where it was frequenting the tall timber-forests; it was also very common in the Kuruwite forests, and thence up to Gillymally, as well as in other parts of the valley of

Saffragam. Beyond the Karawita hills, which lie to the south of the Kaluganga, I again met with it in the forests of the northern or lower part of the Kukkul Korale, and traced it into the Pasdun Korale as far as the remote and sequestered village of Moropitiya. Nearer the sea than this locality I did not find it. In the south its coast-wise limit appears to be the vicinity of the Haycock, and in the east that of "Westminster-Abbey" hill.

From the above remarks it will be seen that this Parrakeet spreads into the low country at all points connected with an adjacent forest-covered range, in which it is numerous.

As regards the altitude to which it ascends, I have seen it between 5000 and 6000 feet above Maturata, at a similar height in the Wilderness of the Peak and in Haputale, and Dr. Kelaart records it from Nuwara ELLIYA, though neither Mr. Holdsworth nor Mr. Bligh met with it there.

Habits.—Layard's Parrakeet frequents the outskirts and open places in the interior of forests, patna-woods, wooded gorges, and glades in the vicinity of hills; it associates in moderately-sized flocks, and is a very noisy and restless bird, uttering its harsh "crake" on the wing, as it dashes up and down the magnificent valleys and forest-clad glens of the Ceylon mountains, and enlivens these romantic solitudes with its swift and headlong flight. It is entirely arboreal in its habits, settling in flocks among the leaves of its favourite trees, and silently devouring the fruit-seeds and buds on which it subsists. It is very partial to the wild fig, the fruit of the Kanda-tree (*Macaranga tomentosa*), the wild cinnamon-tree, and the flowers of the Bomba-tree. After feeding in the mornings it becomes garrulous, assembling in small parties in shady trees, and keeping up a chattering note almost similar to that of *Layarda rufescens*; towards evening it commences to feed again, and before going to roost roams about in small flocks, constantly uttering its loud harsh note, and settling frequently on the tops of conspicuous and lofty trees. In the Singha-Rajah forest their presence at evening was more conspicuous than that of any other bird; they darted up and down the deep gorges and across the small Kurrakan clearings in the forest, keeping up an incessant din; now and then they rested on the top of some dead tree standing in the cheena, and then suddenly glanced off, shooting with arrow-like speed between the trees of the forest, again to appear as they swept up the valley and away over the top of the gloomy jungle.

Its flight is bold and swift, but not of that glancing character peculiar to the last species; and this, together with its harsh cry, which can be heard a long way off, seems to distinguish it easily from *Pal. cyanocephalus*.

Nidification.—The breeding-season commences in January. It nests in holes in large trees; but I have never been able to procure the eggs, although I have more than once discovered the nest. I have seen one situated in a Hora-tree (*Dipterocarpus zeylanicus*); the old birds, on flying to it, clung to the bark outside the opening, and then pulled themselves into the hole, using the beak to assist them in entering. Layard writes that he was informed by natives that they laid two eggs, which, like those of other members of the family, would be pure white. In the Peak Wilderness they breed in the decaying trunks of dead Kitool-trees.

The figures on the Plate are those of an adult female in the foreground, with a slightly abnormal amount of black below the cheeks, and a young male from Kaloday, Eastern Province, in the background, which should have been drawn with the back turned to the front, so as to show the peculiarly light blue on the rump of immature males. Unfortunately, however, the requirements of the author and the tastes of the artist are sometimes at variance. I had wished that these birds should be figured on the "Jambu-tree," a sketch of which, by Sir Chas. Layard, I furnished my artist with; but it was not found suitable, and he has introduced the common fig-tree of Europe instead.

PSITTACI.

Fam. TRICHOGLOSSIDÆ.

Bill with the upper mandible long, compressed gradually from the base, the tip rather straightened and acute; under mandible *longer than it is high*, the tip less obtuse than in the *Psittacidae*.

Genus LORICULUS.

Bill with the upper mandible long, gently curved, compressed; margin with a slight lobe near the base; cere rather advanced; under mandible shallow and considerably elongated. Wings long, with the 2nd quill the longest, and slightly exceeding the 1st and 3rd. Tail short, rounded, scarcely exceeding the closed wings. Tarsus very short. Toes long, the outer anterior much exceeding the inner, which is about equal to the tarsus; claws stout, long, and well curved.

LORICULUS INDICUS.

(THE CEYLONESE LORIKEET.)

(Peculiar to Ceylon.)

Psittacus indicus, Gm. Syst. Nat. i. p. 349 (1788).

Psittacus asiaticus, Lath. Ind. Orn. i. p. 130 (1790).

Psittacula indica, Briss. Orn. iv. p. 390 (1760).

Psittacula coulaci, Lesson, Tr. d'Orn. p. 202 (1831).

Loriculus asiaticus, Blyth, J. A. S. B. 1849, xviii. p. 801; Kelaart, Prodrömus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 261; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 628 (1856).

Loriculus indicus, Bonap. Rev. et Mag. de Zool. p. 155 (1842); G. R. Gray, List Psitt. Brit. Mus. p. 55 (1859); Schlegel, Mus. P.-B. *Psittaci*, p. 132 (1864); Walden, Ibis, 1867, p. 467; Holdsworth, P. Z. S. 1872, p. 426; Legge, Ibis, 1874, p. 15.

Loriculus edwardsi, Blyth, Ibis, 1867, p. 295; Nevill, J. A. S. (Ceylon Br.), 1870-1, p. 32.

Coryllis indica, Finsch, Papag. ii. p. 714 (1868).

The smallest Red-and-green Parrakeet, Edwards, Glean. pl. 6 (1743); *Red-and-green Indian Parrakeet*, Lath. Synopsis (1781), also *Red-rumped Parrakeet*, Lath. Gen. Hist. (1822); *Das ceylonische Papageichen*, Finsch, Papag.; *The Small Ceylon Parrakeet*, Kelaart; *The Ceylon Love-bird* of travellers.

Gira-malitchia, *Pol-girawa*, lit. "Flower Parrakeet," Sinhalese.

Similis *L. vernali*, sed capite et occipite rubris, nuchâ flavo adumbratâ diversus. Juv. capite viridi dorso concolori distinguendus.

Adult male and female. Length to front of cere 5.1 to 5.2 inches; culmen 0.55; total length averaging 5.7 to 5.8; wing 3.6 to 3.8; tail 1.7; tarsus 0.4; outer ant. toe and claw 0.75.

Iris white; bill light orange-red, paler at the tip, lower mandible paler than the upper; legs and feet dusky yellow; cere yellow.

Lower hind neck, back, and wing-coverts leaf-green; forehead and front of crown rich deep red, gradually becoming overcast with an orange hue on the nape, and fading into the green of the hind neck; the upper part of the back is more or less pervaded with a dull golden cast; rump and upper tail-coverts deep red, outer webs of quills and the tail dark green; inner webs of primaries above dark hair-brown, 1st quill with a fine greenish-blue edging; beneath the inner webs of the quills and the lower surface of tail verditer-blue. Cheeks, region round the eye, and entire under surface pale green, washed with bluish across the fore neck.

Young. Iris dull grey or olive; bill dusky yellow; legs and feet olivaceous yellow, claws blackish. Head above green, with the forehead pale, and an aureous cast on the crown; rump and upper tail-coverts as in the adult; fore neck without the bluish tinge. Birds of the year are full-sized.

Lutinos of this species are not uncommonly met with. A description of a beautiful example is given by Mr. Nevill, of the Ceylon Civil Service (*loc. cit.*), as follows:—"Crown of the head and rump brilliant scarlet, shading into metallic orange on the rump; back vivid golden yellow, dappled with emerald-green, and tinged in places with orange; wings green, mottled with bright yellow; quills of the normal colour, tipped with yellowish white; beneath bright but paler yellow than the back, mottled with bright pale grass-green; throat yellowish; cheeks rufescent; under wing-coverts mottled green, yellow, and straw-colour."

Obs. *Loriculus apicalis*, from the Philippines, is very close to this Lorikeet: a specimen in the British Museum, from Mindanao, is scarcely separable in any other point but the coloration of the head, which is pale or yellowish red; the hind neck wants the aureous wash, and the throat has only a very faint wash of blue on it. *L. indicus* also resembles the Indian and Andaman species, *L. vernalis*, in most points, differing from it chiefly in the head. The latter bird has the head grass-green, concolorous with the back, with the forehead brighter than the crown, and the hind neck wanting the aureous colour of *L. indicus*; the red on the rump does not extend so high up the back; the coloration of the tail and wings is almost identical with that of the insular bird. The wing varies from 3.5 to 3.75 inches, or much the same as in *L. indicus*.

Distribution.—This pretty little bird, so well known as a caged pet to travellers who touch at Point de Galle, by whom it is generally styled the "Love-bird," is widely distributed throughout the low country of the island, and is commonly located in the hills up to an elevation of 3500 feet. In the south-west of the island it is extremely abundant, frequenting the cocoanut-groves close to the port of Galle, as well as the entire semi-cultivated interior of that district. Further up the west coast it is not common near the sea, but in the openly wooded and partly cultivated portions of the Western Province it is abundant; and in the Ratnapura and Kurunegalla districts is quite as numerous as about Galle. To the north of the Seven Korales it is less plentiful; but I have met with it here and there throughout all the forest-tracts of this part of the island, and in the N.E. monsoon have seen it in the woods near Fort Osterburgh, Trincomalie. I have noticed it again in many parts of the Eastern Province, but I do not think it is as generally distributed there as in the west. Layard found it abundant about Hambantota, but I did not observe it at all in that district during two visits I made to it; in the north of the Magam Pattu I found it, but not on the scrubby sea-board near Hambantota. In the Central Province it is common about the patnas in Dumbara and Pusse-lawa and in many parts of Uva, and during the dry weather prevalent in the N.E. monsoon ascends above an altitude of 4000 feet. Mr. Thwaites, of Hakgala, informs me that he has seen it in the gardens at that season of the year.

This little bird is not very aptly styled *indicus*; but Gmelin, who named it from the figure in Edwards's plate, did not know from what exact locality he received his specimen, as all the information which Edwards could give about it was contained in the words, "brought from some Dutch settlement in the East Indies." When the bird became better known it was apparent that this settlement was Ceylon.

Habits.—The Ceylon Lorikeet frequents woods, detached groves of trees, compounds, native gardens, patnas dotted with timber, and, in fact, any locality which is clothed with fruit-bearing trees or those whose

flowers afford it its favourite saccharine food. It is a most gluttonous little bird, constantly on the wing in active search for its food, darting with a very swift flight through the woods, uttering its sibilant little scream, its bright plumage flashing in the rays of the tropical sun. When it reaches a tree which attracts its attention it instantly checks its headlong progress, and alighting on the top, actively climbs to the fruit which it has espied, or should the tree prove barren, after giving out its call-note for a short time, darts off, perhaps in the opposite direction from which it came. It is excessively fond of the "toddy" or juice which exists in the Kitool or sugar-palm (*Caryota urens*), and feeds on it to such an extent that it becomes stupified and falls an easy captive to the natives, who cage it in large numbers for sale at Point de Galle.

While in a state of captivity they are fed on sugar-cane, of which they are very fond, but they do not live for any length of time should the supply of cane come to an end. It feeds so gluttonously on the beautiful fruit of the Jambu-tree that I have seen bird after bird shot out of one tree without their companions taking the slightest notice of the gun or the death of so many of their little flock*. When held up by the legs, after being shot, the juice of this fruit pours from their mouths and nostrils. The flowers of the cocoanut-tree come in for a large share of its patronage, as do also those of other trees, on the "cups" or calyces of which it subsists, biting them off in a pendent attitude. Layard writes that "at Gillymally they were in such abundance that the flowering trees were literally alive with them; they clung to the bright scarlet flowers head downwards, or scrambled from branch to branch, while the forest echoed with their bickerings. They bit off the leaves (which fell like scarlet snow upon the ground) to get at the calyx; and when this dainty morsel was devoured they flew off to the banana-trees, down the broad leaves of which they slid and fastened upon the ripening clusters of fruit or the pendent heart-shaped flower."

When roosting at night they sleep hanging by their feet from the perch.

The figure in the Plate facing my article on *Palæornis calthropæ* is that of an adult bird, and that on the Plate of *Xantholema rubricapilla* an immature or yearling individual.

* I have observed the same of *Trichoglossus pusillus* in Australia, which it is sometimes impossible to drive from a tree laden with ripe cherries otherwise than by vigorously shaking the stems!

Order PICARIÆ.

Distinguished from the *Passeres* by the presence of a double notch in the posterior margin of the sternum. Bill not toothed. Wing with ten primaries. Feet in the Scansorial section arranged in pairs, two in front and two behind; in others simple, and arranged three in front and one behind.

Fam. PICIDÆ.

Bill straight, pointed or wedge-shaped at the tip. Head generally crested. Tail of twelve feathers, with the shafts rigid and stout. Feet zygodactyle, one of the posterior toes sometimes wanting.

Skull very strong. Tongue very long and extensile, and furnished at the tip with barbs. Sternum with a double notch in the posterior edge.

Subfam. PICINÆ.

Bill moderate or long, compressed, with the tip wedge-shaped, the ridge acute, and the lateral ridge just above the nostrils and *very* pronounced; the gonys long. Feet large; the outer posterior toe longer than the outer anterior one; the inner posterior toe always well developed.

Genus PICUS.

Bill of medium size, culmen nearly straight and sharp, lateral ridge parallel to the culmen and continued forward till it meets the margin. Nostrils concealed by a tuft of feathers. Wings with the 1st quill very short, the 2nd considerably shorter than the third, and the 4th and 5th the largest. Tail with the shafts stiff and decurved, the tip forked. Tarsus longer than the anterior toe, which is shorter than the versatile or long posterior toe; claws strong and curved.

PICUS MAHRATTENSIS.
(THE YELLOW-FRONTED WOODPECKER.)

Picus mahrattensis, Latham, Ind. Orn. Suppl. ii. p. 31, female (1790); Sykes, P. Z. S. 1832, p. 97; J. E. Gray, Ill. Ind. Zool. pl. 32 (1830-2); Gould, Cent. Him. Birds, pl. 51 (1832); Blyth, J. A. S. B. 1845, p. 196; id. Cat. B. Mus. A. S. B. p. 62 (1849); Layard et Kelaart, Prodromus, Cat. Append. p. 59 (1853); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 448; Horsfield & Moore, Cat. B. Mus. E. I. Co. ii. p. 674 (1856); Malh. Mon. Piciidæ, i. p. 108, pl. 28. figs. 1-3 (1863); Jerdon, B. of Ind. i. p. 275 (1862); Holdsworth, P. Z. S. 1872, p. 426; Hume, Nests and Eggs, p. 122 (1873); Legge, Ibis, 1875, p. 283; Ball, Str. Feath. 1874, p. 390; Hume, ibid. 1875, p. 58.

Picus hemasomus, Wagler, Syst. Avium, gen. *Picus* (female), no. 30 (1827).

Picus aurocristatus, Tickell, J. A. S. B. 1833, p. 579.

Dendrocopus mahrattensis, Jerdon, Cat. B. S. India, Madr. Journ. 1840, p. 212.

Liopipo mahrattensis, Cab. et Heine, Mus. Hein. v. p. 44 (1862).

The Mahratta Woodpecker, The Black-spotted Woodpecker of Europeans.

Kāralla, Sinhalese; *Tatchan-kuruvi*, Tam., lit. "Carpenter-bird."

Adult male and female. Length 6·8 to 7·0 inches; wing 3·7 to 3·95; tail 2·5; tarsus 0·7; outer ant. toe 0·55, claw (straight) 0·33; hind toe 0·6; bill to gape 1·05. Females are usually smaller than males.

Iris variable, red or dull red; bill dusky bluish, culmen and tips dusky; legs and feet plumbeous, claws darker than toes.

Male. Forehead, front of crown, lores, and region round eye pale shining yellowish or straw-colour, extending further back in some specimens than in others, and changing on the crown and occiput into pale crimson. Chin, face, and a continued stripe from the ear-coverts down the sides of the hind neck, throat, centre of the chest, and breast white, the ear-coverts slightly dusky in some; sides of neck and chest, down the centre of hind neck, hair-brown, darkening on the upper part of the back into the brownish black of the upper surface, wings, and tail; feathers of the back with white basal and lateral stripes; the wing-coverts, quills, and tail with large marginal white spots, taking the form of bars on the inner webs of quills; the 1st (small) quill with the outer web unspotted; sides of the breast, flanks, and under tail-coverts white, with very wide dark centre-stripes; centre of the breast and belly pale crimson; tail-spots yellowish beneath. The brown of the neck and chest is very pale in some specimens, probably the effect of the sun's rays, as the brown hue in most Woodpeckers is affected by them.

Female. Has the yellow of the forehead continued over the top of the head to the occiput, which wants the crimson hue; ear-coverts duskier than in male; sides of the chest and flanks somewhat more covered with brown than in the male.

Obs. Ceylonese examples seem to be smaller than Indian. An individual in the national collection, from the N.W. Provinces, has the wing considerably above 4 inches. Mr. Ball gives an extensive table of measurements, *loc. cit.*, from specimens shot in Chota Nagpur, by which it appears that males there have the wing exceeding 4 inches and females from 3·9 to 4·0 inches. The character of the black and white markings is similar in specimens from India and Ceylon. The Burmese race has been separated by Blyth as *P. blanfordi*, with an expressed doubt, however, as to its being really separable. Mr. Hume does not consider it to be so, and writes, with reference to the alleged greater development of the white markings, that Indian specimens "vary much *inter se*. An example from Wynaad is very dark; one from Kutch, again, very similar to *blanfordi*, and one from Sambhur is undistinguishable from Thayetmyo birds; in the wings there seems to be no appreciable difference."

Distribution.—This little Woodpecker has a wide distribution in Ceylon, but is, notwithstanding, by no means plentiful, and is rarely met with except by those who explore the wilds of the woods and forests. Mr. Holdsworth says that it is common in the Aripu district. I have procured it in the Magam Pattu and seen it close to the sea at Kirinde; in the Wellaway Korale it is also to be found. In the southern and western portions of the island it is not found, as far as I am aware; and I have not seen it in the Trincomalie district, nor

in the interior of the country between there and the central road. Further north, however, it is found, for there the jungle is more suited to its habits. Mr. H. E. Hayes, of the Ceylon Public Works Dept., writes me that he has met with it at a place about 22 miles from Mullaittivu, called by the euphonious Tamil name of "Manawalempattumuripu!" Layard found it in the Northern Province and considered it to be confined to that part. I have seen it in the scrubs to the south of Kottiar, and all that densely clothed low jungle country lying between there and the Tamankadua Pattu is a most likely district for it. In the drier parts of the Central Province it is not unfrequent, inhabiting the secluded patna-nullahs, which are dotted here and there with clumps of wood interspersed with its favourite tree the *Euphorbia*. In such places I have seen it in the Hewahette district and also in Uva, in which latter part I once shot it on the Logole-oya, at an elevation of about 2500 feet.

In India the Mahratta Woodpecker is dispersed pretty well all over the peninsula, being found, according to Jerdon, in "almost every district up to the foot of the Himalayas, except in lower Bengal, though common in the Midnapore jungles." Particularizing the localities which it inhabits, we find it recorded by him as rare on the Malabar coast, but plentiful in the gap of Coimbatore. In the Palani hills it is not uncommon up to 5000 feet, a very considerable elevation for a heat-loving bird as it evidently is. It does not appear to be found in the Travancore hills, but Mr. Hume has received it from the Wynaad. In the Deccan and Khandala district it is widely dispersed, but not abundant. Further north, about the Sambhur Lake and in the Guzerat region, it is well known, though it appears, according to Mr. Hume, not to be found in Sindh. In Chota Nagpur it is distributed through the Province, though not very common. In Upper Pegu it again appears as the *P. blanfordi* of Blyth, and is, according to Captain Feilden, "found everywhere from the low grounds of Thayetmyo to the tops of the highest hills." Mr. Oates says it is common near the banks of the Irrawaddy, but was not observed by him far inland, showing that in Burmah as well as in other parts it is local.

Habits.—This species frequents low jungle and scrub, particularly that in which the *Euphorbia* grows; it is very partial to this tree; in fact every example I have met with in Ceylon was either actually on or in the vicinity of one. On the patnas I have usually observed it among scattered trees searching the trunks and branches with great agility, keeping chiefly to the underside of the latter, and working them out nearly to their extremities. It is a shy bird and difficult to procure, taking itself off with a short flight to an adjacent tree as soon as it perceives any one approaching it. It is usually a solitary bird, shunning the company of its species except in the breeding-season. It has a weak trill, not unlike that of the Pigmy Woodpecker, but of course louder; and Jerdon remarks that it also has a squeaking note. Layard observed it chiefly about *Euphorbia* trees, and Mr. Holdsworth noticed it on old fences as well as dead wood.

In India it keeps to particular trees—*Babool* in the Mount Aboo and Sambhur districts, and the Pulas-tree (*Butea frondosa*) in Chota Nagpur. Captain Feilden has observed it descending a tree tail foremost with great ease. Its food, according to my observations, consists mainly of small insects and ants; but Mr. Oates found small beetles in the stomach of one.

Nidification.—The nest of the Yellow-fronted Woodpecker has never, to my knowledge, been found in Ceylon. It is almost sure, however, to nest in the *Euphorbia* tree. In India it breeds from March until April, nesting in a hole in a partially decayed branch, choosing, when it can, a Babool tree. Mr. Hume records the finding of a nest at Etawah, the hole being cut on the underside of a Babool branch about 1.5 inch in diameter, and leading to the excavated egg-cavity about 15 inches below it; the eggs were laid on chips of the wood made in excavating the hole. The eggs are three in number, less spherical than, but in size resembling, those of "the Lesser Spotted Woodpecker of Europe." Before being blown they are a delicate pink, turning glossy white after being emptied of their contents. They measure 0.87 by 0.68 inch, this being, according to Mr. Hume, the average of a large series.*

* I have not included *Picus macei* in this work. It was mentioned by Kelaart as having been procured in the island; but it is more than probable the bird was not correctly indentified. It is a North-Indian species, and could not well have occurred in Ceylon, as Woodpeckers are not birds which stray from their usual habitat.

Genus YUNGIPICUS.

Of small size.

Bill much as in *Picus*, short, widened at the base and conic; gonys quickly ascending. Wings longer than in *Picus*, the secondaries long in proportion to the primaries; tail much as in that genus, the outer feathers not so rigid; tarsi and feet the same, with the versatile toe longer than the anterior.

YUNGIPICUS GYMNOPHTHALMOS.

(THE PIGMY WOODPECKER.)

Picus gymnophthalmos, Bl. J. A. S. B. 1849, xviii. p. 804; id. Cat. Mus. A. S. B. p. 64 (1849).

Yungipicus gymnophthalmus, Bonap. Consp. Vol. Zygod. p. 8 (1854).

Picus otarius, Malh. Mon. Piciidæ, i. p. 152, pl. 35 (1863).

Yungipicus gymnophthalmos, Kelaart, Prodrum, Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 448.

Yungipicus gymnophthalmos, Jerdon, B. of Ind. i. p. 279 (1862); Holdsworth, P. Z. S. 1872, p. 427; Jerdon, Ibis, 1872, p. 8; Hume, Str. Feath. 1873, p. 433; Legge, Ibis, 1874, p. 15; id. Str. Feath. 1875, p. 365; Bourdillon, ibid. 1876, p. 389.

Bæopipo gymnophthalma, Cab. et Heine, Mus. Hein. v. p. 59 (1863).

Little Black-and-white Woodpecker, Europeans in Ceylon.

Mal-kāralla, Sinhalese.

Adult male and female. Length 4·7 to 4·9 inches; wing 2·8 to 3·0; tail 1·3; outer anterior toe 0·4 to 0·45, claw (straight) 0·25; bill to gape 0·6 to 0·7.

Iris white, greyish white, yellowish white, or reddish white (varies much); bill brownish olivaceous, somewhat paler beneath; eyelid and orbital skin dull mauve or purplish; legs and feet greenish plumbeous.

Head above, centre of nape, and hind neck, back, wings, and tail very dark sepia-brown; back broadly barred, and the wing-coverts, quills, and tail spotted with white; on the rump and upper tail-coverts the white predominates, reducing the brown to bars; 1st quill and outer web of second unspotted brown; a broad white stripe passes from behind the eye to the nape; below this the cheeks, ear-coverts, and sides of neck are brown as the back; a narrow line of vermilion-red above the white stripe and partially concealed by the brown of the head; throat and entire under surface murky white; under tail-coverts striped and centered with brown; under wing-coverts white, barred with brown.

Female. Wants the vermilion superciliary stripe; otherwise as the male.

In some specimens the flanks and sides of lower part of breast show obscure brownish striæ.

Obs. Mr. Hume remarks of this species that "Ceylon specimens are absolutely identical with those from the Malabar coast." A female shot by Mr. Bourdillon in the Travancore hills measured—length 4·87 inches; wing 2·87; tail 1·25. This Woodpecker is very closely allied to the commoner Southern Indian race *Y. hardwicki*, which is, according to Jerdon, "brownish or sooty brown above, banded with white on the back; head pale rufescent or yellowish brown, scarcely deepening posteriorly." The Ceylonese bird, it will be observed, differs from it in being darker on the head and back; it is likewise smaller, the wing of *Y. hardwicki* averaging, according to Mr. Hume, 3 inches; he writes, *loc. cit.*, that typical examples of *Y. gymnophthalmos* have the whole head and back darker; but many specimens from Anjango, in the south of India, differ from some of *Y. hardwicki* from the north only in the much darker occiput and nape.

Distribution.—This Pigmy Woodpecker is tolerably plentiful in some parts of Ceylon, and has a wide range, being diffused over nearly all the low country, except perhaps the extreme north of the Vanni and

the Jaffna peninsula, where it may also possibly occur. It is in the south-west of the island and in the Eastern Province where it is most abundant; in the latter part it is particularly seen about the dead trees standing in the beds of all the newly finished tanks. In the Galle district it is a common bird in localities suited to its habits; and about Colombo it is not uncommon, having been procured by myself as near that town as the cinnamon-gardens of Morotuwa. Layard states that he discovered it near the capital in the year 1848. About Uswewa, near Puttalam, Mr. Parker writes me it is common; beyond this in the Northern Province it is sparingly distributed, as far as I have been able to trace it, but, being difficult of discovery on account of its small size, it may often escape observation in that jungle-clad region. It occurs in the Central Province up to about 3000 feet. I have met with it in Pusselawa, Nilambe, Deltota, and parts of Uva, and I have no doubt it is to be found on the Dimbulla and Dickoya side as well.

In India it has been found, as far as present experience proves, only in the south, and even there it has escaped observation until rather recently. Jerdon had evidently seen it, though he had not procured it before the publication of his work, for he remarks, at p. 279, vol. i., "I have reason to believe that another and darker-coloured species is found in the Malabar forests; but whether this may prove identical with one of the Himalayan species or with the Ceylon bird in particular, I cannot now ascertain." Subsequently he satisfied himself of the question; for in his supplementary notes, contained in 'Ibis,' 1872, he writes that the Ceylon species occurs in the extreme south of Malabar and Travancore, and is the bird alluded to in the above-mentioned paragraph. Mr. Bourdillon has procured it in the latter district, whence also Mr. Hume has received numerous specimens, and Mr. Fairbank obtained it in the lower Palanis.

Habits.—This little bird, which, but for the frequent utterance of its shrill little note, would often completely escape observation, lives generally in pairs, and frequents the uppermost branches of trees, often perching *across them* for a short space of time. I have observed it settle thus on a mere twig, and then after a moment's pause sidle down to an adjoining branch. It works much at the broken tops of small dead branches, picking out worms and grubs from the rotten wood. In Rugam tank I observed it breaking off comparatively large pieces of dead surface-wood and searching beneath them for food. It is very fond of the jack-tree; and in the south of Ceylon I have often seen it in the "Dell" or wild bread-fruit trees (*Artocarpus nobilis*), which stand in low cheena wood, having been spared the axe for the sake of the timber. In the Northern Province I have usually observed it in large trees near rivers and tanks, and in the Kandyan country at the edges of coffee-estates or patnas. Its powers of flight, afforded by its long wings, are considerable, and its note, which is a prolonged trill, is audible at some distance, even when uttered at the tops of the loftiest trees.

Mr. Bourdillon's remark on this species, as observed by him in Travancore, is that "it lives in the tops of high trees, and is as difficult to observe as to shoot."

Nidification.—In the Western Province this Woodpecker breeds in February and March, nesting in holes in small branches. A nest which Mr. MacVicar found in the Colombo district, near Poré, was in a dead branch with an opening leading to it of about 1 inch in diameter. There were three young birds in it just hatched, and the egg-fragments were shining white.

Genus CHRYSOCOLAPTES.

Bill very strong, lengthened, the tip wedge-shaped ; lateral ridge very prominent, and parallel to the margin near the tip. Nostrils apart. Neck small. Wings much as in *Picus*. Tail moderately long and cuneate, the four central feathers subequal. Feet very strong, the hind toe considerably longer than the anterior ; claws stout, long, and much curved.

CHRYSOCOLAPTES STRICKLANDI.

(LAYARD'S WOODPECKER.)

(Peculiar to Ceylon.)

Picus ceylonus, Jerd. (*nec* Forster) Ill. Ind. Orn. pl. 47 (1847).

Brachypternus stricklandi, Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 449 ; Jerdon, B. of Ind. i. p. 298.

Indopicus carlotta, Mahl. Rev. et Mag. de Zool. 1854, p. 379 ; id. Mon. Piciidæ, pl. 67 (1863).

Brachypternus ceylonus, Jerdon, B. of Ind. i. p. 278.

? *Brachypternus rubescens*, Kelaart, Prodromus, Cat. p. 128 (1852).

Chrysocolaptes stricklandi, Cab. et Heine, Mus. Hein. v. p. 160 (1862) ; Blyth, Ibis, 1867, p. 297 ; Holdsworth, P. Z. S. 1872, p. 427 ; Legge, Ibis, 1874, p. 15, et 1875, p. 283 ; id. Str. Feath. 1875, p. 200.

Brachypternus erythronotus, Reich. Handb. Spec. Orn. pl. 629. fig. 4186 (1851).

Red Woodpecker, Jerdon's Illustrations ; *Hill-Woodpecker*, Europeans in Ceylon.

Kārala, Sinhalese.

♂ *suprà* coccineus, pileo cristato : rectricibus alarum dorso concoloribus : alà spurià et tectricibus primariorum et primariis nigris, his ad apicem pallidioribus et intùs albo ovatè trimaculatis : primariis interioribus secundariisque coccineis, intùs nigris albo trimaculatis : uropygio celatim minutè albido maculato : supracaudalibus caudàque nigris : loris et frontis basi brunneis : regione paroticà, colli lateribus et collo postico nigris, hóc ovate albo maculato : facie laterali guttureque albidis, fasciis tribus nigris notatis, unà supragenali, alterà mystacali, et tertià medianà gutturali : corpore reliquo subtus sordidè rufescenti-albo, plumis nigro marginatis, pectore et jugulo quasi gutturalis, abdomine quasi striolato : margine alari brunneo : tectricibus alarum reliquis nigricantibus albo maculatis : iride flavicanti-albà ; rostro olivaceo ; pedibus olivaceis.

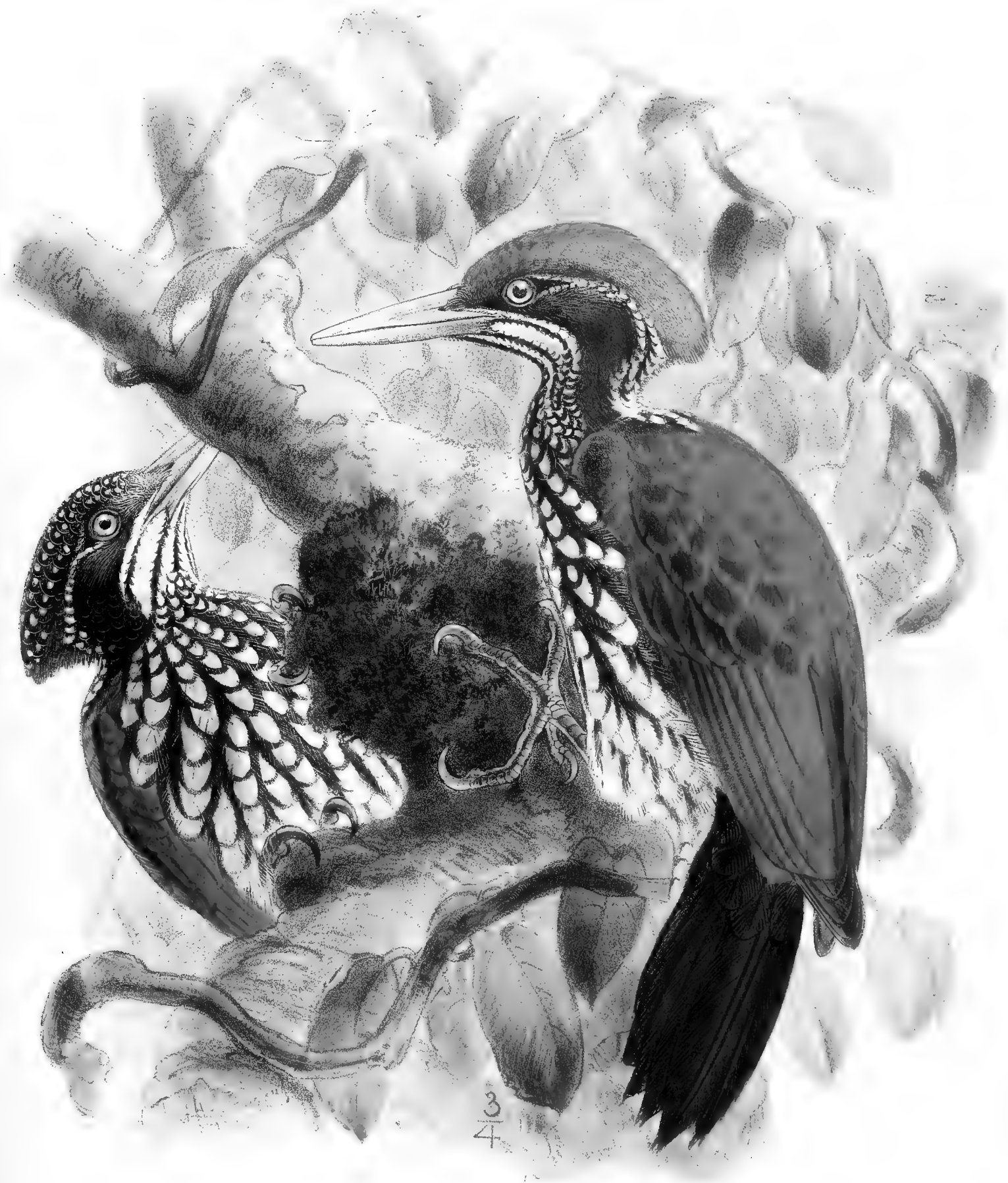
♀ capite nigro, albo punctato.

Adult male and female. Length 11·5 to 11·8 inches ; wing 5·8 to 6·1 ; tail 3·4 ; tarsus 1·0 to 1·1 ; outer ant. toe 0·9, claw (straight) 0·55 ; outer posterior toe 1·1, claw (straight) 0·55 ; bill to gape 1·9 to 2·1.

Females, though quite as large as, and equal in wing to, males, appear to have shorter bills *as a rule*. The claws of this species are very strong and deep.

Iris yellowish white or very pale buff ; bill brownish or olivaceous at the base, changing at the centre into greenish white, the tip assuming a dusky hue ; legs and feet plumbeous green or greenish slate.

Head, nape, back, rump, wing-coverts, outer webs of secondaries, and tertials crimson, dusky on the interscapulars : bases of the head-feathers brown, and those of the back and rump with concealed white spots ; region round the eye, ear-coverts, and down the sides of the neck blackish brown, paling on the lores and at the base of the upper mandible ; a line of white spots up the hind neck, continued above the ear-coverts to the eyes ; primaries and inner webs of secondaries and tertials black-brown, with a series of white inner-margined spots ; upper tail-coverts and tail black ; throat, cheeks, and a line above the gape to the nostril, centres of throat, chest, and upper breast-feathers,



CHRYSOPECTES CALIFORNIA

and lower parts white; a mesial black line from the chin to the fore neck, and two down each cheek; fore neck and chest-feathers very broadly edged with blackish brown, gradually narrowing towards the lower parts, where it almost disappears; under tail-coverts white, crossed by angular dark bars; under wing-coverts barred white.

The spots on the first primary vary; two is the normal number.

Female. Has the top of the head and the nape black, with round white spots; lores, sides of the neck, and ear-coverts blacker than the male and concolorous with the head; the longer under tail-coverts blackish brown.

Young. The nestling bird has the distribution of the markings the same as in the adult, but they are, together with the ground-colour, less pronounced. A young female before me has the head dull blackish, the spots on crown and forehead sullied white, while those of the crest are pure white. The white markings and spottings on the throat are likewise sullied white, the dark edgings are brownish black.

Birds of the year have the bill browner at the base than adults and shorter, measuring, on the average, about 1.85 inch to gape; the iris has a faint tinge of reddish, with a brownish-red outer circle. In some examples the primaries are tipped and crossed with white. Mr. Holdsworth alludes to an example which had the lower part of the back black, faintly barred with white, with crimson feathers appearing among the others.

Obs. Many individuals of this Woodpecker are met with in the low country of Ceylon with the feathers remarkably faded, those which are thus affected being chiefly the primaries at the tips, the coverts at the point of the wing and above the metacarpal joint, as well as on the hind neck; these I have found to be a dun-brown in some, and others a whity brown or greyish colour. The specimens were fully adult; and this singular feature could only have been the result of the action of the sun's rays on the plumage, the birds having frequented exposed situations.

This species is the Ceylonese representative of the South-Indian *Ch. delesserti*; but the latter bird has the back, scapulars, and wing-coverts golden red, and the bill is not so pale. Though first described as a new species by Layard in the 'Annals of Natural History,' 1854, it was previously known to Jerdon from specimens sent from Ceylon, and it was figured by him in his 'Illustrations of Indian Ornithology,' to face his article on *Brach. ceylonus*. It is very closely allied to the Philippine-Islands species *C. hæmatribon*, which differs from it in having the bill brownish, with the base of the under mandible pale.

Distribution.—This Woodpecker, the finest of its tribe in Ceylon, is widely distributed. It has been assigned hitherto to the hills alone, its range not having evidently been worked out; and I am at a loss to understand in what manner its presence in so many parts of the low-country forests has been overlooked by ornithologists collecting in the island. It is found throughout the Central Province from the altitude of the Horton Plains and the Pedro range downwards, but it is, as far as I have been able to trace it out, more plentiful in the higher than in the intermediate forests on the Kandy side. In Uva, however, it is to be found in most forests, following its way down the wooded passes into the low country. It is spread throughout the Eastern Province and the forest-region lying between the Haputale ranges and the south coast, and seems to thrive as well there as in the damp cool regions of the Nuwara-Elliya plateau. I have procured it within a few miles of Kirinde, on the banks of the river there. It is found through all the forest-tract to the north of Dambulla, and inhabits the open woods close to the coast near Trincomalie. Within a few miles of that place I have shot it in an overgrown cocanoot-compound, together with *Brachypternus ceylonus* and *B. puncticollis*! In the Vanni it is common, and extends through the Anaradjapura district and the Seven Korales to Kurunegala and Puttalam, its numbers decreasing as it approaches the damp climate of the Western Province. South of the Deduru-oya it is much rarer. I have met with it in forest near Ambepussa, between Avisawella and Ratnapura, in the Pasdun Korale, and once near Baddegama in the Galle district, the precise locality there being the Government forest reserve of Kottowe.

I believe its numbers to have much diminished in the coffee-districts by the felling of the forest; but, notwithstanding, it seems to be local in its tastes. During several days' wanderings in the Peak forests, a most likely locality for it, I seldom heard its well-known trill, and again in the Knuckles forests I remember to have found it rare.

Layard procured the specimen from which he took his original description at Gillymally near Ratnapura, and mentions Mr. Thwaites getting a large number near Kandy, in which district it was evidently more common then than it is now. Mr. Holdsworth found it "abundant at Nuwara Elliya and in all tree-jungle in that district."

Habits.—Layard's Woodpecker is chiefly an inhabitant of tall forest and timber-jungle, but it is likewise found in tangled woods and groves of jungle which happen to be interspersed with large trees which it principally affects. In the south-east I invariably found it in the tall forest which lined the rivers flowing through that wild region; it shunned the thick thorny jungle clothing the arid land, and resorted to the more luxuriant belts which grew within the influence of the water. I generally found it in similar localities, or near the borders of tanks, in the northern part of Ceylon. In the Central Province it invariably affects the heavy jungle, either above the coffee-estates or in the valleys which have not yet been denuded of their beautiful clothing. It is very shy, always evincing a fear of man, and its habits escape observation by all except those who are much in the jungle. It is very active, working the tallest trees right to the top, and when sounding a hollow branch uses its powerful head and beak in dealing a "rattle" of blows with such inconceivable rapidity that the movement of its head cannot be discerned with the human eye!

This startling sound is produced by the Common Red Woodpecker; but it has not such a loud effect as when executed by the present species. I once watched one of these birds sounding a branch at the top of a lofty Keena-tree in the Lunugalla Pass, and observed that it held its head on one side and listened attentively each time before striking its rattle on the hard wood in order to force the frightened insects from their lair, in doing which it produced a noise which resounded through the forest. These Woodpeckers are usually in pairs not far distant from one another; and when two are running up the same trunk they keep on opposite sides of it, appearing not to wish to interrupt one another, each one suddenly vanishing round the bole on the appearance of the other, which has the effect of a game of "hide and seek." A single bird will work a tree from side to side, crossing and recrossing the trunk rapidly. Its feet and legs are very powerful, and it never seems tired of hunting for its food, which chiefly consists of ants. Its flight is swift, but not sustained for long. I have occasionally seen small parties in company, consisting of young birds with their parents; and on one occasion met with a pair near the Maha-oya, Eastern Province, which were searching about a huge fallen trunk, running along its horizontal surface as they would have climbed a standing tree. Its note is a weak trill, uttered in a high key and prolonged considerably; the voice of one bird is invariably answered by its mate, if within hearing distance.

Nidification.—I know nothing of the eggs of this species; but can state that in the hills it breeds at the beginning of the year, as I once found a nest at Elk Plains in January. It was situated in a hole in rather a small limb high up in a large tree, and the birds by their gestures appeared to have young.

The front figure in the Plate accompanying this article is that of a male shot at the Maha-oya, while the female represents an up-country bird killed at the Horton Plains.

CHRYSOCOLAPTES FESTIVUS.

(THE BLACK-BACKED WOODPECKER.)

Picus festivus, Bodd. Tabl. Pl. Enl. 696 (1783).

Picus goensis, Gm. Syst. Nat. i. p. 434 (1788).

Dendrocopus elliotti, Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. no. 208.

Chrysocolaptes melanotis, Blyth, J. A. S. B. 1843, xii. p. 1005.

Chrysocolaptes festivus, Gray, Gen. B. iii. App. p. 21 (1845?); Blyth, Ibis, 1866, p. 355; Holdsworth, P. Z. S. 1872, p. 427 (first record from Ceylon); Jerdon, Ibis, 1872, p. 8; Adam, Str. Feath. 1873, p. 373; Ball, ibid. 1874, p. 391; Butler et Hume, ibid. 1875, p. 458; Legge, Ibis, 1875, p. 283.

Chrysocolaptes goensis, Blyth, Cat. B. Mus. A. S. B. p. 55 (1849); Jerdon, B. of Ind. i. p. 282 (1862); Reich. Handb. Spec. Orn. p. 400, pl. 655. fig. 4359.

Indopicus goensis, Malh. Mon. Piciæ, ii. p. 82, pl. 66. figs. 1, 2 (1863).

Marram tolashi, Tamils in India (Jerdon).

Kāralla, Sinhalese.

Adult male. Length 11·5 to 12·6 inches; wing 5·8 to 6·0, expanse 19·5; tail 3·0 to 3·6; tarsus 1·05 to 1·2; outer anterior toe 0·9, claw (straight) 0·5; outer posterior toe 1·0, claw (straight) 0·52; expanse of foot with claws 3·0; bill to gape 1·93, height at base 0·42.

The above measurements are from two Ceylonese specimens.

Iris (variable) in one example brownish, in the other crimson-orange; bill dull blackish or leaden horn-colour, darker at the tip; legs and feet greenish slaty, claws bluish horn or brownish ochraceous.

Head and crest bright but pale crimson, bordered by a broad blackish superciliary stripe, commencing at the nostrils and encompassing the occiput; forehead joining the supercilium brownish, bases of the head-feathers black; a broad stripe from the eye to the nape and thence spreading over the hind neck and interscapular region; throat, fore neck, lower part of face, and lower half of lores white; back, rump, upper tail-coverts, scapulars, least wing-coverts, and on each side of the white, passing up the side of the neck to the eye, brownish black; tail black; primaries and their coverts, inner webs of secondaries, and tertiaries blackish brown, with large round marginal spots to the quills, and corresponding greyish markings on the outer webs; throat with a dark mesial stripe, and two more down each cheek as in the last; beneath white, feathers of the throat and chest broadly edged with blackish brown, which diminishes to a narrow margin on the lower parts; under tail-coverts white with dark centres, the lower feathers entirely brown.

Female. Indian examples (I have not met with a Ceylonese specimen) have the crown and occipital crest light yellow, of a more orange hue than the colour of the wing-coverts; the forehead is spotted with white as in the last species; the wing-coverts a duller yellow than in the male. Blyth remarks that some females have the yellow crest tipped with crimson.

Young. A young male, shot by Mr. Parker in the Puttalam district, has the crest-feathers yellow, tipped with orange-red; the superciliary feathers brown and black, and those of the forehead black, marked or spotted with white, the latter colour predominating near the base of the bill.

Obs. Ceylonese examples appear to be altogether smaller and less robust than, and with the bills not so stout as in, Indian specimens; the black and white markings about the neck and throat are more open or bolder in the Indian bird, and this is especially noticeable in the lateral stripes leading down from the chin, in the black patch on the ear-coverts, and in the white stripe over the ears; the forehead, in the continental males, is conspicuously white, and the white centres of the chest-feathers more pronounced. A male in my collection, from Raipoor, measures

6·1 in the wing, bill to gape 2·2 : another from the North-west Provinces, in the national collection, 6·1, the bill to gape 2·2 ; a female from the same locality 6·3, bill to gape 2·15, height at base 0·5. Mr. Ball records a male from Chota Nagpur as 6·3, and a female 6·1. The Raipoor specimen has the forehead all white, the feathers having black bases, and the crimson of the crown and crest is deeper than in my southern Ceylon example.

Distribution.—This is one of our rarest Woodpeckers, for though it is not uncommon in one or two districts, yet the localities that it has been hitherto known to frequent are few and far between. The first examples procured in the island were sent to Lord Walden in 1865, and were a male and female, obtained in a locality called Cocarry, the whereabouts of which I have been unable to determine ; but Mr. Holdsworth is of opinion that the birds were shot somewhere in the north-west of the island, as they were part of a collection made not far from Aripu. Further south, in the forests between Puttalam and the Seven Korales, it is, I am informed by Mr. Parker, not unfrequent, he having seen more than a dozen specimens in the jungles round Uswewa. I have never met with it but once, and that was on the Kirinde Ganga, a few miles from Tissa Maha Rama, in the south-east of Ceylon. I there procured a male of a pair which I saw in March 1872. The species should be looked for by future collectors in the forest on the banks of the Kattregama-oya, Koombookam Aâr, and other rivers of the Park country, as this district is one which abounds in Woodpeckers. Mr. Parker procured a male near Uswewa in February 1876, and another in July 1877.

In India the Black-backed Woodpecker has a tolerably wide distribution. Jerdon remarks of it that it is "found in various districts of the peninsula and Central India, being rare in most parts and common in a few localities." He found it in the Eastern Ghats, in parts of Mysore, between Bangalore and the Nilghiris, in the Vindhyan Mountains near Mhow, and in the hilly and jungly districts of Nagpore, between that and the Nerbudda. Referring to our excellent Indian journal, 'Stray Feathers,' we find Mr. Bourdillon omitting it in his Travancore list, and likewise Mr. Fairbank from the Palani-hills birds. Jerdon also states that it is not found in the Malabar forests ; and therefore its place would seem to be taken in these regions by the common species *C. delesserti*, the above-mentioned districts all lying to the north of latitude 10°. In Chota Nagpur, Mr. Ball met with it on one occasion in the Palamow subdivision, and again in the Satpura hills. From the Central Provinces I have an example mentioned above ; and to the north-west of this district, besides inhabiting the Vindhyan mountains, it is found in the Sambhur-Lake region, concerning its distribution in which Mr. Hume writes, "Dr. King shot this species in the jungles at the foot of Aboo. I got it in similar jungles further up the Aravallis ; and Adam obtained it again near Koochamun, which is near the north-west extremity of the Sambhur Lake. It is quite foreign to the plains region (Guzerat), and is unknown in Sindh Cutch, Kattiawar, and Jodhpoor."

It was originally, as its name implies, sent from the Goa district, near which it has also been procured in the southern Mahratta country.

Habits.—This species frequents forest and jungle-clad country like the last, and is similar to it in its general habits. It is found working on the trunks of both large and small trees, and is very active in its movements, appearing likewise, from my small experience of it, to be shy in its nature. The note which I heard it utter was a weaker trill than that of Layard's Woodpecker, and much resembled the voice of the little Mahratta Woodpecker. I am indebted to Mr. Parker for several notes on its habits, one of which relates to its cry, which he says is not so loud nor so prolonged as that of *Brachypternus ceylonus* ; it would therefore seem to have two distinct calls, like this last-mentioned and other species. One of his specimens was shot in the act of fighting with the Common Red Woodpecker for the possession of a hole for (I presume) breeding-purposes. He writes me that they frequently fight with this species, whose aggressive propensities necessitate it ; he thinks that the great numbers of *Brachypternus ceylonus* in the north-western forests may perhaps prevent the Black-backed Woodpecker from spreading over the country, for these latter have "to fight pretty nearly every day before they can call their house their own, and must find their life a burden to them. With their powerful bills" (he remarks) "and well-formed muscular bodies, they are more than a match for the Red Woodpeckers ; but the latter do not hesitate to attack them, when the two species chance to meet in the same tree." The stomach of an example he shot contained insects and seeds, two of which latter were as large as peas. Mr. Ball saw one of them feeding on the ground where jungle and grass had recently been burnt, and

writes that he saw and shot three which were busily engaged in searching the branches of a cotton-tree (*Bombax malabaricum*).

Nidification.—I am unable to give any information concerning the breeding-habits of this species. Mr. Parker observed a pair in July, engaged in making a hole in a tree standing in a submerged tank-bed, but was unable to get the eggs.

Subfam. GECININÆ.

Bill wider at the base than in the last subfamily; culmen more curved, the lateral ridge slight, in some genera absent; gonys short. Feet with the outer posterior toe shorter than the outer anterior one; hind toe small, obsolete in some.

PICARIÆ.

PICIDÆ.

GECININÆ.

Genus GECINUS.

Bill rather short; upper mandible widened at the gape; culmen curved, lateral ridge near and parallel to it; nostrils partially concealed. Wings with the 1st quill short, and the 4th and 5th subequal and longest. Tail moderately long and pointed. Feet strong, with the anterior longer than the posterior toe; claws very strong and deep.

GECINUS STRIOLATUS.
(THE STRIATED GREEN WOODPECKER.)

Brachylophus squamatus, Jerdon, Cat. Birds S. India, Madr. Journ. 1840, xi. p. 213. no. 210.

Picus striolatus, Blyth, J. A. S. B. 1843, xii. p. 1000; Sundevall, Consp. Av. Piciidæ, p. 60 (1863).

Picus squamatus, Jerdon, 2nd Suppl. Cat. B. S. India, Madr. Journ. 1844, xiii. p. 138. no. 210.

Brachylophus xanthopygius, Hodgson, Cat. Nepal Birds, p. 85 (1845).

Gecinus striolatus, Blyth, Cat. B. Mus. A. S. B. p. 57 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. no. 962 (1854); Jerdon, B. of Ind. i. p. 287 (1862); Legge, Str. Feath. 1873, p. 488 (first record from Ceylon); Ball, ibid. 1874, p. 391; Hume, ibid. 1875, p. 68; Butler, ibid. p. 458; Inglis, ibid. 1877, p. 26; Fairbank, ibid. p. 396; Ball, ibid. p. 413.

Gecinus xanthopygius, Bonap. Consp. Gen. Av. p. 127 (1850).

Chloropicus striolatus, Malherbe, Mon. Piciidæ, pl. 77, p. 134 (1862).

The Lesser Indian Green Woodpecker, The Small Green Woodpecker, Indian authors.

Adult male and female. Length 10·5 to 10·9 inches; wing 5·1 to 5·3 (a female measures 5·2); tail 3·8; tarsus 1·0; outer anterior toe 0·8, claw (straight) 0·42; outer posterior toe 0·75; bill to gape 1·45 to 1·6. Weight of male 3½ oz. Iris reddish, with a frosted silver outer circle; bill blackish, the upper mandible with a pale edge, lower mandible yellow, with the tip dusky; legs and feet dusky greenish. Mr. Oates describes the eyelid in Burmese specimens as bluish grey.

Male. Forehead, crown, and occiput dull crimson, bounded by a black line passing from the upper part of the lores over the eye to the nape, where it spreads out into a crest in continuation of the red of the hind head; below this line a white streak passing from above the eye to the nape; lores and cheeks dusky whitish, the latter with a black stripe formed by the centres of the feathers; ear-coverts greenish grey; back and wings dull green, changing on the rump and upper tail-coverts into yellow, with a wash of orange on the centre of this part; primaries, inner webs of tertials, and all the secondaries, except the green external portion, dark brown, with a series of external white spots on the primaries, and inner white marginal bars towards the bases of all the quills; secondaries with pale indentations at the inner edge of the green portions; tail blackish brown, with interrupted or marginal bars of greenish grey on the central feathers, the remaining feathers with dusky bars and pale edges.

Beneath greenish grey of different depths, darkest on the chest and palest on the lower parts, each feather with a sub-edging of brown, forming a lanceolate mark; on the flanks and parts of the breast there is a central stripe as

well, and the markings on the throat are confined to these mesial lines; under wing-coverts with arrow-shaped bars, and the bases of the under tail-coverts with a central spear-shaped mark.

Female. Has the crown as well as the nape black, the ear-coverts darker, and the throat perhaps duskier, as a rule, than in the male; the frontal feathers are pale-edged, the central portions only being black.

Obs. The under surface of this Woodpecker is variable in appearance, owing to a discoloration of the feathers; it is only in new plumage that the green hue of the chest and breast is pure; it soon becomes sullied, and scarcely any two specimens (at least according to my experience of a tolerably large series of Indian and Ceylonese individuals) have the lower parts of the same hue, some being completely brownish, the green tint of the central portions of the feathers being only perceptible on close examination.

Ceylonese examples are identical with Indian in plumage, and are quite equal to the general run of these in size. From an examination of a series in the national collection, from Nepal and other districts, I find that the wings in the males vary from 4.9 to 5.2 inches, and in females from 4.8 to 5.0. Mr. Ball's tabulation of Chota-Nagpur specimens shows the wing in 3 males as 5.05 inches, and in a female as 4.95; the bills in these specimens are remarkably long, varying from 1.6 to 1.7. A female from the Palanis measures—wing 5.0, bill from gape 1.4. Burmese examples are large: wing 5.3 to 5.55.

This species is tolerably closely related to three others, viz. *G. viridanus* from Burmah, *G. squamatus* from the Himalayas, and *G. dimidiatus* from Java. It is most nearly allied to the first named, which Jerdon calls "a duplicate of it." *G. viridanus*, however, is a larger bird; the wings in a male measure 5.4 and in a female 5.6 inches. It has a greener under surface, the quills are much darker, and the rump is not so yellow as in *G. striolatus*; the black superciliary line is bolder in the male, and the black moustachial band broader, with the feathers conspicuously white-edged. In the female the forehead is uniform black, and the cheek-band much more pronounced; while the quills and rump present the same distinction as in the male.

G. squamatus is also considerably larger than *G. striolatus*, and has the scale-like markings of the under surface confined to the lower breast and abdomen. The forehead in the female is again uniform black, and not edged with whitish, as in *G. striolatus*.

G. dimidiatus is about the same size as *G. striolatus* (wing 5.0 inches), with the bill perhaps shorter as a rule. The fore neck and chest is uniform green, the breast and lower parts with conspicuous, blackish, scale-like markings; rump not so yellow as in *G. striolatus*; in the female, as in the last, the forehead presents the same peculiarity, being quite black.

Distribution.—This Woodpecker has a restricted range in Ceylon, being, as far as is yet known, quite a hill-bird. Until late years it escaped all observation, and had no place in the Ceylon lists, which was owing to the imperfect exploration of the patnas in the Central Province, to which it is almost entirely restricted.

The first specimen brought to the notice of the ornithological world was killed in 1872 in the Pusselawa district, and was recorded by me, *loc. cit.* Mr. Laurie procured a female example about the same time in the Knuckles district. Subsequently Mr. Bligh obtained a pair in the Haputale ranges, the shooting of which was recorded in the 'Observer.' These were killed at an elevation of 4500 feet, and others have since been shot by him at the same elevation near the Catton estate. It is more plentiful in the Uva patna basin (*i. e.* the great stretch of grassy scrub-covered hills extending across from Udu Pusselawa to the northern slopes of the Haputale hills) and in the district beyond Badulla than in any other part, save perhaps the similarly featured country below Hangrankette. I have shot it near Lunugalla, and on the Logole-oya in Madulsima, and likewise in the valley in Lower Hewahette; and I once met with it in the low-lying patnas at the foot of the Hewa-Elliya range at an elevation of about 1000 feet.

It is not improbable that it will be found in the Rakwana district, and perhaps on the Karawita hills; and in the Central Province it may possibly extend considerably down the valley of the Mahawelliganga, where the country is open, grassy, and dotted with scattered timber.

On the mainland this Green Woodpecker enjoys an extensive range, being found in Southern and Central India and in the Himalayas. Jerdon remarks that he has seen it in Malabar in low jungle near the sea, in bushy ground on the Nilghiris and on the Eastern Ghâts, and also that it occurs rarely near Calcutta.

In the Palani hills Mr. Fairbank procured a single specimen at 4000 feet elevation; but he remarks that it is absent from the Khandala district. Mr. Ball's experience of it is that it is rare in Chota Nagpur and more abundant in the Satpura hills, and that it occurs sparingly throughout the coast-region lying between the Mahanadi and Godavery rivers. In the north-west it is local; Captain Butler procured it in the jungles

at the foot of the Arawalli range, and this is the only locality in all that region in which it is, according to Mr. Hume, to be found.

It is found in the Doon and in Kumaon, as well as in the sub-Himalayan tracts; and Mr. Inglis writes that in Cachar "it is very common during the cold weather, and also often seen in the rains." It extends thence to Assam and Upper Pegu, where it is, according to Mr. Oates, very common.

Habits.—The Striated Green Woodpecker frequents stunted trees dispersed about the patnas and bare hillsides in the Central Province, and being of a retiring, shy disposition, resorts mostly to the numerous ravines with which these districts are cut up. Jerdon remarks that it not unfrequently descends to the ground and feeds there; this I have seen it do myself, and have more than once observed it searching about the stems of quite small bushes. When flying off to a tree it generally alights at the bottom of the trunk and works the whole tree to the top, devoting most of its time to the small branches, from one to the other of which it flies before going to another tree. It is very active and also shy, being a most difficult bird to procure. When aware that it is being pursued it flies quickly from tree to tree, and leads the collector such a chase as soon leaves him breathless on the steep patnas up which he has been toiling under a blazing sun, baffled in his pursuit and listening to the restless Woodpecker's singular "*quēēmp*" cry as it disappears over the brow of the nearest rise! It is constantly uttering this note, and by it I have always discovered its whereabouts. It is nearly always in pairs; but on one occasion I discovered four in a wood in Madulsima, which were probably a young brood with their parents. I have reason to believe that it roosts *perched across* a branch, as I once shot at one in the dusk of the evening that had flown into the top of a tree above my head and had taken up that position. Mr. Bligh has met with it in coffee-plantations frequenting dead stumps of trees; but it does not appear to reside in such localities, merely visiting them from the neighbouring patnas. I have found its diet to consist almost entirely of black ants, which abound in the trees in the Central Province. It is very local, dwelling, I believe, in one spot, for it may be heard day after day in the same place.

Nidification.—In India this species lays from March until May, building, according to Mr. Hume, in holes in trunks or branches of trees. The eggs are four or five in number, "pure china-white and very glossy;" they vary from 1.02 to 1.1 inch in length, and from 0.74 to 0.85 inch in breadth.

Genus CHRYSOPHLEGMA.

Bill shorter than in *Gecinus*, widened at the base, with the lateral ridge well defined and parallel to the culmen, which is curved. Nostrils concealed by hair-like plumes; gonys short. Tail long and cuneate, the central feathers considerably attenuated. Feet with the anterior toe longer than the posterior; claws strong and well curved.

CHRYSOPHLEGMA XANTHODERUS.

(THE SOUTHERN YELLOW-NAPED WOODPECKER.)

Picus mentalis, Jerd. (*nec* Temm.) Cat. B. S. India, Madr. Journ. 1840, xi. p. 214. no. 211.

Chloropicus xanthoderus, Malh. Brit. Mus. 1844, et Rev. Zool. 1845, p. 402, et Monog. Piciæ, pl. 75, vol. ii. p. 114.

Picus chlorigaster, Jerd. Cat. B. S. India, Madr. Journ. 1845, xiii. p. 138. no. 31.

Gecinus chlorophanes, Blyth (*nec* Vieill.), Cat. B. Mus. A. S. B. p. 59 (1849); Kelaart, Prodromus, Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 448.

Chrysophlegma chlorophanes, Jerd. B. of Ind. i. p. 290; Holdsworth, P. Z. S. 1872, p. 428; Bourdillon, Str. Feath. 1876, p. 390; Fairbank, *ibid.* 1877, p. 396.

Picus xanthoderus, Sundev. Consp. Av. Pici. p. 58 (1863).

Green Woodpecker, "*Ground-Woodpecker*," Europeans in Ceylon.

Pachcha kāralla, Sinhalese.

Adult male and female. Length 8·7 to 9·2 inches; wing 4·5 to 4·75; tail 2·9 to 5·5; tarsus 0·75; outer anterior toe 0·7, claw (straight) 0·38; posterior outer toe 0·65; bill to gape 1·0 to 1·05. Females appear to average smaller than males.

Iris sombre red or brownish red; bill blackish, with the sides of the lower mandible and margin of the upper next the gape yellow; legs and feet olive-greenish or dusky sap-green.

Head, crest, and a patch on the lower part of cheeks crimson, the feathers of the nape below the crest rich yellow; bases of forehead and crown-feathers greenish black; upper surface with the wing-coverts bright olive-green; face, throat, neck, and under surface dull green; lores blackish, round the eye and on the cheeks the feathers are somewhat dusky; outer webs of inner primaries, secondaries, and tertials next the shaft orange-red; greater wing-coverts with their bases orange; inner webs of quills brown, with distant white spots, and the terminal portion of the outer webs of the primaries with whitish spots; tail black; beneath, the sides of the breast, flanks, and lower parts are barred with white; bases of throat-feathers white, showing more or less on the surface; under wing-coverts marked with greenish white.

Female. Has the forehead and head deep green, the bases of the feathers dark brown; the occipital feathers and yellow nape-patch as in the male, but the red cheek-stripe absent, that part being green like the sides of the neck.

Young. Birds of the year have the forehead dark green, and the feathers tipped with the crimson hue of the occiput; the fore neck and throat are brownish, and the dorsal feathers to a certain extent tipped with a pale hue; flanks and lower parts more barred with white than in the adult.

Obs. Ceylonese specimens correspond well with those from Madras. A male from this locality measures 4·7 inches in the wing, bill to gape 1·1; a female 4·6 in the wing, bill to gape 1·1. This species is closely allied to *Ch. chlorophus*, its northern representative, which inhabits Bengal, Assam, and parts of the sub-Himalayan hills. This is a larger bird, two males from Nepal measuring 5·5 and 5·6 inches in the wing, and a female 5·4; it has the hinder part of the head green, a band of red passing across the front of forehead over the lores and eyes to the occiput, where it occupies the terminal half of the nuchal feathers, while the nape and upper part of the hind neck are light

saffron-yellow, richer in hue than in *Ch. xanthoderus*, and the wing-coverts are not so much washed with red as in this latter species.

The female wants the red stripe across the forehead and over the eyes; the under surface is greyish, and less washed with green than in *C. xanthoderus*.

This Woodpecker has been styled by Jerdon and Blyth, and consequently by Layard and other writers on Ceylon ornithology, *Chrysophlegma chlorophanes*, owing, apparently, to a mistake made by Blyth in quoting Vieillot as the author of the species at page 59 of his Catalogue of the Birds in the Asiatic Society's Museum, Calcutta; he there gives as a synonym of *Ch. chlorophanes*, "*Picus chlorophanes*, Vieillot." Vieillot, however, gave no such name in his 'Dictionary,' as Malherbe remarks in his article on the present species and on *Ch. chlorolophus*. I have myself examined the pages in his vol. xxvi., devoted to the Woodpeckers, and cannot find any reference to any other Green Woodpecker from India but that relating to the *Pic à huppe verte* from Bengal. The species, then, in reality wanted a name until Malherbe met with specimens of it in the British Museum, sent there by Jerdon from South India, and described it under the above title. Blyth, by an error, quoted this name as a synonym of *Ch. chlorolophus* at page 58 of his Catalogue.

Distribution.—The "Ground-Woodpecker" is found throughout most of the low country, except the northern parts, where, as far as I am able to ascertain from report and my own observation, it has not yet been detected. As it is, however, nowhere very abundant and is of a retiring nature, it may have been passed over in the north of the Vanni, and it will be for future explorers to extend its limit to that part of the island. It is not unfrequent near Colombo, and is diffused generally throughout the Western Province, being perhaps most common in parts of Saffragam and in the Raygam and Pasdun Korales. In the south-west it is not uncommon both in the hill-region and the wooded country lying between the "Haycock" and Galle. On the eastern side of the island I have found it in the Friars-Hood and other districts; I met with it also in the Wellaway Korale, and it most likely inhabits most of the Park country between there and Batticaloa. In the Kandyan Province it is found in the valleys intersecting the coffee-districts, but more particularly on the Uva side, where I have seen it at an altitude of 4000 feet. It was not uncommon about Lunugalla, inhabiting the jungle on the pass down to Bibile. Kelaart says that it is not unfrequently seen at Nuwara Elliya; but I know of no one else who has seen it there.

In the south of India this Woodpecker is not uncommon. Jerdon writes that it is "found in the forests of Malabar, more especially far south, as in Travancore." In this district Mr. Bourdillon says it is very common; and Mr. Fairbank obtained it in the Palani hills at a considerable elevation. It seems to be restricted to the extreme south of the peninsula; for Jerdon did not find it in the Eastern Ghâts nor in Central India, and Mr. Fairbank does not record it from the Deccan.

Habits.—This species affects the edges of forest and also the interior of the jungle, being partial to wooded ravines through which streams run, near the banks of which I have more than once met with it. It is also found in scattered jungle and low thickets, and may often be surprised on the ground in dense under-wood. But though it is found so much near the ground, tapping about the roots of trees and searching for food on fallen timber, it nevertheless often betakes itself to the very tallest trees of the forest, and has a habit of mounting up to the very topmost branch and there remaining motionless for some time, uttering its loud monosyllabic note, which somewhat resembles that of the Bay Woodpecker. It is when not feeding or on sallying out the first thing in the morning that it utters its note; and sometimes when flying across an open glade or cheena, as I have noticed it in the Eastern Province, it gives out its plaintive pipe; but otherwise it is not a very noisy Woodpecker. When disturbed in the thick jungle, if it be on the ground, it decamps from tree to tree with a loud fluttering of the wings, and clings to the trunks near the roots. When on the wing for any distance its flight is performed with quick beating of the wings and long intermediate jerks, by which it progresses with considerable speed.

Layard writes that he has seen it on the ground "in pairs, breaking into the dried masses of cow-dung in search of Colcoptera. On being alarmed it takes refuge in the nearest tree or bush, and displays all the arboreal activity of its tribe, climbing round the branches and evading the eye by carefully keeping on the opposite side of the limbs."

Besides feeding on colcopterous insects, it is very fond of ants, with which I have found its stomach crammed.

In the breeding-season, which in Travancore apparently is in March, Mr. Bourdillon says that the "plaintive monotonous call of these birds (which somewhat resembles the breeding-call of the common Pariah Kite) may be heard at all hours of the day as they cling motionless to the topmost bough of some tall forest tree."

I know nothing of its nidification.

Genus MICROPTERNUS.

Bill short, wide at the base; culmen much arched or curved, lateral ridge almost obsolete and close to the culmen; gonys straight, its angle sharp. Wings much as in other genera of the family, but with the secondaries long. Tail rather short, broad at the base. Tarsus about equal to the anterior toe, which is longer than the versatile one; claws much curved.

Of chestnut plumage.

MICROPTERNUS GULARIS.

(THE MADRAS RUFOUS WOODPECKER.)

Picus badius, Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. no. 214.

Micropternus gularis, Jerdon, 2nd Suppl. Cat. B. S. India, Madr. Journ. 1845, xiii. p. 139;

Blyth, Cat. B. Mus. A. S. B. p. 61 (1849); Kelaart, Prodr. Mus. Cat. p. 128 (1852);

Jerdon, B. of Ind. i. p. 294; Holdsw. P. Z. S. 1872, p. 428; Hume, Str. Feath. 1873,

p. 431; Legge, *ibid.* 1875, p. 201; Hume, *ibid.* 1877, p. 477.

Micropternus phaeocephus, Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 450.

Phaiopicus jerdoni, Malherbe, Rev. Zool. 1849, p. 535; *id.* Mon. Picid. pl. 47. figs. 1-4 (1862).

The Bay Woodpecker of some; *Brown Woodpecker*, Europeans in Ceylon.

Kāralla, Sinhalese.

Adult male. Length about 9·5 inches; wing 4·5 to 4·7; tail 2·75; tarsus 0·75; outer anterior toe 0·75 to 0·8, its claw (straight) 0·4 to 0·42; outer posterior toe 0·65 to 0·7; bill to gape 1·15 to 1·3. The bill, considering its small size, is somewhat variable in length.

Iris chestnut-brown in some, brownish red in others; bill black, with a slate-coloured or sometimes a greenish line at the sides of the lower mandible; legs and feet "slaty" or blackish plumbeous.

General plumage rufous-bay, with a dusky hue on the under surface; head, region round the eye, and cheeks infuscated with brownish; the feathers extending from the gape beneath the eye to the ear-coverts tipped with crimson, and occasionally those in front of the eye faintly pointed with the same; the feathers of the lower part of the hind neck and all the upper surface beneath that part crossed with bars of brownish black, narrowest on the back and broadest on the inner webs of the quills and tertials; tail with the central feathers deeply tipped with blackish, and the remaining bars five in number; the three lateral feathers with the subterminal bar the same width as the rest; chin- and throat-feathers crossed with blackish-brown subterminal bars and tipped with whitish; flank, sides of belly, and under tail-coverts barred with a lighter brown than the back; first three primaries with a brown patch on the inner webs; under wing-coverts crossed with narrow bars of brownish black.

Though the extent of the crimson tipping on the cheeks varies, I have not yet seen a Ceylonese specimen with it above the anterior angle of the eye, as is the case with the closely allied *M. badius*.

Female. Slightly smaller; wing 4·5 inches; bill to gape 1·1 to 1·25.

The rufous plumage paler throughout than in the male, at least in most specimens that I have examined; cheeks wanting the crimson colour.

Young. In what appears to be an immature male bird, the feathers of the head are edged with rufous-bay, and the crimson cheek-patch is very small in extent; the chest and breast have the feathers crossed with crescentic bands of brown.

Obs. This species is said to vary in size from different parts of South India: I find no appreciable difference between western, southern, and northern specimens in Ceylon; they average, as is the case with most Indo-Ceylonese forms, smaller than the continental birds. Mr. Hume, in his exhaustive notice of the genus ('Stray Feathers,'

1877), gives the wings of a series taken at random from the "Nilghiris, Ceylon, and Travancore as 4.72, 4.85, 4.75, 4.68, 4.71, 4.6, 4.78, 4.85, 4.8, 4.7;" all but three of these dimensions exceed the maximum of Ceylon birds. He remarks that the tail-bands are usually six in number: I take it for granted that the black tip, 0.6 to 0.8 inch in depth, is not included in this number; and if so, most Indian birds must have an extra band on the caudal feathers. Lord Tweeddale records an instance of a Malabar specimen having the crimson "points" quite round the eye; this appears to be a characteristic distinction of *M. badius* from Borneo. Ceylonese females are quite as pale as South-Indian.

Perhaps no genus of Woodpeckers has its members so closely allied as this; the different species have a general resemblance to one another, but yet possess certain nice points of distinction peculiar to types from certain regions which serve to assign them to specific rank. *M. phaiiceps* from Bengal is a larger bird than ours: wings 5.1, 5.3, 4.7. It is paler on the head, and has the white-margined feathers of the throat concolorous with the fore neck and chest. *M. brachyurus* (or *M. badius*), according to Mr. Hume, has the white-tipped throat-feathers banded with dark brown like *M. gularis*; but they extend on to the cheeks, whereas in the latter they do not surmount the rami of the lower mandible; the head is paler than in *M. phaiiceps*, and the crimson dotting of the face the same in extent, or not extending above the angle of the eye: this species inhabits Java, and to it Mr. Hume unites the bird from Tenasserim. The fourth species (*M. badius*) differs solely in the red points extending round the eye; but this would seem to be the case, in isolated instances, with some individuals from Malabar.

Distribution.—This bird has hitherto been considered rare in Ceylon, and likewise of local distribution. It is, however, widely distributed, for I have met with it in all my wanderings through the low country. It is less common, I think, in the north than elsewhere; but yet I have seen it in many parts of the forest-clad country from Tamblegam to the neighbourhood of Anaradjapura. It is found within four miles of Colombo, and is pretty evenly diffused throughout the Western Province: in the south I have met with it chiefly near the Gindurah, and in the south-east found it at Tissa Maha Rama and other places; it is not uncommon in parts of the "Park" country, and I have met with it near Nilgalla; but in all these districts of the eastern portion of the island it is likely to be passed over unless the collector be well on the alert, for it is found usually in the wilder parts of the forest, where the jungle is thin and scattered or interspersed with open glades. In the Seven Korales it is pretty common, and Mr. Parker writes me that it is numerous about Uswewa. It occurs in the valley of Dumbara; but I do not know that it ascends much higher than that. Mr. Bligh has seen it in Haputale up to about 2000 feet. In the peninsula of India it is found "in the forests of Malabar, both above and below the Ghâts, from the extreme south to north latitude 16°." At the latter extreme it is rarer than further south. Mr. Fairbank records it from Khandala and Mahabaleshwar, where it inhabits the western slopes of the hill-ranges. Further north than this I do not think it has been met with. It is, I imagine, more common on the Nilghiris and the adjacent Malabar coast than in the extreme south, for I do not find it recorded either from the Travancore or Palani hills.

Habits.—The Bay Woodpecker is an active and restless bird, astir the first thing in the morning, making its loud note, *quēemp-queep*, heard before many other birds have begun to think about their morning rambles! It is found in thick forest, in compounds filled with cocoanut, bread-fruit, and jack trees, at the borders of jungle-begirt paddy-fields, and in detached woods. It usually mounts to the top of a tree, and selecting some dead branch, taps away at it, diligently listening in the intervals until its luckless prey is discovered. It may be approached easily when thus engaged, and when disturbed does not fly far. It goes more on the ground, I think, than the last species, for I have several times surprised a pair breaking up dried cattle ordure; and on one occasion, in the north of Ceylon, came on one busily attacking a stream of black ants as they filed in close order, a dozen abreast, across a jungle-path. This insect, the short black ant (*Formica exundans*?), forms the Bay Woodpecker's favourite food in the forest districts; it attacks the large black pendent nests which it constructs and entirely consumes its numerous inhabitants. Mr. Parker writes me that he once descried an individual issuing from a round hole in a large nest, and found, on examining it, that the interior was completely hollowed out. When flushed from the ground it rises with a loud flutter to the nearest tree, and often flies suddenly from branch to branch, and so decamps to another place of safety. I have more than once found its breast smeared and discoloured with some viscous substance, which must be the gum from the bark of certain trees. Its flight is very jerky and not swift, being performed with alternate beating and closing of the wings.

I am unable to furnish any information concerning this bird's nesting.

Genus BRACHYPTERNUS.

Bill moderately long, with the culmen curved, wide at the base, with the nostrils apart; gonys short and straight. Wings and tail moderate; the latter cuneate, the central feathers slightly exceeding the next. Tarsi rather short; anterior toe longer than posterior; *hind toe minute*, and its claw *rudimentary*.

BRACHYPTERNUS CEYLONUS.

(THE RED WOODPECKER.)

(Peculiar to Ceylon.)

Picus ceylonus, Forster, Naturf. xiii. pl. 4.

Picus erythronotus, Vieill. N. Dict. d'Hist. Nat. xxvi. p. 73 (1818).

Picus sonneratii, Less. Traité d'Orn. p. 221 (1831).

Brachypternus erythronotus, Strickl. P. Z. S. 1841, p. 31.

Brachypternus ceylonus, Blyth, J. A. S. B. 1846, p. 282; id. Cat. B. Mus. A. S. B. p. 56 (1849); Kelaart, Prodromus, Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 449; Cab. et Heine, Mus. Hein. v. p. 171 (1863); Blyth, Ibis, 1867, p. 297; Holdsworth, P. Z. S. 1872, p. 428; Legge, Ibis, 1874, p. 15, et 1875, p. 284; id. Str. Feath. 1875, p. 202.

Brahmapicus erythronotus, Malherbe, Mon. Piciidæ, ii. p. 90, pl. 69. figs. 1-4 (1863).

Red Woodpecker, Coconut-Woodpecker, Europeans in Ceylon; "*Toddy-bird*," natives in south of Ceylon.

Pastru carpentaru, Portuguese in Ceylon, lit. "Carpenter-bird" (from its habit of tapping trees).

Kāralla, Keberella, Sinhalese; *Tatchan-kuruvi*, Tamils in Ceylon.

♂ *ad.* suprā coccineus, colli et dorsi postici plumis basaliter nigris: uropygio nigro sordidè coccineo lavato: supra-caudalibus caudæque omnino nigris: tectricibus alarum coccineis, basaliter nigris, et pallidè coccineo apicaliter maculatis: remigibus nigris, albo fasciatim maculatis, primariis extimis pogonio interno tantùm notatis, secundariis extūs dorso concoloribus: plumis superciliaribus nigris albo minutè punctatis: facie laterali fulvescenti-albidā nigro striolatā: genis et gulā fulvescentibus nigro maculatis: gutture imo nigro: corpore reliquo subtūs fulvescente, plumis nigro marginatis: hypochondriis, subcaudalibus et subalaribus transversim nigro fasciatis: rostro saturatè corneo, mandibulā cyanescenti-corneā: pedibus sordidè viridibus: iride rubrā.

Adult male and female. Length 11.4 to 11.75 inches; wing 5.2 to 5.65; tail 3.5 to 4.0; tarsus 1.0; outer anterior toe 0.8, its claw (straight) 0.45; outer posterior toe 0.7; bill to gape 1.5 to 1.6.

Iris red, dull red, or reddish; bill blackish, base and sides of under mandible leaden; legs and feet murky greenish, olivaceous green, or dusky sap-green.

Male. Head and crest, back, scapulars, and wing-coverts, with the outer webs of secondaries, tertials, and inner primaries crimson, brightest on the crest and back, and merging into the black of the rump; bases of the head-feathers black, those of the forehead being pointed or tipped with black; throat, fore neck, space behind the eye, hind neck, upper tail-coverts, and tail black; a stripe from behind the eye to the nape, and a broader one from the gape down the cheeks and sides of the neck to the chest white; ear-coverts striated, and throat closely spotted with bar-shaped marks of white; primaries, inner webs of secondaries and tertials, primary-coverts, and point of wing blackish brown; a series of bar-shaped spots on the inner webs of all the quills and corresponding marginal whitish spots on the outer webs of the primaries; secondary-coverts with terminal reddish-white spots;



BRACHYPTERNUS SEYLONUS



beneath, in continuation of the throat, the feathers of the chest have white centres and broad black margins, which latter coalesce lower down into bars, most conspicuously on the flanks and under tail-coverts; under tail- and under wing-coverts black, barred with white.

Female. Has the forehead and crown black, with terminal, circular, white spots, the occiput and nuchal crest being crimson.

Young. Birds of the year have the iris brown; bill dark horn-colour, light bluish at the base beneath, and varying in length from 1.2 to 1.5 inch (tip to gape).

The forehead and crown in both sexes are black; the *male* has the feathers on the latter part faintly tipped with reddish, which colour seems to spread to the frontal feathers at the end of the first year, and probably by moult; the *female* has the forehead and front of crown unmarked at first, and the white-spotted feathers appear by moult at the age of about four months; the face and throat are less spotted than the adult, the white markings being roundish and small; on the chest there is much more black, the white spaces being broken in the centre by the black of the outer portions of the feather, while on the breast the black margins are broader and extend to the tip of the webs; the pale terminal spots on the wing-coverts are absent or very faintly indicated.

With age the markings of the chest open out into broad white mesial stripes.

Obs. This species is not very distantly related to the next, bearing, as Blyth remarks, the same relationship to it as *Chrysocolaptes stricklandi* does to the South-Indian *Ch. delesserti*. In the dark race of *B. puncticollis*, as found in the forests of Ceylon, there is a still greater approach to the present species, for the well-matured male of it is almost as red on the back.

Distribution.—This Woodpecker is the most abundant species of its family in the island, and being such a common bird was known to the old naturalist Forster.

It is diffused throughout the entire island, with perhaps the exception of the extreme north of the Vanni and the Jaffna peninsula. It is abundant in the Western and Southern Provinces, and equally so in the forest-clad country lying to the south of the Haputale hills, in the interior of the Eastern Province, and scarcely less so in the jungles between Matale and Trincomalie and in the N.W. Province. Mr. Holdsworth did not observe it in the Aripu district, nor did I meet with it there nor in the island of Manaar; some distance inland from Mantotte it is, I am informed, not uncommon, as also further north in the Vavonia Valankulam district. In the Kandyan Province it is not rare in the Knuckles district, in Pusselawa, Nilambe, Hewahette, Dimbulla, and Uva, being perhaps most numerous in the latter part. In his 'Prodromus,' Dr. Kelaart records it as very abundant at Nuwara Elliya; but this remark, doubtless, really refers to Layard's Woodpecker, which might easily be mistaken, by an unpractised eye, for the present species. I have never seen it above 3500 or 4000 feet; but there is no reason why it should not range higher than that elevation. It is found likewise in the hills of the Southern Province, for it is not uncommon above Morowaka and in other localities in the Rakwana district.

I did not notice it in the scrubby districts along the south-eastern seaboard, not meeting with it nearer the coast than about 10 or 15 miles north of Hambantota; not so, however, on the western coast, where it frequents the cocoanut-plantations close to the sea-beach, being the first Woodpecker which the newly arrived collector meets with in his trips to Mount Lavinia or through the cinnamon-gardens to the villages about Kotté.

Habits.—Partial as the Ceylon Woodpecker is to cocoanut-groves and compounds containing jack, bread-fruit, and other cultivated trees, it is nevertheless found, in the wilder districts, in forest and jungle of all sorts. It is a fearless bird and very active, running up and round the stems of trees, searching flowers and nut-stalks at the heads of palms, and in a general way perpetually cramming itself with its favourite food, red ants (*Formica smaragdina*). Its usual note is the loud harsh call well known to most people in Ceylon, besides which it delivers a loud "trill" while searching for food; and on many occasions I have observed a pair working about the roots of large trees in the forest going through a little parlance or conversation quite unlike the common notes. Its manners while feeding are quaint, striking loud blows and twisting its head attentively on one side with a view of finding out the whereabouts of its intended victim. It is also highly

interesting to a lover of nature to witness a pair of these birds carrying on their courtship, as they jerk to and fro, round and up a bare cocoanut-trunk, hammering and alternately cocking their heads on one side to listen, then feeding each other, and playing hide and seek round the bare stem, uttering the whole time a low love-chattering. The rattle which this Woodpecker performs when sounding a hollow branch for insects is quite as rapid as that of Layard's Woodpecker, but not so powerful. I have observed it sound a branch many times, twisting its head into a listening attitude after each series of strokes before it gave up the task as unsuccessful. Its harsh call above mentioned is uttered while the bird is in flight, which is, as Layard mentions, sustained "by short rapid jerks repeated at considerable intervals."

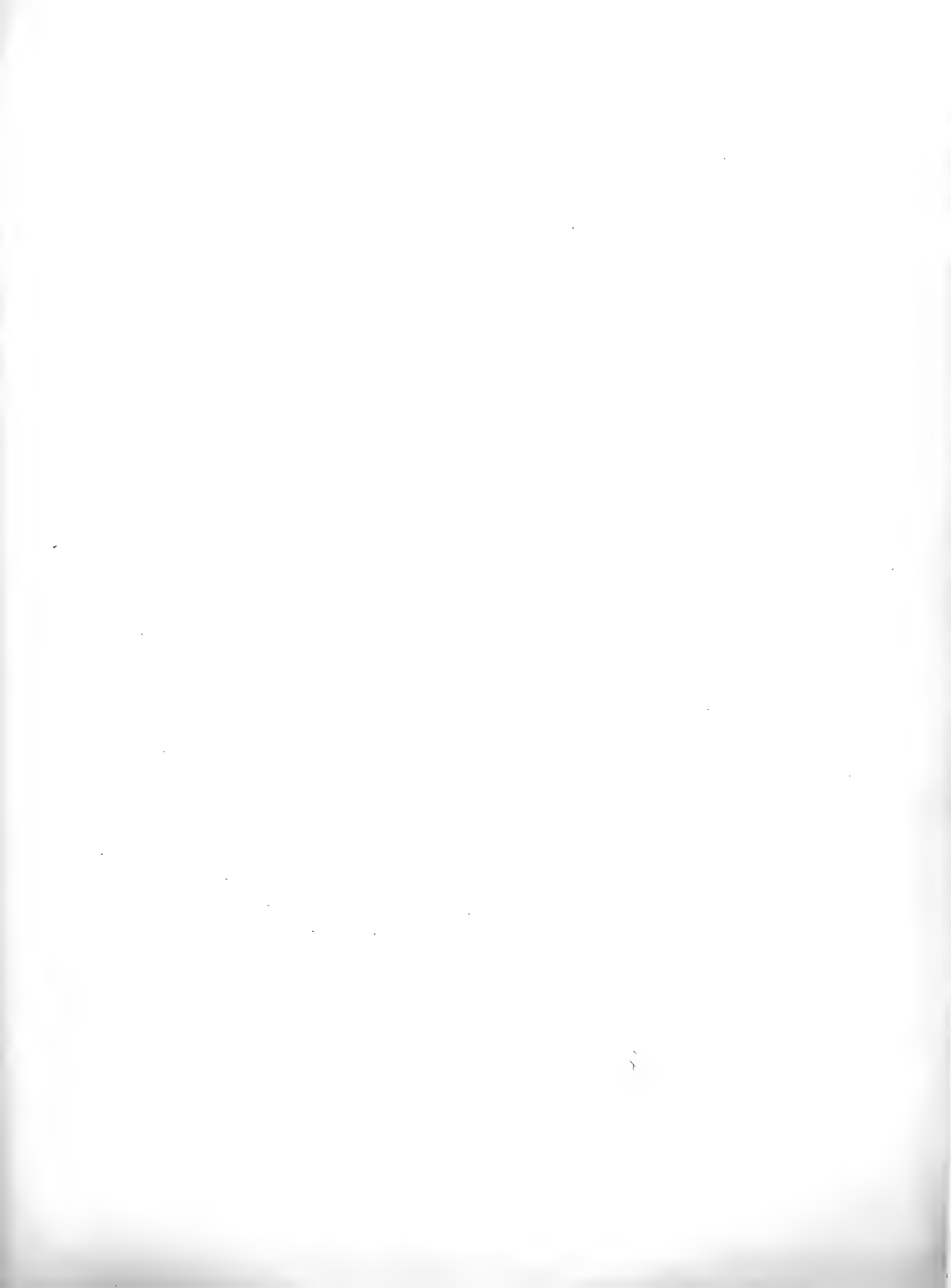
This species is very fond of searching about the flowers of the cocoanut-palm, which abound in various insects on which it feeds; and this habit has caused the natives to think that it resorts to the tops of the cocoanuts for the purpose of feeding on the toddy!

Perhaps the most remarkable feature in this bird's economy is its extraordinary pugnacity. As mentioned in the preceding article, it is addicted to fighting with the Black-backed Woodpecker, disputing with it the right of entrance into the holes which the latter has perhaps excavated for its nest. It is, however, not less amiable towards its own kin! Mr. Parker writes me an account of a combat which he witnessed once, and comments on the disposition of the bird as follows:—"I think the Red Woodpecker is one of the most fearless (amongst his fellows) of any bird I have seen. One day, when examining a tank, I heard a tremendous screaming in a large tree, and I found there two Red Woodpeckers fixed *vertically* on opposite sides of a small *horizontal* branch hammering away at each other as they would do at a dead tree. They were far too busily engaged to take any notice of me, and after watching them for 10 minutes or a quarter of an hour I left them still screaming and fighting." I have observed that they do not live on very good terms with the Racket-tailed Drongo, *Dissemurus malabaricus*; but in this case it is the latter that I have always noticed to be the aggressor, flying at and driving the Woodpeckers from the trees in which they, the Drongos, may be sitting.

The skin of the Red Woodpecker is tough and very thick, but not so much so as that of either of the foregoing *Chrysocolaptes*; its neck is thicker in proportion to the head than in those birds.

Nidification.—In the south of Ceylon the Red Woodpecker breeds from February until June, and not unfrequently nests in the trunk of a dead cocoanut-tree, cutting a round entrance and excavating the decaying part of the tree for some distance below it. I have never been able to procure the eggs, although the bird is so common.

The figures in the Plate accompanying this article represent a male and female of this Woodpecker.





BRACHYPTERNUS PUNCTICOLLIS.

(THE SOUTHERN GOLDEN-BACKED WOODPECKER.)

Brachypternopicus puncticollis, Malh. Rev. Zool. 1845, p. 404 (♂ adult).

Picus chrysonotus, Malh. Rev. Zool. 1845, p. 404 (♀).

Brachypternus micropus, Blyth, J. A. S. B. 1845, xiv. p. 194.

Brachypternus aurantius, Kelaart, Prodromus, Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 448.

Brahmapicus puncticollis, Malh. Mon. Pictidæ, vol. ii. p. 92, pl. 70 (1-4), 1861.

Brachypternus chrysonotus, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 656 (1856); Jerdon (*nec* Lesson), B. of Ind. p. 296 (1862).

Brachypternus puncticollis, Holdsworth, P. Z. S. 1872, p. 428; Hume, Str. Feath. 1876, p. 457; Fairbank, *ibid.* 1877, p. 396.

Brachypternus intermedius, Legge, Str. Feath. 1876, p. 242; Whyte, *ibid.* 1877, p. 201.

Yellow-backed Woodpecker, Europeans in Jaffna district.

Pastru carpentaru, lit. "Carpenter-bird," Portuguese in Ceylon.

Tatchan-kuruvi, Ceylonese Tamils; *Kāralla*, Sinhalese.

Adult male. Length 10·3 to 10·75 inches; wing 5·3 to 5·5; tail 3·5; tarsus 0·8; outer anterior toe 0·8, claws (straight) 0·45; posterior outer toe 0·7; bill to gape 1·4 to 1·55.

Adult female. Wing 5·1 to 5·35 inches.

Male. Iris red; bill blackish or very dark plumbeous, edges of upper mandible paler; legs and feet dull sap-greenish, claws blackish leaden.

RED RACE.—*Male.* Occiput and crest pale crimson, the feathers black at the base and with a narrow pale stripe down the centres; forehead and crown black, each feather "pointed" with crimson; a white streak passing from the nostril under the eye and expanding on the sides of the neck, where it meets another passing from above the eye and over the ear-coverts; the latter white, edged with black; lower back, tail, primaries and their coverts, and the inner webs of the secondaries black; interscapular region, middle of the back, scapulars, and adjoining greater wing-coverts orange-yellow on the centres of the feathers, crimson at the tips, and olivaceous yellowish at the bases; the extent to which the dorsal and scapular feathers are terminated with crimson varies much; outer webs of secondaries and tertials dusky orange; some of the outer median wing-coverts with a whitish central spot near the tips; quills barred with white, the secondaries on their inner webs, and the primaries, all but the first, on both; the latter feathers with one white spot on the inner web; chin, throat, lower part of cheeks, and fore neck black; the feathers of the chin and throat with a terminal triangular white spot and a bar of the same across the bases; the feathers of the fore neck with only the terminal spot; chest, breast, and flanks white, with broad, lateral, black margins, decreasing in width towards the abdomen; lower flanks barred with black; under tail-coverts barred and tipped with the same; under wing-coverts and edge of the wing white, the feathers margined with black.

The extent to which the crimson coloration is developed in some birds from the forests is shown in the figure in the Plate; in this the back and scapulars are almost entirely crimson, with a yellowish hue about the centres of the feathers, the latter colour being almost entirely overcome by the red; the outer webs of the secondaries, the tertials, and the wing-coverts are reddish orange, with a yellowish hue slightly developed near the shafts; the outer wing-coverts are somewhat tinged with yellow.

Female. Iris duller than the male. Forehead and crown black, the feathers with terminal spots of white. The crimson of the occiput not so bright; the back and scapulars orange, or in some yellowish orange tipped with crimson. Some have the back uniformly orange, while others have the feathers yellow and the red coloration confined to the tips; but in all cases there is less of the latter hue than in the males.

PALE OR YELLOW RACE.—Male. Markings the same; the white wing-covert spots larger and continued more on the inner feathers; the ear-coverts with less black; the back and scapulars golden yellow; outer webs of secondaries, tertials, and the secondary wing-coverts dusky golden.

In one specimen from the Jaffna district, which presents an abnormal development of white in the spots of the primaries and those on the wing-coverts, the terminal spot on the feathers of the throat is connected with the basal bar by a mesial stripe, and this imparts the appearance of a specimen of *Brachypternus aurantius*.

Female. Does not differ from the male in the yellow coloration, the head and forehead being, as in the other race, black with white spots.

The older the bird in both sexes the greater the amount of white on the breast and chest, the white portions having evenly defined lateral edges and not indented with the marginal black as in birds not thoroughly mature.

Young. A female in nest-plumage has the dark portions brownish black instead of jet-black; the feathers of the forehead and crown with faint fulvous-white tips; the spots on the throat and fore neck very small, the basal marking in the form of a spot and not of a bar; the white central portions of the chest-feathers small and round in form, the black portions deeper than in the adult and extending to the tips as well as the margins.

Obs. The light form of this species resident on the coast is evidently the bird referred to by Layard as *B. aurantius*, which is a North-Indian Woodpecker, and not found in Ceylon, although it must be remarked that specimens are rarely found among our Jaffna birds with an extraordinary development of the white on the throat-feathers, which nearly approach individuals of typical *B. aurantius*; their isolation, however, precludes their being considered any thing but abnormally-marked examples of this truly puzzling species. The present species is, in fact, one of the most difficult birds to deal with in the whole of this work. Its extreme variability of coloration, apparently dependent on the effect of climate and situation, and its somewhat doubtful connexion with its relations of South India (*Brach. puncticollis* of Malherbe), together with a want of access on my part to a good series of Indian specimens carefully recorded from the forests and open low-lying districts analogous to the north coast of Ceylon, make it almost impossible for me to come to a satisfactory conclusion in the matter. First, as to variability of coloration: Ceylonese specimens from the Jaffna peninsula and adjacent coast, as far south as Manaar, exhibit no variation in the pale golden hue of the back, which resembles that of *B. aurantius*; in the island of Ramisserum, however, which belongs to the mainland, we at once get a richer yellow-backed bird than the Jaffna and Manaar one, and some examples even have a faint tipping of crimson to the feathers of the back, whereas in some specimens from South India the whole coloration of the upper surface has a dull orange hue, a similar example to which I once shot near Trincomalie, forming a good link between the Jaffna and the forest bird. One such specimen from "Malabar," in the British Museum, has the wing 5.9 inches; it is a female, and the largest specimen I have ever seen.

Directly we enter the forests in Ceylon, we find the back and scapulars of an orange-yellow instead of a golden yellow, and the tips more or less "touched" with crimson, or the whole back of a uniform reddish-orange hue. Examples from Madras, and presumably from the forests, have much less of the crimson tippings than is exemplified in some from Ceylon, males from the former locality corresponding with females from the latter. Malherbe's description of these birds from the Nilghiris is very exact. He says, "Le dos et les tectrices alaires sont d'un jaune-orange lavé de rouge vif; les plumes de ces parties sont olivâtres à leur bases, puis lavées de jaune-orange et terminées d'un rouge à reflets qui borde aussi la moitié de la plume." Blyth, in describing his *B. micropus*, which seems to me to have been an example of a *pale-backed* bird of this species, speaks of the black of the nape being continued lower upon the shoulders, and considerably contracting "the golden orange of the back." The expression *golden orange* seems to imply a uniformity of coloration, as would have been the case with a *pale-backed* individual. It is evident, from what I have adduced here, that this Woodpecker varies immensely in India in its coloration, but not so much, I am inclined to think, as in Ceylon. The extremely red bird was first of all considered by me to be distinct, and was named (*loc. cit.*) *B. intermedius*; but as I now find, from an examination of a more complete series, that there is every grade from the pale yellow to it, and having never seen another so dark, it becomes necessary to unite the two extremes. Rather, perhaps, does the pale golden bird need separation; for I question whether any specimens from India can compare, in this respect, to the Ceylonese coast race. The area of country which it inhabits is, I think, too small to allow of its being elevated into a race or subspecies; but if, when further investigation is brought to bear on the matter, it be found to be paler than any Indian examples, the entire Ceylonese group of Golden-backed Woodpeckers might well be separated as *B. intermedius*. It is just possible that the very dark bird which I figure here may be a hybrid between *B. ceylonus* and the present species.

As touching the synonymy of this Woodpecker, Malherbe's name seems always to have been considered to have priority over Blyth's, owing probably to the November number of the 'Revue Zoologique' having been published earlier

than the July number of the 'Journal of the Asiatic Society of Bengal'; otherwise *B. micropus* is the older of the two names. The *Picus chrysionotus* of Lesson never referred to this species; it was simply the female of *B. aurantius*; for, remarks Malherbe, the southern bird did not exist in the Paris collection at the time Lesson gave his name.

Distribution.—The pale race of this Woodpecker inhabits the Jaffna peninsula and the adjacent coast down to Manaar; further south it occurs, but less plentifully, to Puttalam, although specimens appear to be generally tinged with orange in the latter district; on the east coast it is found as far south as Trincomalie, but is not at all common on that side of the island. I have noticed a golden-backed Woodpecker south of Kottiar Bay, but I am not able to say to which race it belonged. In the forests the orange bird is found throughout the northern half of the island. I have procured it a few miles inland from Trincomalie; it is common at Anaradjapura, and throughout the Seven Korales down to the Puttalam district, where Mr. Parker has seen it in the jungles near Uswewa. I fully expected to find it in the jungles of the Eastern Province, but did not succeed, although I was shown a specimen by the late Dr. Gould which he had procured in the "Park" country while on a trip to that part of Ceylon.

I think I may safely say that directly this species enters the shady forests of Ceylon it alters its coloration, assuming the orange hue; no pale-backed bird has ever, to my knowledge, been shot in the interior, and no orange-backed one at Jaffna.

In Ramisserum Island the Southern Golden-backed Woodpecker appears to be very common. My native collector brought me a series of specimens from it, and said it was abundant there. Jerdon says that it is found in "various parts of Southern India, in the Carnatic, and in Malabar." From the latter district I have seen skins; and Mr. Fairbank writes that it is common in heavy forest on the lower Palanis; he has also met with it so far north as in the Khandala district near the Goa frontier.

Habits.—This handsome species frequents, on the sea-coast and in the maritime districts, cocoanut- and palmyra-groves, native gardens, compounds, and scattered jungle in the vicinity of the forest, while in the interior it is found throughout the forests, affecting the heaviest timber and the densest jungle. It has the same jerky flight and a similar loud note of alarm to the last species, and usually consorts in pairs, which do not keep close company, but generally follow each other about, sometimes working on the same tree, but more often searching for their food at a little distance from one another. It runs actively up the trunks of the cocoanut-trees, and when it has reached the top disappears into the head and searches about among the roots of the fronds and the dead flower-stocks, where there are generally numbers of ants to be found. It is very early astir, and when the day has scarcely dawned its loud note is to be heard among the cocoanut-groves in the Jaffna district. It is then very restless, flying from tree to tree before finding a suitable quantity of ants to attack; and a considerable time elapses before it settles down steadily to work, vigorously tapping and listening attentively for the result of its morning salutation to the varied insect inhabitants of the fine old tamarind- or jack-tree into which it has perhaps betaken itself. In the forests I have seen it devoting much attention to the huge bosses and knarled excrescences of the fine Koombook- or Mee-trees which one so often finds near the remote village tanks. It has a trill note, somewhat louder than that of Layard's Woodpecker.

Nidification.—I know nothing concerning the nesting of this Woodpecker; but Layard says that it excavates large holes in the male palmyra-trees, the wood of which is softer than that of the female.

The red-backed figure in the Plate represents the type specimen of my *B. intermedius*, described *loc. cit.*, and which was presented to the Colombo Museum by the late Governor of Ceylon, Sir Wm. Gregory. The pale bird is from the Jaffna peninsula, and the female in the background is an orange-backed bird from the forests near Trincomalie.

PICARIÆ.

Fam. CAPITONIDÆ.

Bill large, wide at the base, conic, inflated at the sides, the margins toothed in some; the culmen curved, the base of the upper mandible continued backwards to the gape; the tips of both mandibles acute; base of the bill furnished with bristles. Tail short and soft, of ten feathers. Feet zygodactyle. Sternum with the keel low and the posterior edge with two emarginations on each side.

Subfam. MEGALÆMINÆ.

Bill with the margin of the upper mandible smooth, variable in length; shorter than the head in some, longer in others.

Genus MEGALÆMA.

Bill conical, stout, wide at base, compressed towards tip; upper mandible overlapping the under at the gape, which is wide; culmen more or less arched. Nostrils exposed and in a basal groove parallel to the culmen, protected by long bristles pointing forwards. Lores, gape, and chin furnished with similar tufts. Wings short, the tertials comparatively long; 1st quill short, 4th and 5th subequal and longest. Tarsus longer than the long anterior toe, scutellated before and behind. Feet zygodactyle, with stout scales; the anterior toes syndactyle.

MEGALÆMA ZEYLANICA.

(THE BROWN-HEADED BARBET.)

(Peculiar to Ceylon.)

Bucco zeylanicus, Gm. Syst. Nat. i. p. 408 (1788).

Capito zeilanicus, Vieill. N. Dict. d'Hist. Nat. iv. p. 499 (1816).

Bucco zeilanicus, Cuv. Règne An. p. 457 (1829); Blyth, J. A. S. B. xv. 1846, pp. 13, 282; Hartlaub, Rev. Zool. 1841, p. 337.

Megalaima caniceps, G. R. Gray, Gen. Birds, ii. p. 429 (1846); Blyth, Cat. B. Mus. A. S. B. p. 66, 1849 (in part), et J. A. S. B. 1851, xx. p. 181 (in part); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 446; Cassin, Orn. Rep. U.S. Exp. Japan, p. 242.

Bucco kottorea, Hartlaub, Rev. Zool. 1841, p. 337.

Bucco viridis, Bonap. Consp. Av. i. p. 144 (1850).

Megalaima zeylanica, Blyth, J. A. S. B. 1851, xx. p. 181; Kelaart, Prodromus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 46; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 638 (1856); Jerdon, B. of Ind. i. p. 311 (1862); G. R. Gray, Cat. B. Brit. Mus. *Capitonidæ*, p. 13 (1868); Holdsworth, P. Z. S. 1872, p. 429; Legge, Ibis, 1874, p. 15.



JG Keulemans lith

Hanhart imp

MEGALĒMA ZEYLANICA.
MEGALĒMA FLAVIFRONS

Megalæma zeylanica, Blyth, Ibis, 1867, pp. 297, 311; Marshall, Mon. Capitonidæ, pl. 40 (1871).

Le Kottorea, Levaill. Barbus, pl. 38; *Le Cabezon kottorea*, Vieill. N. Dict. d'Hist. Nat.

The Large Barbet, Kelaart; *Woodpecker*, Europeans in Ceylon.

Kotoruwa (so called from its note), Sinhalese; *Kootoor*, Ceylonese Tamils; *Kootooroo*, Portuguese in Ceylon.

Similis *M. canicipiti*, sed minor et capite et collo postico brunnescentioribus, et striis medianis minùs conspicuis: tectricum alarum maculis pallidis minùs conspicuis.

Adult male and female. Length 9·5 to 10·0 inches; wing 4·2 to 4·5; tail 2·5 to 2·7; tarsus 1·2; outer anterior toe and claw 1·15; posterior outer toe 1·1; bill to gape 1·6 to 1·8.

Iris reddish brown, with a pale outer circle, sometimes brownish buff; bill dull orange or fleshy red; legs and feet sickly yellow or pale olivaceous yellow; orbital skin dull yellow.

Bristles round the bill black; head, hind neck, throat, and chest umber-brown, passing on the lower part of hind neck into the grass-green of the back, wings, and tail; the brown parts with pale striæ, yellowish and most conspicuous on the lower part of hind neck, throat, and chest; wing-coverts with yellowish terminal spots; some of the tertials and rump-feathers with an occasional wash of bluish; outer primaries brown, with yellowish-grey edgings towards the tips; inner webs of remaining quills brown, with pale yellowish inner margins; chin obscure slaty grey (this hue not always discernible); ear-coverts brownish yellow; beneath, from the chest, light green, paling gradually into the brown of that part; under wing-coverts yellowish, tinged with greenish; under surface of tail bluish.

Young. The young quickly assume the plumage of the adult, being at first paler about the head and hind neck.

A young female, with the wing measuring 4·1 inches, in my collection, has the head, face, and hind neck pale brown, with the striæ whitish, in which colour they are continued to the green feathers of the interscapular region; the throat and fore neck are paler brown than the head, with the striæ whitish and blending gradually into the ground-colour; upper breast very slightly suffused with green. This example might well pass for a small specimen of *M. caniceps*.

Obs. This species is very closely allied to its representative in Central and Southern India, some specimens being scarcely separable were it not for their constantly smaller size. The wing in this Barbet, *Megalæma caniceps*, varies from 4·6 to 4·9 inches, the average length being, I imagine, about 4·75. It has the head, hind neck, and throat paler than in *M. zeylanica*, the stripes are broader and are continued down on to the interscapular region; the wing-coverts have the pale central spots more pronounced.

Megalæma viridis, from Malabar, Travancore, and other Southern-Indian hill-districts, is very nearly related to the last mentioned, but is smaller than it and less even than the Ceylonese bird. The wing varies from 3·7 to 4·4 inches. Jerdon's description of it is:—"Very similar to *Meg. caniceps*, but smaller, the brown of the head and nape scarcely lineated; that of the under parts pale, becoming whitish on the throat; there are no pale specks on the wing-coverts, nor any traces of pale streaks on the green of the back." Another species from Southern India is the *Megalæma inornata*, Walden, which was, until lately, confounded with *M. caniceps*. It is readily distinguished from that species by the "absence of the broad pale median streaks on the pectoral plumage." It has the "chin, throat, breast, and upper portion of the abdominal region uniform pale brown; each feather has the shaft very faintly paler. The plumage above closely resembles that of *M. caniceps*; but the terminal spots on the wing-coverts and tertiaries are almost altogether wanting." In the uniformity of the throat it differs from all other Barbets.

Distribution.—This noisy well-known bird, commonly called a "Woodpecker" or "Woodcutter" by the Eurasian population and many Europeans, is very abundant in most parts of the low country, except close to the seashore or in large tracts of damp forest such as clothe much of the face of the southern half of the island. It is likewise an inhabitant of the Kandyan Province up to an altitude of about 2500 or 3000 feet in the western and northern parts, and to about 4000 feet in the drier district of Uva. Those parts in which it is numerous are the cultivated portions of the west and south-west, parts of the Eastern Province (in which it is locally distributed), portions of the flat forest-clad country lying between Lemastota and the S.E. coast,

and the north-east of the island. It is found in the Vanni and throughout most of the country lying immediately to the north of Dambulla, wherever the jungle is of an open character. In the Seven Korales the same may be said of it; and Mr. Parker writes me that it is common about Uswewa. Mr. Holdsworth does not record it from Aripu; but it avoids such dry scrubby districts on the seaboard, being similarly absent from the brushy country about Hambantota.

As regards the Central Province it is not uncommon in Dumbara and in the valleys of Hewahette, Maturata, and other basins of the hill-tributaries of the Mahawelliganga. In the glens or steep ravines intersecting the great expanse of hilly patnas between Fort MacDonald and Haputale it is likewise found, and is now and then seen at a considerable altitude on the pass leading up to Hakgala. Near Banderawella I have met with it at about 4000 feet elevation.

Habits.—The Brown-headed Barbet inhabits compounds, open wooded country, dry jungle, and scanty forest where fruit-bearing trees are plentiful, on the seeds of which it principally feeds.

There is perhaps no bird better known than this one is to sportsmen or any others who are induced to visit or reside in the cultivated interior of the Western and Southern districts; taking up their abode in some shady compound encircling the native cultivator's house on the nearest rise to his ancestral paddy-fields, these noisy birds commence early in the morning to call to one another, and make the woods resound with their guttural cries. Its loud scale-notes, commencing in measured time and increasing in rapidity and loudness, must be known to every European in the low country, and give rise to its native name of *Kotoruwa*, which has a slight resemblance to some of the syllables in the scale; they much remind one of the commencement of the laugh of the Great Brown Kingfisher, or "Laughing Jackass," of Australia. The food of this Barbet consists of every sort of tree-fruit, seed, and berry; nothing seems to come amiss to it, for there is no tree that bears fruit that it may not sometimes be found in. It is not as gregarious as the next, or as the two smaller Barbets, but, on the contrary, is unsociably inclined towards its fellows, and more than two or three are seldom found in the same tree. It is active in its movements, seizing fruit that may be firmly attached to the stalk, and swinging its body from its perch, wrenches off the coveted morsel; fruit and berries are swallowed whole, and in the north the favourite food is the berry of the banyan or the luscious seed of the Palu or iron-wood tree, of which the Ceylon bear (*Prochilus labiatus*) is so fond. It perches with the body inclining to the horizontal and the head thrust forward in an attitude of watchfulness, unlike the smaller Barbets, who sit bolt upright and twist the head stupidly from side to side. Coleopterous insects are likewise devoured by it; and in captivity this Barbet has been known to exhibit, as some Toucans do, a carnivorous tendency. An interesting account of a caged bird is contained in Layard's "Notes on the Ornithology of Ceylon." At page 447, Ann. & Mag. Nat. Hist. 1854, he writes:—"One kept in a large aviary in Colombo destroyed all the little Amadinae placed with it. Not content with snapping them up when within his reach, he would lie in wait for them behind a thick bush or the feeding-trough, pounce upon them unawares, and after beating them a little on the ground or perch, swallow them whole. When this cannibal came into my possession he was confined in a smaller cage than that in which he had at first been secured; this seemed to displease him, and he went to work to find some means of escape; he narrowly examined every side and corner to discover a weak spot, and having detected one, applied himself vigorously to bore a hole through it, as a Woodpecker would have done; grasping the bars with his feet, he swung himself round, bringing his whole weight to bear upon his bill, which he used as a pickaxe, till the house resounded with his rapid and well-aimed blows. On being checked from exercising his ingenuity in this manner, he became sulky and refused to eat or offer his call of recognition when I approached him; in a day or two, however, he apparently thought better of the matter, resumed his labours upon another spot, and fed as voraciously as ever, devouring huge slices of bananas, jungle fruits, the bodies of any small birds I skinned, &c. I hoped he would have lived long with me, but found him dead one morning; and as he was fat and well-favoured, I presume he died a victim to the solitary system."

The flight of the *Kotoruwa* is performed with quick beating of the wings, and is somewhat laboured, though by no means slow, owing to the amount of momentum which such a solid frame must naturally acquire.

Nidification.—This bird breeds from March until July. The latter month is rather late, I imagine;

but at that date I found a nest with four young ones near Minery. It hollows out with its powerful bill a hole in a rotten tree just large enough to allow of its entering the egg-cavity, which is some distance down the trunk or branch. It does not use the same nest twice, but having found a tree with wood suited to its work, perforates it each year for the new nest, as many as 8 or 10 holes being sometimes visible in a tree by a jungle roadside. It is only when sounding wood before making its nest that these birds tap with their bills, the blows being very slowly repeated with perhaps an interval of 10 seconds between each. There are generally a few bents and grass-stalks collected for the eggs to lie on, but scarcely worthy of the name of nest. The eggs are three or four in number, pure white, glossy, and rather round in shape; they measure about 1.1 by 0.9 inch.

The upper figure in the Plate accompanying this article represents a male of this species from the Western Province.

MEGALÆMA FLAVIFRONS.

(THE YELLOW-FRONTED BARBET.)

(Peculiar to Ceylon.)

Bucco flavifrons, Cuv. Règ. An. i. p. 428 (1817).

Bucco aurifrons, Temm. Pl. Col. texte (1831).

Megalæma flavifrons, Bonap. Consp. Gen. Av. i. p. 143 (1850); Blyth, J. A. S. B. 1852, p. 179, et Ibis, 1866, p. 227; Gray, Cat. B. Brit. Mus. *Capit.* p. 8 (1868); Marshall, Monog. Capit. pl. 30 (1871).

Megalaima flavifrons, Kelaart, Prodromus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 447; Holdsworth, P. Z. S. 1872, p. 429; Layard, P. Z. S. 1873, p. 204; Legge, Str. Feath. 1875, p. 365.

Cyanops flavifrons, Jerdon, B. of Ind. i. p. 314 (1862); Blyth, Ibis, 1867, p. 297; Legge, Ibis, 1874, p. 15.

Le Barbut à front d'or, Levaill. Barbus, pl. 35; *The Yellow-headed Barbet*, Kelaart; *The "Shouter,"* Europeans in planting districts.

Kotoruwa, Sinhalese.

♂ *ad.* suprâ prasinus, interscapulio obscurius viridi, occipitis nuchæ et colli postici plumis clarè flavo medialiter striatis: remigibus nigris, extûs prasinis, intûs flavo marginatis: caudâ prasinâ: fronte et vertice aurato-flavis: lorîs, fasciâ superciliari, facie laterali, gulaque totâ cyaneis: genis anticis aurato-flavis, fasciam mystacalem parvam formantibus: corpore reliquo subtûs pallidè viridi, juguli et pectoris plumis prasino marginatis: subalaribus pallidè ochrascenti-fulvis, obscurè viridi lavatis: rostro viridescenti-corneo, mandibulâ pallidiore: pedibus pallidè viridescentibus: iride dilutè rubrâ.

♀ *mari similis.*

Adult male and female. Length 8·3 to 8·9 inches; wing 3·45 to 3·7; tail 2·2 to 2·3; tarsus 0·9 to 1·0; outer anterior toe and claw 0·95 to 1·05; outer posterior toe 0·85; bill to gape 1·15 to 1·3; height at front of nostril 0·32 to 0·4. *Females* average slightly smaller than males, and the bills of both sexes vary in size.

In this species the bristles at the gape and chin are slight, and the lores more feathered than in the preceding.

Iris light red, or pale brownish red, a pale outer circle often present; bill greenish horn, slightly dusky at base of culmen, lower mandible paler; tarsi and feet sickly green, the tarsi in some bluish; soles yellow, claws dusky.

Lores, a superciliary stripe, cheeks, ear-coverts, and throat pale verditer-blue, lightest on the latter part; a spot beneath the gape, forehead, and front of crown amber-yellow, passing on the head into brownish green, and from that into the grass-green of the back, wings, and tail; nape, sides, and back of neck marked with light striæ, yellowish on the former, and greenish white on the neck; outer primaries and inner webs of quills brown, margined internally with yellowish; longer primaries outwardly edged light towards the tips; beneath pale green; bases of abdominal feathers whitish; chest and sides of breast with crescentic margins of brownish green.

Obs. The coloration of this Barbet is peculiar, inasmuch as it forms a link between the *Cyanops* group and that comprised of the members of the genus *Megalæma*. Although now classed with the latter, it has, as I have pointed out above, a slight dissimilarity in the less amount of facial bristling and more feathered lores, besides which its bill is shorter in proportion to its width at the base. Some variation in its plumage is observable; the extent of the frontal yellow varies, in some specimens it ceases abruptly, while in others it passes back almost to the occiput. The striæ on the hind neck are sometimes broad and almost white in colour, individuals so marked having the lunulations on the chest very pale; this is, perhaps, a sign of immaturity. There is no difference in size between low-country and hill birds, some Mahara specimens in my collection being as large as, if not larger than, any others.

Distribution.—This Barbet has long been known as a peculiar Ceylon bird. Levallant described it in his great work among the Barbets, from a specimen in the Paris Museum, and Cuvier afterwards gave it its Latin title of *flavifrons*. Its head-quarters in Ceylon are the hills of the Kandyan Province and those of the southern group lying in the Kolonna, Morowak, and Kukkul Korales, downwards from all of which it spreads into the low country and has there a somewhat peculiar distribution. It is very abundant throughout all the Kandyan Province, ranging up to the forest of the main range, but not nearly in such numbers as it inhabits the coffee-districts. I have met with it as high as the Kandapolla woods, 6400 feet, but not at Nuwara ELLIYA or on the Horton Plains, although it is found just beneath the latter, at the foot of the "World's End" precipice. In the coffee-districts of Rakwana and the Morowak Korale it is numerous, but it is far more abundant in the Singha-Raja forests of the Kukkul Korale. As regards its dispersion through the low country, commencing in the south, we find it in the Opaté, Oodogamma, and other fine timber-forests on the banks of the Gindurah, and in the dry season in the forest of Kottowe, near Galle. In the forest-region of the south-east I never met with it. In the Western Province it is common in some localities in Saffragam, and is numerous in parts of the Pasdun Korale, whither it finds its way down from Kukkul Korale. It inhabits the hills stretching from Ambepussa to Avisawella, and thence spreads down the river to Kaduwella, and northwards to Mahara and Heneratgoda; in the south-west of the Raygam Korale it is not uncommon, and is numerous about Kæsbawa and other places in the Hewagam Korale. It extends from the Ambokka range into the Seven Korales, in which I have found it on the western slopes of the Doolookanda hill; but further out than this I was unable to trace it. I do not think it ranges much to the north of Dambulla, or I should most likely have met with it on the slopes of the isolated mountain of Rittagalla. In the Eastern Province its distribution is equally local; for it is met with in some forests near Kumberuwella, about 25 miles from Batticaloa, and also in the Friars-Hood forests, but thence through a wide expanse of forest-country to the foot of the Madulsima range it does not appear to be found.

I observe that Layard (P. Z. S. 1873) is of opinion that it did not frequent the low country of the Western Province in his day, but that it has spread outwards of late years. I think, however, the above "distribution" will demonstrate to any one knowing the interior of Ceylon that its range is very peculiar, some districts coming in for a share of its patronage, while others adjacent to them are altogether passed over.

Habits.—The voice of this bird is one of the chief ornithological characteristics of the Ceylon hills; the notes which constitute it have somewhat the character of those of the larger bird, but differ chiefly in the "roll" with which they begin; they are commenced early in the morning, and continued for many hours, until the persistent Barbet, judging by the tone of his cries, becomes hoarse, and then there is a cessation, much to the relief of the wearied planter over whose bungalow the "shouter" has perhaps been calling to his mates away up at the forest's margin for the past hour! Mr. Bligh tells me that he observes a very perceptible decrease in this bird's loquacity as soon as it has begun to breed, although it has, of course, been more than usually noisy during the season of courtship. It delights in perching on the top of a tree growing at the brink of some dizzy precipice, from which its note swells far and wide over the beautiful coffee-planted gorge beneath; but still more curious is the manner in which the monosyllabic sound *quiōk*, *quiōk*, ascends audibly from the edge of the patnas far beneath the bungalow, and falls on the ear as distinctly as if it were issuing from a tree close at hand. In the low country it is found chiefly in forest, but sometimes about paddy-field woods, as at Mahara, Kaduwella, Ambepussa, and other places; in the timber-jungles of the south-west it is next to impossible to procure, as it keeps to the tops of the highest Hora- or Keena-trees, and would never be discovered were it not for its perpetual shouting. It is a gluttonous feeder, collecting in dozens among the branches of any tree in fruit, climbing intently about and wrenching off the berries with its powerful bill, at the same time letting much fall to the ground. In the Singha-Raja forest I found it feeding greedily on the berry of the Dang-tree (*Syzygium caryophyllæum*). Towards evening, after digesting its morning food, the Yellow-fronted Barbet begins its clamour again, and after feeding becomes silent before dusk. It is noticeable to what a great extent these birds answer one another; as soon as one commences its note, the refrain is taken up by another not far distant, and then by a third, and so on until the whole wood resounds with the not unmelodious but rather wearying sounds. I have not unfrequently heard from my friends in the coffee-districts that the continuous cry of this bird near the bungalow of a sick person has a most wearisome effect.

Nidification.—This Barbet has apparently two broods in the year, for the season of its breeding lasts from February until September. It selects usually a soft-wood tree, such as the cotton (*Bombax malabaricum*), and cuts a round hole into the heart of the branch or trunk, in which it excavates a cavity for its eggs some distance down from the entrance. The eggs are two or three in number, and are laid on the bare wood; they are pure white, rounded in form, with a smooth texture; they average 1·11 by 0·81 inch. When the trunk of a tree is chosen, several holes are sometimes commenced before a soft-enough place is found to excavate the nest.

The lower figure in the Plate accompanying the preceding article represents a fine specimen of this bird from the Southern Province.



Hanhart imp
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ANTHOLÆMA RUBRICAPILLA
var LORICULUS INDICUS

Genus XANTHOLÆMA.

Bill shorter and wider at the base than in *Megalæma*; culmen more arched; loral bristles very long. Wings with the 2nd quill the longest, the 3rd only slightly less than it. Legs and feet as in the last genus.

XANTHOLÆMA RUBRICAPILLA.

(THE LITTLE CEYLON BARBET*.)

(Peculiar to Ceylon.)

Bucco rubricapillus, Gm. Syst. Nat. i. p. 408 (1788); Blyth, J. A. S. B. 1847, pp. 386, 464.

Bucco lathamii, Gm. Syst. Nat. i. p. 408 (1788); Lath. Ind. Orn. i. p. 205 (1790); Cuv. Règ. An. i. p. 45 (1829).

Capito rubricapillus, Vieill. N. Dict. d'Hist. Nat. p. 449 (1816).

Capito lathamii, Vieill. N. Dict. d'Hist. Nat. p. 449 (1816).

Megalaima rubricapilla, G. R. Gray, Gen. Birds, p. 429 (1846); Kelaart, Prodrömus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 448; Goff. Mus. Pays-Bas, *Buccones*, p. 26 (1863).

Megalaima lathamii, G. R. Gray, Gen. Birds, p. 429.

Megalæma rubricapilla, Blyth, Cat. B. Mus. A. S. B. p. 68 (1849); Bonap. Consp. Av. p. 144 (1850).

Xantholæma rubricapilla, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 646; Blyth, Ibis, 1867, p. 297; Marshall, Monogr. Capit. pl. 44 (1871); Holdsworth, P. Z. S. 1872, p. 430; Legge, Ibis, 1874, p. 15, et 1875, p. 284.

Le Barbet à couronne rouge, or the *Red-crowned Barbet*, Brown, Ill. xiv. (1776); *Le Cabezon à couronne rouge*, Vieill. N. Dict. d'Hist. Nat. p. 497; *The Rose-crowned Barbet*, Marshall; *The Red-fronted Barbet*, *The "Copper-smith,"* also *Bell-bird*, Europeans in Ceylon.

Mal-kotoruwa, lit. "Flower-Barbet" (from its gay colours).

♂ *ad.* prasinus, plumis quibusdam cyaneo lavatis: remigibus saturatè brunneis, extùs dorsi colore lavatis: caudà viridi: narium plumis flavis: lineà angustà frontali nigrà: vertice et fronte scarlatinis postea nigro marginatis: strigà supra- et infraoculari flavà: facie laterali genisque viridi-cyaneis: gutture toto latè flavo, maculà jugulari scarlatinà: corpore reliquo subtùs viridi flavo lavatà: subalaribus flavidis: rostro nigro, ad basin schistaceo: pedibus saturatè corallinis: iride rufescenti-brunneà.

Adult male and female. Length 6·0 to 6·2 inches; wing 3·0 to 3·15; tail 1·4; tarsus 0·75; outer anterior toe and claw 0·75; posterior toe 0·65; bill to gape 0·85 to 0·9.

* This species has usually been styled the "Red-fronted Barbet;" but the next, though not so called, has also a red forehead; and therefore, taken in reference to Ceylon ornithology, the present name will, I think, be better.

Iris brown or reddish brown; bill black, pale beneath at the base; legs and feet opaque coral-red, claws blackish; orbital skin dull red.

Forehead and a spot on lower part of throat crimson, a black border at the base of culmen, and another above the crimson patch passing behind the eye to the cheeks; a superciliary stripe, cheeks, chin, throat, and round the crimson neck-spot shining gamboge-yellow, bases of throat-feathers black; from the black coronal band to tail, including the wings, dark green, tinged with bluish on the crown; outer primaries and inner webs of all the quills blackish brown, margined internally with yellowish; wing-coverts and back in many specimens edged bluish green; a patch of pale blue over the ear-coverts and side of neck, passing up into the bluish edgings of the crown; beneath, from the chest (which is washed with the yellow of the throat) pale green, with bluish edgings on the sides of the breast in some.

The amount of black on the crown varies, the band being narrowest in newly-plumaged examples, the black bases of the head-feathers amalgamating with it in abraded dress.

Young. Bill blackish; iris brown; legs and feet bluish brown. Forehead green, somewhat paler than crown, no trace of red band; throat yellowish, and the yellow cheek-spot present; crimson throat-spot wanting; green of upper and under surface as in adult. This is the plumage on first merging from the nest. Shortly afterwards the red throat-spot and frontal band are acquired.

Obs. This little Barbet is allied, but not very closely, to its South-Indian representative, *X. malabarica*, which also has the forehead and the space round the eyes, as well as the chin and throat, crimson; the occiput is black passing into blue; cheeks and sides of neck dull blue. In size it is similar to the Ceylonese bird; wing about 3.2 inches.

Distribution.—The Little Ceylon Barbet inhabits almost all the low country except the hot scrubby districts on the sea-board in the south-east and north-west of the island; but it is much more common in the southern than the northern half. In the Galle district it is very abundant, extending into the southern ranges to an altitude of 2500 feet; it is almost equally so all through the Western Province, and extends through the N.W. Province (beginning to be less abundant at Chilaw) into the northern forest tract, in some parts of which it is more plentiful than the next species, which is essentially a northern bird. About Trincomalie and along the north-east coast to Mullaitivu it dwells chiefly in the jungle some miles inland, while *Xantholema indica* is found near the coast as well as in the interior. Mr. Holdsworth did not observe it at Aripu, which is a region unsuited to its habits; but it frequents the interior towards the Central Road, and is also found in the Jaffna peninsula.

In the Kandyan Province it is common in Dumbara and about Pusselawa, Hewahette, and other localities, but is less so in Uva than the next species. From this region it is found at intervals in the Eastern Province out to the east coast; and in the forest country from the base of the Haputale range to the edge of the scrub or "brush" country near Hambantota it is fairly common.

Habits.—This Barbet chiefly frequents cultivated country, scattered woods, the edges of paddy-fields, native gardens, compounds, and cocoanut-plantations; but in the wild districts of the north and east it is partial to luxuriant forest, in which it usually takes up its quarters near some spreading banyan-tree or other source of frugivorous supplies. It is one of the most noticeable birds about native villages, taking up its abode among the bread-fruit and jack-trees, and uttering its curious note, which has gained for it, as well as for the next species, of which the voice is somewhat similar, the name of "Copper-smith." It sits perfectly upright on the top of a tree, being very partial to the *Bombax malabaricum*, and jerks out its monosyllabical cry *wok, wok, wok*, slowly repeated, with a bob of the head at each note, and then breaks forth into *wok wok wok wok*, as if it had suddenly become impatient at the result of its parlance with its inattentive mate. It is usually solitary, or if accompanied by a mate appears not to dwell in very close fellowship with it, except, of course, during the breeding-season, when it may be seen in pairs in the same tree. It lives entirely on fruits and seeds like the rest of its congeners, but does not congregate in such flocks as the next species. The flight of this Barbet is tolerably swift, but of necessity somewhat laboured; it is performed with quick beatings of the wings, with now and then a long dipping motion.

Nidification.—The breeding-season of this little bird lasts from March until June, and it usually nests in the decayed branches of living trees, the bread-fruit (which is generally much encumbered with small, dead, top branches) being a favourite resort with it. It plies itself to the task of excavating the hole with great assiduity, first of all slowly tapping the wood all over until it has found what it imagines is a soft place; very often, after working in for an inch or so, it will find that the wood is too hard for its capabilities, and will then try another spot in the same branch. A nest I once found was in the topmost branch of a bread-fruit; the habitation was an old one, but close to it were one or two essays at making a fresh hole; the wood had evidently proved too hard and it had returned, perhaps reluctantly, to the old nest. The branch was about 4 or 5 inches in diameter, and the hole entering the cavity 2 inches and perfectly round; the nest was about 6 inches below the aperture, and the young, which were three in number, reposed upon the bare wood without any nest-lining whatever. The eggs are glossy white, rather spherical in shape, and measure about 0·9 by 0·65 inch.

In the Plate accompanying this article the figure of the young bird represents the nestling after quitting the nest.

XANTHOLÆMA HÆMACEPHALA.

(THE CRIMSON-BREASTED BARBET.)

Bucco hæmacephalus, Müll. Syst. Nat. Suppl. p. 88 (1776).

Bucco flavigula, Bodd. Tabl. Pl. Enl. p. 30 (1783).

Bucco philippensis, Gm. Syst. Nat. i. p. 407 (1788).

Bucco indicus, Lath. Ind. Orn. i. p. 205 (1790).

Capito philippensis, Vieill. N. Dict. d'Hist. Nat. iv. p. 498 (1816).

Megalaima philippensis, G. R. Gray, Gen. B. ii. p. 429 (1846); Blyth, Cat. B. Mus. A. S. B. p. 68 (1849); Kelaart, Prodromus, Cat. p. 127 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 447.

Xantholæma indica, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 644 (1856); Jerdon, B. of Ind. i. p. 315 (1862); Holdsworth, P. Z. S. 1872, p. 430; Legge, Ibis, 1875, p. 284.

Megalaima hæmacephala, G. R. Gray, Cat. B. Brit. Mus. *Capit.* p. 10 (1868).

Xantholæma hæmacephala, Marshall, Mon. Capit. pl. 42 (1871); Hume, Nests and Eggs (Rough Draft), p. 131 (1873); id. Str. Feath. 1873, p. 453; Ball, *ibid.* 1874, p. 466; Hume, *ibid.* 1875, p. 77; Armstrong, *ibid.* 1876, p. 311.

Le Barbut des Philippines, Brisson; *Le Cabezon à gorge jaune*, Vieill.; *The Crimson-gorgeted Barbet*, Marshall; *Copper-smith*, Europeans in Ceylon; *Kat-khora*, Hind., or *Tambayat*, lit. "Copper-smith"; *Chota bassant bairi*, or *Chota Benebo*, Beng.; *Tokoji*, Telegu.

Kotoruwa, *Mal-kotoruwa*, Sinhalese; *Kokoorupan*, Tamil (Layard).

Adult male and female. Length 6·0 to 6·1 inches; wing 3·0 to 3·15; tail 1·5; tarsus 0·8; outer anterior toe and claw 0·75; bill to gape 0·9 to 0·97.

Iris reddish brown, with a pale or pearly-grey outer circle; eyelid red; bill black; legs and feet coral-red.

A broad frontal band and a patch across the lower part of throat glistening crimson; lores, the top and sides of head behind the eye, ear-coverts, and cheeks black; chin, throat, a stripe above the eye, and a patch on the cheek sulphur-yellow; hind neck, back, and wings sap-green, slightly pervaded with bluish on the occiput; tail and outer webs of quills bluish green; outer primaries and inner webs of all the quills blackish brown, margined inwardly with whitish yellow; below the chest-patch green, washed next the crimson with yellow; breast and lower parts whitish, with broad dark green centres to the feathers, darkest on the flanks, and fading on the centre of the belly; bases of wing-coverts blackish, under wing yellowish.

The extent of black on the occiput varies, and specimens are likewise often seen with the back and wing-coverts edged yellowish green.

Young. Iris dark brown; legs and feet yellowish red. In the fully-plumaged nestling the crimson forehead and chest are wanting, the former being concolorous with the crown, which is dusky green; the yellow throat- and facial-spots are not so bright as in the adult; the lower part of the face and space just behind the eye only are blackish: the upper surface is pale-edged, and that part of the chest which is crimson in the adult is dull green; under surface much as in the adult, but the centres of the feathers are paler. Traces of the black crown are perceptible in the blackish bases of the feathers there.

Obs. Ceylonese specimens are identical with Indian in character of marking &c., but the latter may perhaps average somewhat larger. An individual from Kamptee has the wing 3·2 inches, another from "North India" 3·25. In some specimens the pale portions of the breast-feathers are strongly tinged with yellowish. Birds from the Burmese countries, says Mr. Hume, are not different from Indian; and an example from Acheen (Sumatra) is indistinguishable, as regards colour, from Indian examples, although somewhat smaller and shorter in the bill.

Distribution.—The little "Copper-smith" is diffused throughout all the dry region of Ceylon, commencing

in the south a few miles west of Tangalla, and extending round the east side of the island (including the interior from the coast to the eastern slopes of Madulsima) to the extreme north. From the Jaffna peninsula it inhabits the west coast as far south as Madampe, the limit of its range extending thence across the country to Kurunegala, where it is very common. From Kurunegala it is found all along the base of the west Matale hills to Nalanda, and round to Bintenne; while all through the forests of the interior, stretching north of Dambulla, it is common. From the lowlands below Madulsima it ascends into Uva, in which region it is the prevalent small Barbet; but it does not cross the Hakgala ridge, and, in fact, its numbers decrease gradually to the west of the Badulla valley, and it is not very plentiful in the Uva patna basin. From Badulla it extends round the base of the hills, being found up their slopes to a height of about 2000 feet to Maturata and Hewahette, in which valley I have seen all four species together in the same ravine. In the north-east monsoon it strays in small numbers into Kandy, and as far even as Peradeniya, in the gardens at which place I have heard it in February. It is resident a little to the east of Kandy, namely at Hangerankette. It will be seen that the range of this bird in Ceylon is entirely determined by climate, and is one of the most interesting of such cases to be found in the whole list of Ceylonese birds: the lower portions of the Kandy country towards the east are dry, and there this little Barbet establishes itself, and in the dry season penetrates to the west almost until it meets its fellows permanently residing in the low country of the North-west Province. The distance between Peradeniya, the most westerly point at which I have observed these birds coming from the east, to Kurunegala, where western birds are common, is not 20 miles in a direct line. I should not wonder if it be found in this intervening space, should naturalists take the trouble to look for it. I have never heard it myself at the back of Allegalla peak, and I do not know the low-lying cheena-hills between it and Gallagedera.

Beyond the confines of Ceylon the Crimson-breasted Barbet has a wide range. Jerdon speaks thus of its habitat:—"It is found throughout all India, extending into the Burmese countries, Malayana, and the isles." In some of the latter regions it is perhaps as common as it is in India. Capt. Feilden and Mr. Oates speak of it as common throughout Pegu, and Dr. Armstrong found it in abundance in thin forest-jungle in the Irrawaddy delta. In Tenasserim it is recorded as common; and Col. Tickell states that there appear to be two races of it in that Province, one of which inhabits the dense lofty forests, and the other the open country and villages, the two differing somewhat in voice. Mr. Davison procured it at Acheen.

In Southern India I find that Mr. Bourdillon does not state it to be an inhabitant of the Travancore Hills; but Mr. Fairbank found it common up to 4000 feet in the Palanis, which form an eastern spur of the former range, and are, I have no doubt, much drier. In Central India and Bengal it is widely distributed, extending westwards into the Guzerat district, but not as far as Sindh, nor is it found in the Punjab or the Himalayas.

Habits.—This quaint little bird, being an inveterate fruit-eater, is found in all localities where trees affording it its favourite food are to be found. In the hills it affects scanty jungle and wooded ravines and hollows; but in the low country it is found, in addition to jungle, woods, groves, &c., in the gardens of the natives and the grounds surrounding the bungalows of the Europeans. It was a constant resident in the Fort at Trincomalie, and there I had much opportunity of observing its curious habits and manners. It appears not to indulge much in its powers of wing, but is a quiet retiring little bird, taking up its abode in the shady banyan or other such fruit-bearing monarch of the forest, and flying from branch to branch as it gorges itself with the ripe berry. If disturbed it flies off a short distance, and sits on the top of a neighbouring tree, twisting its head about and looking intensely stupid, until it suddenly remembers that its mate must be somewhere near, and it then commences its singular metallic-sounding call, resembling the syllable *wonk-wonk-wonk*. This is slowly repeated, and sounds like the striking of a hollow copper vessel; it is very distinct from the quicker sharper *wok-wok-wok* of the Ceylonese Barbet. In the breeding-season it delivers this note from morning to night, continuing it to a most monotonous extent without cessation: the pair sit close together, and utter it in concert, each note being accompanied by an odd-looking combined forward and sideward jerk of the head; and as of course both birds do not move together, the sound appears to come from different directions. I find that Sundevall takes another view of this curious effect; he writes, as quoted by Jerdon, "the same individual always utters the same note, but two are seldom heard to make it exactly alike. When, therefore, two or more birds are sitting near each other, a not unpleasant music arises from the alternation of the

notes, each sounding like the tone of a series of bells." The difference in sound, as I have already remarked, is produced by the alternate twisting of the birds' heads, that of one being directed towards, while that of the other is turned away, from the listener while the note is being delivered. Jerdon, I remark, advocates the same reason.

This Barbet has been stated to run up the trunks of trees; this it assuredly does not; it may be seen clinging to the bark of a tree at the commencement of the breeding-season, tapping the wood in order to find some soft or hollow place to make its nest in, but it has no power of proceeding up the surface of the trees. It congregates in large flocks, in company with Pigeons, to feed on the fruit of the Banyan-, Bo-, and Palu-trees, and quickly returns to the feast after being frightened away.

Nidification.—This species breeds from January until June, April being, I imagine, the month in which most young are reared. It generally nests in small decayed branches, boring them on the lower side when they happen to be slanting. As is the case with the former species, it selects, if possible, a branch that is hollow, and cutting its neatly-made round entrance, lays its eggs at the bottom of the cavity. Should the branch not be hollow, however, it will excavate to a depth of 6 inches or more, and will even continue to deepen it year after year. An instance of this is given by Jerdon, who had a pair breeding year after year in the cross beam of a vinery in his garden; the cavity was lengthened annually until "the distance from the original end was 4 or 5 feet." Another entrance was made from the underside, as was the first, and about $2\frac{1}{2}$ feet from the nest. A pair that bred in a tree opposite my bungalow in the Fort at Trincomalie took from a fortnight to three weeks to construct the entrance and a short internal cavity. The opening was on the underside of a branch inclined at about 30° . The birds took it by turns to work, and the assiduity with which they laboured at the solid branch was extremely interesting. The little "carpenter" clung to the bark beneath the orifice, and swinging its body sideways and backwards would bring the whole of its strength to bear on the blow which it delivered with its stout little beak. I observed that the tail was seldom used as a support unless when a very vigorous blow was about to be dealt. When tired he would fly to an adjacent branch and look at the work with a contented aspect, and after a rest commence anew.

Mr. Parker writes me that he once watched one working at a hole in a most sedate manner. "After swaying his body sideways a little, whilst he was selecting a suitable chip to attack, he very gravely gave two or three sharp taps with his bill and detached a piece of wood. He then, *after looking round him*, proceeded in the same way to select another chip and detach it, and so on, as if he intended to spend his whole existence at the work."

Mr. Adam describes a nest which was made in the fork of a dead branch lying by the side of a thoroughfare, and so small that it could easily be lifted by the hand.

The eggs are usually three in number and are of an elongated shape; they are pure white, and have a pinkish tinge before being blown; they average 0.99 by 0.69 inch (*Hume*).

PICARIÆ.

Fam. CUCULIDÆ.

Bill more or less slender, curved, and compressed; the nostrils exposed and variable in position; gape wide. Feet zygodactyle; the outer anterior toe longer than the outer posterior one. Tail more or less long and broad.

Subfam. CUCULINÆ.

Nostrils swollen; the head sometimes crested. Tail variable. The tarsi feathered anteriorly, and the thigh-feathers long, hiding the tarsus. Stomach villous. (*Sharpe*, P. Z. S. 1873, p. 579, in part.)

Genus CUCULUS.

Bill moderately slender; gape wide, the culmen gently curved. Nostrils round, apert and basal. Wing tolerably long and pointed; the 3rd quill the longest, and the 1st shorter than or subequal to the 7th. Tail graduated, generally long. Tarsus not longer than the middle toe, feathered above at the front, the lower part covered with broad transverse scales. Inner anterior toe much shorter than the outer, and not so long as the outer posterior one.

CUCULUS CANORUS.

(THE COMMON CUCKOO.)

Cuculus canorus, Linn. Syst. Nat. i. p. 168 (1766); Sykes, P. Z. S. 1832, p. 98; Gould, B. of Europe, pl. 240 (1837); Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 219; Blyth, Cat. B. Mus. A. S. B. p. 71 (1849); Layard et Kelaart, Prodromus, Suppl. Cat. p. 60 (1853); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 452; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 702 (1856); Blakiston, Ibis, 1862, p. 325; Jerdon, B. of Ind. i. p. 322 (1862); Holdsworth, P. Z. S. 1872, p. 430; Gould, B. of Gt. Britain, vol. iii. pl. 67 (1873); Hume, Nests and Eggs (Rough Draft), p. 133 (1873); Ball, Str. Feath. 1874, p. 393; Bligh, J. A. S. (Ceylon Branch), 1874, p. 67; Hume, Str. Feath. 1875, p. 78; Butler, ibid. 1875, p. 460; Scully, ibid. 1876, p. 134; Hume, ibid. p. 288; Blakiston and Pryer, Ibis, 1878, p. 227; Dresser, B. of Europe, pt. 69 (1878).

Cuculus hepaticus, Sparrm. Mus. Carls. iii. pl. 55 (1787).

Cuculus borealis, Pall. Zoogr. Rosso-Asiat. i. p. 442 (1811).

Cuculus indicus, Cab. et Heine, Mus. Hein. iv. p. 34 (1862-3).

Cucu, Spanish (Saunders); *Phu-Phu* in Dehra Doon; *Kukupho*, Lepchas; *Akku*, Bhotan (Jerdon); *Kako*, Japanese (Blakiston); *Kakkok*, Turkestan (Scully).

Adult male (Kotmalie). Length 13·5 inches; wing 8·6; tail 7·2; tarsus 0·85; outer anterior toe and claw 1·1; bill to gape 1·17.

These are the dimensions of a very fine example shot in Ceylon. I subjoin others from specimens procured in different parts of the world, beginning with those contained in Dr. Scully's very complete notice of Eastern-Turkestan Cuckoos.

	Length. in.	Expanse. in.	Wing. in.	Tail. in.	Tarsus. in.	Bill from gape. in.	Weight. oz.
(1) Five males. Yarkand	12·8 to 14·0	23·0 to 24·0	8·5 to 8·9	7·0 to 7·7	0·8 to 1·0	1·15 to 1·3	3·2 to 4·5
Two females, juv., rufous. Yarkand	12·3 to 13·2	22·8 to 23·5	8·0 to 8·5	6·6 to 6·9	0·9	1·15 to 1·2	2·8 to 3·8
(2) Examples in Brit. Mus.:—							
Athens	13·0 (from skin)	..	8·9	6·8	0·8		
Germany . . . . .	..	..	8·5	7·0	0·85	1·2	
Persia . . . . .	..	..	8·6	7·0			
N.W. Province . . . . .	..	..	8·9	7·0	0·9	1·1	
♀. "India" . . . . .	..	..	8·3				
♂. Sweden . . . . .	..	..	8·9	7·5	0·9	1·2	

Iris yellow, pale yellow; bill, upper mandible and tip of lower blackish, base of under mandible greenish yellow; gape and eyelid yellow; inside of mouth red; legs and feet yellow; claws dusky.

Above dusky bluish ashen, with a slight greenish gloss generally on the interscapular region; the rump and upper tail-coverts more bluish than the back; quills plain brown, crossed on the inner webs with pointed marginal bars of white, reaching to within about 2 inches from the tips of the longer primaries; winglet and primary-coverts darker than the quills; edge of the wing beneath the winglet white; tail blackish, with a slaty hue; the tips of the feathers white; the five lateral feathers on each side with central white spots, sometimes limited to one in number, and marginal indentations of the same on the inner webs and sometimes on both; the outermost feathers more spotted than the rest.

Throat and fore neck delicate ashen, blending on the sides into the darker hue of the hind neck; from the chest downwards white, crossed with narrow wavy bars of blackish, broadest on the flanks; vent and base of under tail-coverts unmarked; under wing-coverts white, marked as the chest; a wash of slate-colour along the under edge of the wing.

Young. Variable in plumage; more or less marked with rufous.

Above greenish brown, the green lustre very strong in some; the head, hind neck, back, and lesser wing-coverts with white tips to the feathers; quills and primary-coverts mostly barred with rufous, the inner parts of the bars whitish; tail more boldly spotted than in the adult, the white spots running into rufous adjacent patches; under surface buffy white, with bolder and darker bars than in the adult, which extend also to the throat, where they are closer together than on the breast. There is often a white nuchal patch.

After moulting the nest-plumage, specimens have the lower part of the throat and also the chin washed with buff, and the lower parts often retain the buff tinge; the bars are darker and sharper-edged than in old birds.

Rufous phase of young. Barred more or less on the whole upper surface with rufous bands, occasionally very broad, and predominating on the rump and upper tail-coverts over the slaty-brown ground-colour; the under surface is white as in others, barred with bold black bands.

Obs. Although the moderately close character of the barring which distinguishes adults of this Cuckoo from others is the same in all specimens, yet I notice a considerable variation in the bars themselves, consisting in their width and in the appearance of the edges, some being more softened off than others.

Cabanis and Heine separated the Indian Cuckoo, alleging that it was a smaller bird than the European; but the specimens which they had to deal with were doubtless those of *C. himalayanus*, now recognized to be quite distinct from *C. canorus*.

Distribution.—There have been two instances of the occurrence of the Common Cuckoo in Ceylon; and it is only to be wondered that a bird in which the migratory instinct is so powerful as in this interesting

species has not been oftener met with in the island, particularly as on the other side of the Bay of Bengal it has been found as far south as Timor, lat. 10° S. Layard obtained the first example in the old Botanical Gardens at Kew, Colombo; and Mr. Bligh the second, which he shot on the Harangolla Patnas, Kotmalie, on the 7th October, 1873. This was at an elevation of about 4000 feet, lower than which it is not likely that the Cuckoo would reside in Ceylon during its stay. Layard's specimen was killed, of course, *en passant* to the hills.

Our English harbinger of spring can therefore only be looked upon as a mere straggler to Ceylon; but notwithstanding, as it is a bird which recalls home recollections to many of my readers who perhaps feel themselves exiled to the beautiful island of Lanka, I feel constrained to say more concerning its distribution, habits, and strange career as a nestling than the limits of this work on a local avifauna would otherwise warrant. During the breeding-season the Cuckoo inhabits more or less the whole of the Asiatic continent north of the Himalayas, extending its range as far north as the limit of forest-growth, considerably within the Arctic circle, and extending westwards from Japan right across to the neighbouring continent of Europe, over which it is entirely diffused, being of course, as regards the various districts in which it has been noticed in both regions, locally common and locally scarce: to the south of the Himalayas many birds remain and perhaps breed as low down as the latitude of Calcutta. Within its ordinary breeding-limit, however, it is to some parts only a visitant; Mr. H. Whitely records it as such to Hakodadi, in Japan. In China, says Swinhoe, it "occurs in the mountains of the south in spring, extending northwards to Peking. During its migration we met with it on the plains." Mr. Blakiston notes it as common on Fujisan, one of the Japanese islands.

In Eastern Turkestan, writes Dr. Scully, it arrives on the plains about the middle of April (this is from the south of course), and leaves about the beginning of August. In Persia, Mr. Blanford says that it abounds; he heard its note frequently in the Baluchistan hills in February and March, and he is of opinion that it breeds in the Persian highlands, for he met with it in May in the wooded hillsides and valleys of Fars. To Palestine it is also a summer visitant from the south; Canon Tristram ('Ibis,' 1866, p. 285) did not observe it before the 30th March; it was generally spread over the country, and was particularly abundant in the Jordan valley. As above remarked, it is spread over the whole of Europe to the extreme north. Messrs. Alston and Harvie Brown record it as very abundant at Archangel; in Sweden and Norway it is likewise common; and as regards the British Isles it travels to the extreme limit of the Shetlands, arriving in the south at the end of April, and laying, according to Mr. G. Dawson Rowley's observations, as early as the 1st of May. It does not appear to remain in Spain during the summer, merely passing through on its northward migration from Africa: Mr. Saunders did not find it laying anywhere in the country.

In North Africa it is a spring and autumn visitor, passing through on its way to the north from more southerly latitudes. Captain Shelley has shot it as early as the 30th April; and Von Heuglin states that it arrives from the south in March, and lingers on its way north until May, returning so soon again as August. These must be, in all probability, birds that have bred in the south of Europe. In Lower Nubia, Professor Hartmann heard it in May, and again in September and October. In Tangier it is common, arriving in spring from the south. On the west coast it has been procured in Fantee by Governor Ussher, in Damara Land, South-west Africa, by Mr. Andersson, and in Natal by Mr. Ayres. In South Africa, however, where it winters, it is evidently by no means common, as there are comparatively few instances of its capture there; where, therefore, the number of birds that pass through North Africa spend the winter has yet to be determined, and will most likely prove to be the upland regions of the continent, or the country of the great lakes so prominently brought before the world of late years by our great African travellers.

In Asia, where we have been discussing its summer habitat, its winter quarters are well known. In Bengal it is common, and thence is spread all over India to the extreme south, where it is rare. In the north-west of the latter country it is a spring visitant, passing through, according to Captain Butler, in May, and moving towards the hills; after the breeding-season it returns again, and is very plentiful in September. Neither Mr. Bourdillon nor Mr. Fairbank record it from the Travancore hills; and the latter does not speak of it in the Deccan, although Jerdon says that it remains two or three months in the spring in Central India, and that he heard its call at Goomsoor, Saugor, and Nagpoor in May and June. On the other side of the bay it is evidently a mere straggler, occurring in Pegu and perhaps in the Malaccan Peninsula and islands between there and Timor, which is its utmost limit to the south.

Habits.—The Cuckoo chiefly affects openly wooded or park-land, avenues of trees, the borders of woods, scrubby commons or wastes where a few trees are here and there interspersed among the low growth, in which its foster-parents usually nest. In the breeding-season, however, it wanders about so much that it may be found in the heart of large woods; and I observe that Mr. Blanford mentions hearing it in the jungles of the Persian hills. Shortly after arriving in the various localities where it intends to rear its young its welcome note may be heard from daybreak until late in the morning resounding merrily through the woods, which teem with numerous joyful songsters, not a few of which are perhaps destined to be the foster-parents of the Cuckoo's offspring, and to have their own ignominiously expelled by the unprincipled and unscrupulous little stranger! There is no bird in Europe about which so many strange theories have existed in the popular mind as the "harbinger of spring." Strange crimes and misdemeanours have been accredited to it from the earliest times; and among these, as is stated by the ancient writer and naturalist Pliny, none is so dire as its devouring its foster-parent; he remarks, "The young Cuckoo being once fledged and ready to fly abroad is so bold as to seize on the old titling and to eat her up that hatched her." Although we must absolve the Cuckoo from such a want of gratitude as is here depicted, yet the conduct of the young nestling, as will be noticed directly, is in the highest degree unnatural. It is believed by many that the old birds possess the power of fascinating the species in whose nest their egg is to be deposited, such a belief having obtained from the erroneous idea that the Cuckoo actually lays its egg in the nest it has chosen, which it certainly does not. A great difference can be detected in the sound of the Cuckoo's note as uttered by different birds, some giving it out as *wuk-koo*, the first syllable being very plainly pronounced. The Yarkandis syllabize it by the word *kak-kok*, which Dr. Scully says he thinks is a better representation of the note than ours. It is the love-call of the bird, and after the breeding-season, as is well known, ceases to be heard, causing many to think that the Cuckoo has left her accustomed haunt, whereas in reality it has only become silent. I have observed in England that it is usually heard before 9 or 10 o'clock, after which the bird is more or less silent until evening, when it again becomes as garrulous as it was in the morning. The Cuckoo's flight is powerful and very Hawk-like, being performed with regular beatings of the wing; it generally flies a moderate distance, mounting into an upper branch, where it alights and commences its note at once, which it continues for a little time and then becomes silent before moving on again. It is most noisy just at the time of laying.

Its diet is insectivorous and varied, consisting of caterpillars, grubs, worms, moths, and small insects. The stomach is clothed inside with a thick hairy or villous coating, which is, I believe, peculiar to all the subfamily Cuculinæ; at least all I have shot in Ceylon possess this character in a greater or less degree.

Nidification.—The chief amount of interest which attaches to the singular economy of the Cuckoo is naturally centered in its nidification, and the strange habit, as exemplified in the whole group of true Cuckoos, of fostering its young upon other birds. Connected with this are many points of great interest to the naturalist, such as its supposed polygamy, its instinct of laying eggs of a peculiar type to suit those with which it is deposited, its partiality for Warblers' nests, the fact of eggs of peculiar coloration prevailing in different localities, and the habit of conveying the eggs in the bill after laying them and then depositing them in the nest chosen to receive them, all of which justly tend to render the natural history of the Cuckoo one of the most interesting of any bird known.

In India the Cuckoo has been ascertained to lay during the latter half of May and the first half of June (Hume, 'Nests and Eggs'), usually choosing the nests of Pipits and Chats; among the former the Upland Pipit (*Heterura sylvana*) and Jerdon's Rock-Pipit (*Agrodroma jerdoni*), and among the latter the Indian Bush-Chat (*Pratincola indica*), the dark grey Bush-Chat (*P. ferrea*), the white-winged Black Robin (*P. caprata*), and the Magpie Robin (*Copsychus saularis*) appear to be the favourite species. In the Almorah district Mr. Brooks says they lay in the nests of *P. indica* and *C. saularis*, and Mr. Thompson in the nests of Pipits. At Murree, Captain Marshall found the eggs in the nests of *A. jerdoni* and *P. ferrea*, and Mr. Hume obtained two eggs in the nests of *Heterura sylvana* near Kotegurh.

In Europe it has a great partiality for nests of Warblers; and in a long list of about a score of these birds given by Dr. Baldamus, in his exhaustive article in the 'Naumannia,' 1853, are mentioned the Blackcap, the Robin, the Garden-Warbler, the Whitethroat, the Lesser Whitethroat, the Reed-Warbler, the Wood-Warbler, the Marsh-Warbler, the Redstart, the Grasshopper-Warbler, the Nightingale, and the Willow-

Wren; other species given by the same author are the Common Wren, the Hedge-Sparrow, the Pied Wagtail, the Yellow Wagtail, the Marsh-Pipit, the Meadow-Pipit, the Skylark, the Yellow Bunting, the Butcher-bird (*Lanius collurio*), the Tree-Pipit, the Crested Lark, the Wood-Lark, the Reed-Bunting, the Brambling, the Crossbill, and the Linnet. Mr. Cecil Smith, in his 'Birds of Somersetshire,' mentions also an instance of a Blackbird's nest; in addition to which I may cite those of the Thrush, Great Tit, Turtle Dove, and Wood-Pigeon. It will be observed that the majority of these birds have much too small nests for the Cuckoo to be able to lay in, and that into some she of course could not enter, which fact alone would prove what used to be doubted by many naturalists, but is now universally accepted by all who have given their attention to the matter, viz. that the Cuckoo deposits her eggs in the nest by carrying them in her bill. Birds of late years have been killed with the eggs in their mouths; and I myself have seen one shot rising from an Essex meadow with an egg in its bill.

Females hang about certain localities for days, and having in the mean time discovered a nest which suits them, lay their eggs and, watching the opportunity when the rightful owners are away, convey them to their destination. A struggle not unfrequently ensues between the Cuckoo and the foster-parent, evidences of which are seen in broken egg-shells and other signs of a scuffle having taken place. The same bird, it has been ascertained, only deposits a single egg in one nest, and that generally after the rightful owner has begun to lay. Of this even the natives of Central Asia have cognizance; for Dr. Scully tells us, in his paper in 'Stray Feathers,' that the Yarkandis told him so, giving the nests in which the eggs were deposited as those of the Brown Shrike (*Lanius arenarius*), the Red-headed Bunting (*Euspiza luteola*), and the Indian Blue-throat (*Cyanecula suecica*). They say, he remarks, that all Cuckoos are of the female sex, and are not very particular in their choice of husbands, frogs being selected indifferently with birds! The latter strange idea emanates, no doubt, from the Cuckoo in Yarkand giving, according to Dr. Scully, "a prolonged sort of cry, somewhat resembling that of the toad (*Bufo viridis*), but somewhat louder." Dr. Baldamus contends that each Cuckoo lays "eggs of a certain colouring only, which corresponds with that of the eggs of some one species of Warbler, in the nest of which she deposits them;" but Mr. G. Dawson Rowley has found that this is not always the case.

The most remarkable feature, however, in the economy of the Cuckoo has yet to be noticed; and this is the extraordinary faculty in the young chick which prompts it, when newly born, and *before its eyes are open*, to eject its foster-brethren from the nest; and coupled with this is the scarcely less singular devotion evinced by the bereaved foster-parent for the little monster who has thus deprived her of the rearing of the rest of her offspring. With regard to the conduct of the young Cuckoo, it may not be known to all of my readers that a long account of it was published in the last century by Dr. Jenner, who gave the results of his observations in the 'Philosophical Transactions' for 1788. For a long time the Doctor's account of what he saw did not secure that amount of credence which it should have. The fact seems to have been known to the ancients that the young Cuckoo got rid of its fellow nestlings; but this, according to Pliny, was by the simpler method, perhaps, of devouring them, which somewhat rough treatment was, he considered, rather encouraged than otherwise by the unconscious foster-parent; for, writes he, "she joyeth to see so goodly a bird, and wonders at herself that she hath hatched and reared so trim a chick. The rest, which are her own, indeed, she sets no store by; yea, and suffereth them to be eaten and devoured of the other, even before her face."

Of late years the experience of Dr. Jenner has been verified by the observations of a lady in Scotland devoted to the subject of natural history, and who, in a little book on the Pipits, gave a sketch of what she saw. She was afterwards requested to publish an account of the proceeding in detail in 'Nature,' which she did. I quote here in part from Mrs. Hugh Blackburn's story as follows:—"The nest (which we watched last June, after finding the Cuckoo's egg in it) was that of the common Meadow-Pipit, and had two Pipit's eggs, besides that of the Cuckoo. It was below a heather bush, on the declivity of a low abrupt bank on a Highland hill-side in Moidart. At one visit the Pipits were found to be hatched, but not the Cuckoo. At the next visit, which was after an interval of forty-eight hours, we found the young Cuckoo alone in the nest, and both the young Pipits lying down the bank, about ten inches from the margin of the nest, but quite lively after being warmed in the hand. They were replaced in the nest beside of the Cuckoo, which struggled about till it got its back under one of them, when it climbed backwards directly up the open side of the nest, and

hitched the Pipit from its back on to the edge. It then stood quite upright on its legs, which were straddled wide apart, with the claws firmly fixed halfway down the inside of the nest, among the interlacing fibres of which the nest was woven; and, stretching its wings apart and backwards, it elbowed the Pipit fairly over the margin so far that its struggles took it down the bank instead of back into the nest. After this the Cuckoo stood a minute or two, feeling back with its wings, as if to make sure that the Pipit was fairly overboard, and then subsided into the bottom of the nest.

"As it was getting late, and the Cuckoo did not immediately set to work on the other nestling, I replaced the ejected one, and went home. On returning next day, both nestlings were found dead and cold, out of the nest. I replaced one of them; but the Cuckoo made no effort to get under and eject it, but settled itself contentedly on the top of it. All this I find accords accurately with Jenner's description of what he saw. But what struck me most was this: the Cuckoo was perfectly naked, without a vestige of a feather, or even a hint of future feathers; its eyes were not yet opened, and its neck seemed too weak to support the weight of its head. The Pipits had well-developed quills on the wings and back, and had bright eyes, partially open; yet they seemed quite helpless under the manipulations of the Cuckoo, which looked a much less developed creature. The Cuckoo's legs, however, seemed very muscular, and it appeared to feel about with its wings, which were absolutely featherless, as with hands, the 'spurious wing' (unusually large in proportion) looking like a spread-out thumb. The most singular thing of all was the direct purpose with which the blind little monster made for the open side of the nest, the only part where it could throw its burthen down the bank. I think all the spectators felt the sort of horror and awe at the apparent inadequacy of the creature's intelligence to its acts that one might have felt at seeing a toothless hag raise a ghost by an incantation. It was horribly 'uncanny' and 'grewsome'".*

Comment upon this extraordinary feat is unnecessary, suffice it to say that the testimony of other observers is forthcoming to prove that the young Cuckoo ejects its companions when still in a perfectly unfledged state, thus displaying a more wonderful instinct than perhaps exists throughout the whole range of the bird creation!

Concerning the attachment of the foster-parents to their tyrannical offspring, I quote as follows from Mr. Gould's admirable article in the 'Birds of Great Britain':—"How wonderfully solicitous are the little birds for its welfare, and with what spirit do the foster-parents defend their nurtured Cuckoo. If its removal be attempted they display the greatest uneasiness. Wagtails will even fly in the face of the person who thus teases them; and if it be returned to them they will evince their joy by fondling and dancing around it, leaping over its back, and exhibiting many other demonstrations of delight. Yet in a few days their charge will wing its way to the leafy branch of some tree in the forest, and there sit uttering most strange, piercing, bat-like notes, varied occasionally by others resembling the syllables *chat-chat*." The affection displayed by the Wagtail in particular for the young Cuckoo, inciting it to feed it when grown to three times its own size, is well delineated in Mr. Gould's magnificent plate, in which a Pied Wagtail is drawn standing (as it was actually seen) on the back of a Cuckoo seated on a fence, and depositing a caterpillar in its upturned and gaping mouth. Touching the habits of the young, I subjoin from the same article the following interesting paragraph:—"A young Cuckoo, which was taken from the nest of a Wagtail at Formosa (Berkshire), exhibited many strange actions, which very strongly reminded me of a rattlesnake. If the hand was put towards it, it raised itself on its legs, protruded its neck, puffed out its feathers, and threw its head forward with a quick and determined stroke, precisely like a snake or viper, struck the hand with the open mouth, just as a snake would do, and immediately drew the head back in readiness for another stroke. On the second day after it was taken, the bird was sufficiently reconciled to me and my daughter to take small pieces of raw beef or mutton and caterpillars from the hand, but continued to utter its piercing shriek whenever we approached it. Does not this peculiar electrifying shriek attract the attention of the smaller birds when it requires food? A delicate ear will hear this sound for thirty or forty yards, and it is probably heard at a still greater distance by the smaller birds."

The two types common in Cuckoo's eggs are the red and the grey. The ground-colour is whitish in some,

* 'Nature,' No. 124.

streaked and spotted with brownish red and purple ; in others it is stone-coloured or pale reddish, blotched with brownish grey, yellowish brown, or brownish red.

They average about 0·9 by 0·7 inch.

For permission to give the accompanying woodcut I am much indebted to the kindness of Mr. Gould. It is a copy from his facsimile of Mrs. Blackburn's sketch in the 'Pipits.'



CUCULUS MICROPTERUS.

(THE INDIAN CUCKOO.)

Cuculus micropterus, Gould, P. Z. S. 1837, p. 137; Blyth, J. A. S. B. 1842, xi. p. 902; Kelaart, Prodromus, Cat. p. 129 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 452; Jerdon, B. of Ind. i. p. 326 (1862); Swinhoe, P. Z. S. 1871, p. 395; Holdsworth, P. Z. S. 1872, p. 430; Legge, Ibis, 1874, p. 16; Hume, Str. Feath. 1875, p. 79.

Cuculus striatus, Blyth, Cat. B. Mus. A. S. B. p. 70 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 703 (1856); Cab. et Heine, Mus. Hein. iv. p. 37 (1862).

Cuculus affinis (A. Hay), Blyth, J. A. S. B. 1846, xv. p. 18.

Great-billed Cuckoo, Blyth; *Ashy Mountain Cuckoo*, Kelaart.

Bou-kotako, Bengalese; *Takpo-pho*, Lepchas.

Adult male (Ceylon). Length 12.2 inches; wing 7.75; tail 5.8; tarsus 0.7; outer anterior toe 0.8; bill to gape 1.24.

An example from Sumatra measures—wing 8.2 inches; tail 6.8; bill to gape 1.11. A male from Pegu—length 13.3; expanse 23.5; wing 8.25; bill from gape 1.35: a female—length 12.4; wing 7.6; bill from gape 1.3. (*Oates*.)

Iris brown; bill dark horn at base of upper mandible, the tip blackish; under mandible fleshy, with a dark tip; gape and orbital skin yellow; legs and feet ochre-yellow, claws dusky.

Back, wings, and tail brownish ashy, with a metallic or bronze lustre; the head and hind neck dusky slate-colour, blending imperceptibly into the hue of the back; wings light ash-brown, the inner webs of the primaries and secondaries crossed with marginal bars of white, except at the tips, the secondaries white at the base of the inner webs; tail light cinereous brown, with tips and a series of shaft-spots of white, a blackish subterminal bar and blackish shaft-streaks between the white spots, outermost feathers barred with white.

Lores, face, throat, and fore neck pale ashy, the cheeks darker than the rest; from the chest downwards white, with distant blackish, clear-margined bars; under tail-coverts with the longer feathers only barred; under wing-coverts buff-white, irregularly marked with black bars.

An example not quite adult has the concealed portions of the hind-neck feathers barred with rufous, and the chest-feathers tipped and transversely marked with a paler hue of the same; the lateral upper tail-coverts, which lie concealed, have the outer webs barred with rufous and white, with the interspaces dark brown.

This Cuckoo is at once recognized at a glance from *C. canorus* by the presence of the dark caudal bar.

Young. A specimen in nest-plumage from Darjiling has the upper surface a lustrous ruddy brown, all the feathers more or less deeply tipped—on the head and hind neck with buff-white, on the back and wing-coverts with rufous, the extreme tips being whitish, and on the rump and upper tail-coverts with dusky rufous, the quills tipped and their inner webs barred with rufous; both margins of the central tail-feathers indented with rufous, and the tips of all the feathers fulvous-white, the outermost pair barred with rufous, and the next two pairs with the inner webs only barred with the same; there is no bar, but the terminal inch of all the feathers is unmarked, imparting the appearance of a band; under surface buff, barred heavily with blackish brown; the markings of the chest not so regular as on the breast and flanks.

An immature bird shot at Nalanda, Ceylon, is glossy grey-brown above, with a subdued ashen hue on the hind neck and head; there is a lightish stripe above the eye and a narrow dark edge in front of it; greater secondary wing-coverts tipped with rufous, the primaries and secondaries tipped with white, and the latter indented outwardly with rufous; tail much as in the adult, but with the margins of the feathers indented with rufescent; chin and lower part of chest washed with rufescent; a dark brownish patch on the sides of the chest, and the central portion barred with blackish brown; under parts with the bars broader than in the adult.

Obs. The synonymy of this species is in a somewhat confused state, owing to Drapiez (Dict. Class. Hist. Nat. vol. iv. p. 570) having described a Cuckoo from Java in 1823, of a cindery-brown colour ("brun-cendré") above, and

12 inches in length, which some unite with Gould's bird, discovered many years after in the Himalayas, but which others join with *C. himalayanus* of Vigors, a perfectly different bird, and not belonging to the terminal-bar-tailed group at all. It is scarcely possible to affirm what the *Cuculus striatus* of Drapiez really was; it was evidently an immature bird, as the outer primaries were indented with rufous; the dimensions of the wing were unfortunately not stated: taking all things into consideration it appears to me to have belonged to the brown bar-tailed section and not to the ashy one, of which *C. canorus* is the type. *C. himalayanus* is a miniature of this latter. Mr. Seeböhm procured it on the Yenesay river; it migrates to China and Japan, and goes down to the Malay archipelago in winter; but so does the present species. In the British Museum is a specimen from Sumatra labelled *C. affinis*, with the wing 8.2, bill to gape 1.1 (this is identical with a Ceylonese example), and another from the Himalayas labelled *C. micropterus* (this has, perhaps, the bars on the lower parts broader, and is slightly darker on the throat and chest than the Ceylon bird; the bill across the gape is 0.75 inch, while the latter measures 0.71). Mr. Oates measured a male shot in Pegu as, wing 8.25 inches, bill from gape 1.35; a female, wing 7.6, bill from gape 1.3. The bills are very large in these, and Mr. Hume considers *C. micropterus* to refer to these large-billed birds. Perhaps there are two races of this Cuckoo in the Himalayas; but we do not know whether Gould's type had an exceedingly large bill or not. The Ceylonese birds which I have seen certainly are not so large in the bill as these latter specimens; but they evidently migrate from the Himalayas, and they most decidedly are not *C. himalayanus*. What the *C. affinis* of Lord A. Hay was is not quite clear. I cannot therefore apply his name to our bird, nor can I Drapiez's, if his species is to be considered the same as Vigors's (*C. himalayanus*, an altogether different type of bird), and therefore I must allow it to stand under Gould's name as heretofore.

Distribution.—This Cuckoo arrives in Ceylon during the month of October; but apparently its numbers are extremely limited, as but comparatively few examples have ever been recorded from the island. Kelaart speaks of it as a mountain species of rare occurrence and found in Dimbulla; Layard did not meet with it. Holdsworth writes that "the only two examples he met with were obtained in half-cultivated land in low country near Colombo." These were probably in migration to the hills at the time they were killed. I have shot it in the Kottowe forest near Galle, and have seen it in the same district on another occasion. It probably affects the subsidiary hills in the south-west of the island as much as any other part of the low country. I met with a Cuckoo, which I did not procure, but which I identify as belonging to this species, in the forests between Anaradjapura and Trincomalie; and Captain Wade, of the 57th Regiment, killed an immature individual at Nalanda at the north base of the Kandyan ranges; in addition to which I have seen it in the collection of Messrs. Whyte and Co., the specimen having been procured in Dumbara. It is doubtless a commoner species in reality than it appears to be, but, being a denizen of the forests, escapes nearly all observation during the period of its visit.

There is, I think, no doubt that this species migrates to Ceylon *viâ* the south of India from the Himalayan region; it is evidently very rare in the Peninsula. I notice that Messrs. Bourdillon and Fairbank do not record it in either of their lists from the southern hills; the latter notes it from Ahmednagar, but makes no comment as to its scarcity or otherwise. Jerdon found it rare on the Malabar coast and in the Carnatic, but "tolerably common in the jungles of Central India, as at Nagpore, Chanda, Mhow, and Saugor."

Taking the large-billed race to be only a local variety of the species which visits Ceylon, we find Mr. Hume recording this Cuckoo as "common throughout Lower and Eastern Bengal, and even up into the lower valleys of the Himalayas, in Sikkim, Bhootan, and Assam." In Pegu, according to Mr. Oates, it is numerous everywhere, but less so in the plains than in the hills. From Burmah it finds its way eastwards to China, where Swinhoe found it on the Upper Yangtze; southwards it migrates in the cool season through the Malaccan peninsula to the archipelago, whence it has been procured in Java and Sumatra, and probably will some day be obtained in Borneo, if it has not been already met with there. Lord Tweeddale refers with doubt four examples procured in the Andamans by Lieut. Ramsay to this species; but the measurements of the wings, viz. 7.0 and 7.37 inches, are almost too small for *C. micropterus*.

Habits.—The Indian Cuckoo frequents high jungle and forest, particularly that on the sides of hills. It is a shy bird and keeps, as far as I have observed, to the tops of tall trees. It is very Hawk-like in flight, having much the appearance of a small Accipiter as it wings its way from the summit of one lofty tree to another. I noticed it in the Kottowe forest fly out of the upper branches of an enormous Hora-tree, and after proceeding

a short distance alight on the very top of an equally high dead trunk. Its habit of keeping to the uppermost branches of these giants of the forest leads to its being seldom procured. Jerdon writes that it "repeats its call more frequently than other Cuckoos; this," he remarks, "is a double note of two syllables each—a fine, melodious, pleasing whistle, which the natives of Bengal attempt to immitate by their name *Bokutako*." Mr. Oates says that its note is double and very melodious, and that it selects the topmost bough of a tree (generally a dead one) and remains calling there for a quarter of an hour or more. Its loquacious habit, like that of the Plaintive Cuckoo, is evidently confined to the breeding-season; I never heard it, on the several occasions I have seen it in Ceylon, utter a note.

Its stomach is highly villous, and its principal food consists of caterpillars.

Its eggs have not yet been identified; but some suppose that it lays in the nests of Babblers (*Malacocerci*).

CUCULUS POLIOCEPHALUS.

(THE SMALL CUCKOO.)

Cuculus poliocephalus, Lath. Ind. Orn. i. p. 214 (1790); Blyth, J. A. S. B. 1842, p. 904, et Cat. B. Mus. A. S. B. p. 71 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 704 (1856); Jerdon, B. of Ind. i. p. 324; Hume, Nests and Eggs, p. 135 (1873).

Cuculus himalayanus, Gould, Cent. Him. Birds, pl. 54 (1832).

Hierococcyx poliocephalus, Bp. Consp. Gen. Av. i. p. 204 (1850).

Cuculus bartlettii, Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 452 (juv.).

Cuculus lineatus, Less. Traité d'Orn. p. 152.

Cuculus tamsuicus, Swinhoe, Ibis, 1865, p. 108.

Cuculus —?, Blakiston and Pryer, Ibis, 1878, p. 227.

The Hoary-headed Cuckoo of some Indian writers.

Daugham, Lepchas; *Pichu-giapu*, Bhootias (Jerdon).

Hototogisu, Japanese.

Adult male and female. Length 10·0 to 10·75 inches; wing 6·0 to 6·2; tail 5·2 to 6·0; tarsus 0·75 to 0·85; outer anterior toe and claw 0·9 to 1·0; bill to gape 1·0 to 1·1. Expanse 17·3.

The above dimensions are from three examples procured in Ceylon. A Japanese specimen measures—wing 6·3 inches; tail 5·7.

Iris brown or brownish grey; bill, upper mandible and tip of lower blackish, gape, base of under mandible, and eyelid yellow; inside of mouth the same, but the base of the palate orange-red; legs and feet yellow, tarsus washed with brownish; claws brownish yellow.

Above almost uniform bluish ashen, illumined strongly with greenish, mostly on the scapulars; upper tail-coverts more bluish than the back; primaries slaty brown, with a greenish tinge, barred with white; tail blackish, tinged slightly with green, tipped with white, with a series of white shaft-spots and marginal indentations of the same; throat and fore neck pale fulvous, shaded with an ashen hue, and which colour blends softly into the grey of the sides of the neck; beneath, from the neck downwards, white, with the vent and under tail-coverts pale buff; breast, flanks, and thigh-coverts crossed with narrow softened-edged bars of blackish.

The above description is taken from a well-preserved Japanese example in Mr. Seeborn's collection, which is identical with Indian specimens.

Young. Above ashy brown; the feathers of the head more or less tipped with white, these markings being often confined to the superciliary region and occiput. Upper back, scapulars, and wing-coverts tipped and barred with whitish or pale fulvous; the lower back and upper tail-coverts marked with a series of white central transverse spots, the latter more or less barred with rufous as well; primaries and secondaries barred on the outer webs with rufous, and on the inner with white, changing somewhat into rufous near the tips; tail spotted as in the adult, and the central feathers barred with rufescent; chin and throat fulvous, barred with pale brownish; under surface as in the adult.

Individuals vary much *inter se* in the markings of the upper surface, some specimens being banded with rufous instead of white. An example shot in March at Colombo is acquiring the adult plumage, having the attire of the head, back, and rump mixed with bluish-ashen feathers.

Rufous phase. This species commonly assumes a rufous phase. Two individuals from Nepal which I have examined in the British Museum are entirely rufous above, with the head, hind neck, back, scapulars, and wing-coverts banded with blackish slaty, having a perceptible greenish lustre: in one the rump and upper tail-coverts are almost unmarked, the feathers only having terminal bar-like spots; the wings are greenish brown, barred with yellowish rufous; the tail glossy dark brown, barred with incomplete angular rufous bars, the feathers all tipped with whitish; chin and throat yellowish rufous, narrowly barred with blackish; breast and lower parts white, crossed with widely-separated blackish bars; edge of under wing rufous, the rest of it white, barred with black.

Obs. I have examined a specimen of the Small Cuckoo from Madagascar, the *Cuculus rochii* of Hartlaub (P. Z. S. 1862, p. 224), and which is kept distinct from *C. poliocephalus* by Mr. Sharpe in his admirable paper on the Cuckoos of the Ethiopian region, on account of its darker upper surface and the somewhat different banding of the under parts, the dark bars, according to him, being broader and the white interspaces wider. It is entirely the same as the Japanese specimen above described; the upper surface has the same hue, and the breast and lower parts barred the same, the under tail-coverts having precisely the same buff hue. I think that the two species will have to be amalgamated; and if so, the great range which the Small Cuckoo will then acquire will be only second to that of *C. canorus*.

Distribution.—The present species was described in the 'Annals and Magazine of Natural History' by Layard as new, under the title *C. bartlettii*. His specimen was in immature plumage; and he writes of the bird that he obtained many examples of it both at Pt. Pedro and Colombo. Mr. Holdsworth does not seem to have identified it while he was in Ceylon, but speaks of a Cuckoo, closely resembling *C. canorus*, which he saw in an English garden in Colombo; and this I imagine, though it is very much smaller than the latter, must have, in reality, been this Cuckoo. It is, of course, migratory to Ceylon, and appears as isolated individuals on the west coast in October. Some years it is not seen at all, and during others several examples may perhaps come under the notice of collectors. Not a few were seen in the neighbourhood of Colombo in October 1876, one of which I procured at Borella, and another was shot near Kotté and preserved in the Colombo Museum. In December 1869 I obtained an example (immature, as are all which I have seen from Ceylon) on some trees at the lake side of the Galle face. It does not seem to have been noticed anywhere but in the Jaffna peninsula and about Colombo. It probably leaves the island in April.

On the continent it appears to enjoy a wide range; but is found more often in Northern than in Southern India, which makes its occasional occurrence in Ceylon somewhat noteworthy. It is known from the Nilghiris, but less so from the low country in the south of the peninsula. Mr. Fairbank records it from Ahmednagar, and Jerdon procured it as far south on the east coast as Nellore. He says that it is found throughout the Himalayas, migrating sparingly to the plains in the cold weather. "At Darjiling," he remarks further, "it is tolerably common, beginning its call still later in the season even than *Cuculus himalayanus*, this being rarely heard before the end of May, and continuing till the middle of July." Dr. Stoliczka procured it in Ladak, and to the eastward of the Himalayas it extends all the way to China and Japan, in the latter of which countries it is not uncommon. Swinhoe received specimens from Amoy and Szechuen and from North-west Formosa. In Java Mr. Wallace procured it, his specimens being, according to Blyth, similar to those from "the Himalayas and the Nilghiris," and, he adds, "from the mountains of Ceylon." It is not clear how he identifies it from the latter locality, for, according to my knowledge, it does not affect the hill-region at all. A specimen from Morty Islands, in the British Museum, is identical in plumage with other examples of this Cuckoo which I have examined, but is much longer in the wing, measuring 6·8 inches.

Habits.—The Small Cuckoo frequents low trees and stunted jungle near open places, and appears to be a tame bird, being stupidly heedless of observation, and allowing a near approach before taking wing. Jerdon remarks of it, "It is a very noisy bird, and has a loud, peculiar, unmusical call, which it frequently utters both when seated on a branch and when flying from tree to tree." "The Bhootias," he adds, "attempt to imitate this in their name (*Pichu-giapu*) for the species."

It appears to feed much on caterpillars, one which I shot in my compound at the Colombo Lake being in the act of taking them from a plaintain-tree at the time.

Nidification.—Mr. R. Thompson says this species lays in May and June. An egg, which Mr. Hume believes to belong to this species, was taken by Mr. Brooks from the nest of a Warbler (*Reguloides superciliosus*), and is described as being an elongated, cylindrical ovate egg, and pure white and glossy; it measured 0·81 by 0·57 inch.

CUCULUS SONNERATI.

(SONNERAT'S CUCKOO.)

Cuculus sonnerati, Lath. Ind. Orn. i. no. 24, p. 215 (1790); Blyth, J. A. S. B. 1842, p. 906; id. Cat. B. Mus. A. S. B. p. 72 (1849); Kelaart, Prodrumus, Cat. p. 129 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 452; Jerdon, B. of Ind. i. p. 325 (1862); Holdsworth, P. Z. S. 1872, p. 430; Legge, Ibis, 1874, p. 15, et 1875, p. 284.

Cuculus himalayanus, Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 220.

Polyphasia sonnerati, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 699 (1856).

Penthoceryx sonnerati, Cab. et Heine, Mus. Hein. iv. p. 16 (1862); Walden, Ibis, 1872, p. 367.

Le petit Coucou des Indes, Sonn. Voyage aux Indes, ii. p. 211 (1782); *Sonnerat's Cuckoo*, Lath. Syn. Suppl. p. 102; *The Banded Bay Cuckoo*, Jerdon; *Rufous Cuckoo* of some; "*Fine-weather Bird*," Planters in Ceylon.

Punchi koha, lit. "little Cuckoo," Sinhalese.

Adult male. Length 9.5 to 10.0 inches; wing 4.9 to 5.1; tail 4.8 to 4.9; tarsus 0.7; outer anterior toe 0.65, claw (straight) 0.25; bill to gape 1.1.

Iris brownish red, paling at the outer edge to slaty and in some to yellowish; bill blackish, gape fleshy yellow or reddish; base of lower mandible bluish, in some yellowish; inside of mouth orange-reddish; legs and feet brownish slaty, or bluish leaden in some, the soles yellowish, claws dusky blackish.

Forehead, top of the head, hind neck, upper surface, and wings hair- or nut-brown, with a green lustre, barred on the head, body, and wing-coverts with rufous-bay; feathers of the forehead with white bases, showing as spots on the surface; on the hind neck the bars almost monopolize the feather and are lighter; the upper tail-coverts have marginal spots or indentations of, and are tipped with, rufous; the quills and primary-coverts are unbarred, but are rufescent whitish inwardly, and are externally finely edged with rufous; tail deep brown, tipped white and edged or indented with rufous-bay, the inner webs of all but the centre feathers rufous with dark bars next the shaft, these latter have rufescent tips sometimes and at others want the light extremities altogether; entire under surface and feathers above the eye and down the side of the head between the nape and ear-coverts white, with narrow wavy blackish bars; ear-coverts darkish; the under tail-coverts and flanks, and in some specimens (probably young) the lower parts, tinted with fulvous; edge of wing white.

Female. Is, according to my experience, generally a smaller bird than the male. Length 9.5 inches; wing 4.5 to 4.9; bill to gape 1.0 to 1.05.

Iris hazel or reddish, with a yellowish outer circle; bill lighter than that of the male.

Has the upper-surface bars paler than in the male, and the under tail-coverts pure white or less coloured than the other sex.

Scarcely any two specimens of this Cuckoo are barred above precisely alike; with age the transverse marks seem to reduce themselves.

Young. Birds of the year are said to be more coarsely barred with paler bands than the adult, and to have the lower parts more tinged with fulvous.

Immature birds cannot be confounded with the rufous phase of *Polyphasia*, being, first of all, stouter or more massive, the bill much wider; and, secondly, they are more narrowly barred, and the under surface is all white, whereas in the latter the throat, chest, and generally the breast and abdomen are rufous.

Obs. This handsome little Cuckoo is closely allied to the Malayan species *C. pravatus*, Horsf., which inhabits Malacca and many of the islands of the Archipelago, including Sumatra, Java, and Borneo. This is a much smaller bird and more neatly barred, and wants the green gloss on the upper surface. Two individuals which I have examined

in the national collection from Malacca measure in the wing 4.45 and 4.1 inches, and another from Sumatra 4.2. Lord Tweeddale gives the wings of three examples as follows :—Candeish, 4.88 inches; Malabar, 4.75; Maunbhoom, 4.88. An individual from Tenasserim in the British Museum, which is scarcely separable from an immature bird from Ceylon, has the wing 4.6, appearing to be intermediate between the true *C. sonnerati* and *C. pravatus*.

Distribution.—The Bay Cuckoo is a resident in Ceylon, and scattered pretty freely over the island, but is nowhere very common, except in the Eastern Province. In this part it is frequent in many localities. I found it, particularly in the tank-district, affecting the open country between the Friars-Hood hills and the sea, and also cheenas in the vicinity of the tanks. In the north-eastern districts I have observed it chiefly in the north-east monsoon. In the South-west and in the Western Province it occurs in isolated places. I have either met with or procured it at Wackwelle near Galle, at Kaduwella near Colombo, in the Kuruwite Korale, at Ambepussa, and one or two other spots. Mr. Parker records it from Uswewa, and I have heard it in the North-central Province.

During the north-east monsoon it appears to ascend the hills, and is not uncommon in many parts of the Kandy country and also in Uva; it is styled by the planters in some coffee-districts the "Fine-weather Bird," from its habit of calling before fine weather sets in.

Elsewhere this species is found almost only in the Southern and Central parts of India. Mr. Hume ('Stray Feathers,' 1875, p. 79) speaks of Captain Feilden procuring specimens of a Bay Cuckoo in Pegu which corresponded with Jerdon's description of *C. sonnerati*; and I have seen an individual from Tenasserim, as mentioned above, which could scarcely be separated from a Ceylonese specimen. Whether these will eventually prove to be the true *C. sonnerati* or not, I am unable now to say; but if they should, it will much extend the range of the species.

Jerdon writes, "This elegantly marked little Cuckoo is found in the forests of Malabar and Travancore, where it appears tolerably common, also on the sides of the Nilghiris and in the Wynaad, and more rarely on the Eastern Ghâts, about the latitude of Madras." Of late neither Mr. Fairbank nor Mr. Bourdillon have procured it in the above-mentioned localities; but the former records it from Khandalla, and Lord Tweeddale likewise from Maunbhoom, which is the most northerly locality from which I have heard of it.

Habits.—This bird frequents open places in the jungle, the edges of tanks where there are dead trees, sparsely-timbered country, and cheenas. It is very shy, and chiefly affects the tops of trees, where it remains motionless for a long time, piping its curious far-sounding whistle, which may be syllabized as *whi-whip*, *whiwhip*—*whi-whip*, *whiwhip*. It is particularly noisy in the morning before 9 or 10 o'clock, and in the evening just before and at sunset, calling for a considerable time without intermission, and consequently making its presence known wherever it has taken up its abode. When in forest it is difficult to find, being a small bird and generally seated across some horizontal branch near the top of the tree; but should there be an isolated tree standing in the open, near the edge of the forest-clearing or cheena, there the Banded Bay Cuckoo is sure to post itself, and then can easily be seen. In the Eastern Province I have come upon three or four in as many separate trees standing close together; they do not seem to care about cultivating any close intimacy, though they are not unfrequently found in scattered company. Their call-notes are different from the whistle just mentioned; commencing in a low key they suddenly change to a higher, and then die away into scarcely audible sounds. When approached they fly off to an adjacent tree, and commence calling anew. The diet of this species consists chiefly of Coleoptera, Mantidæ, and caterpillars.

Nothing seems to be known of the nidification of this species. Mr. Hume, it is true, mentions that an egg taken from the oviduct of one of the birds shot by Captain Feilden was bluish grey; but it does not seem quite certain to what species these specimens belonged.

CUCULUS PASSERINUS.

(THE INDIAN PLAINTIVE CUCKOO.)

Cuculus passerinus, Vahl, Skriv. af Nat. Selsk. iv. p. 57 (1797).

Cuculus niger, Blyth, J. A. S. B. 1842, xi. p. 908.

* *Polyphasia tenuirostris*, Hodgk. Cat. B. Mus. E. I. Co. ii. p. 698 (1856, in part).

Cuculus tenuirostris, Kelaart, Prodrum, Cat. p. 129 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 453.

Polyphasia nigra, Jerdon, B. of Ind. i. p. 333 (1862).

Ololygon passerinus, Gray, Hand-list Birds, ii. p. 217 (1871); Hume, Nests and Eggs, p. 136 (1873); Ball, Str. Feath. 1874, p. 394; Butler, ibid. 1875, p. 461; Ball, ibid. 1876, p. 235.

Polyphasia passerina, Jerdon, Ibis, 1872, pl. i.; Holdsw. P. Z. S. 1872, p. 431; Legge, Ibis, 1875, p. 284.

Narrow-billed Cuckoo, Kelaart; *Pousiya*, Mahrattas; *Chinna katti pitta*, Telugu.

Koha, Sinhalese.

Adult male and female. Length 8·75 to 9·2 inches; wing 4·4 to 4·5; tail 4·5; tarsus 0·65; outer anterior toe 0·65, claw (straight) 0·23; bill to gape 0·9.

Iris light red or yellowish red, in some red with a well-defined yellowish outer circle; bill blackish, often with a reddish tinge, the base of lower mandible slightly paler, inside of mouth orange-red; legs and feet (very variable) light reddish brown or greyish brown with a yellowish tinge, in some dusky reddish and in others yellowish; soles yellow, claws blackish.

Above dark ashy, blending on the sides of the neck into the uniform pale cinereous of the throat, chest, and breast; upper back, scapulars, and wing-coverts glossed with greenish; rump and upper tail-coverts more bluish than the head, the former edged with white at the base; quills plain brown; tail dark ashy blue, deeply tipped, barred on the inner webs, and edged outwardly towards the base with white; under tail-coverts, vent, and lower part of belly white, blending into the hue of the breast.

In some specimens there is more white on the abdomen than in others; and at times the under tail-coverts even are sullied with grey. Some individuals, otherwise in the normal adult plumage, have the tail scarcely tipped, and the inner edge of the feathers only slightly indented with white; and occasionally the tail is devoid of white markings.

Young. Birds of the year vary considerably in their coloration; but their prevailing character is to be marked with rufous, and nearly always on the tail (this has the mesial spots and marginal bars rufous), and the chin and throat with more or less of the same colour, while the under surface is marked with whitish or fulvescent bars. In some the caudal bars are white near the tips of the feathers and rufous at the base.

Hepatic phase. This species assumes frequently a rufous plumage analogous to that in which the common Cuckoo is often found. An example shot in March at Colombo has the upper surface, wings, tail, sides of the neck, and throat bright rufous; the feathers of the head and hind neck with a few terminal bars of blackish; the back, scapulars, and wing-coverts barred with greenish black; the terminal portion of the quills and the entire outer webs of the first primaries dull brown; shafts of the tail-feathers and a subterminal spot black, tips of all but

* The trifling differences in the bill and plumage of the members of this genus are not, I consider, sufficient to separate it from *Cuculus* as restricted. The structure of wing and tail is nearly similar in both. The same may be said of the next species, which differs from *Cuculus* mainly in the metallic lustre of the plumage. The tail in the bronze Cuckoos is, as a rule, less graduated than in *Cuculus*; but it is variable, scarcely any two species being exactly alike.

the central pair whitish; under surface, under tail-, and under wing-coverts white, blending on the chest into the rufous of the throat and barred with wavy bands of blackish brown, which on the under tail-coverts are far apart; some of the tibial feathers rufous.

In other examples the breast and flanks, as well as the chest, are rufous, these birds being probably in a younger stage than those which have a considerable amount of white on the lower parts.

These rufous individuals, I imagine, remain so throughout life, perhaps losing the bars on the upper surface entirely, while the quills would remain more or less brown.

Obs. The allied species, *P. tenuirostris* of Gray, which replaces the present bird in Burmah and the countries to the east of India generally, is very similar to it on the upper surface and throat, but has the breast, belly, and under tail-coverts rufous, darkest on the latter, which is consequently the very opposite character to that displayed by the Plaintive Cuckoo. It has a rufous phase; but this differs slightly from that of the present species, the lower parts being banded more boldly, and the tail wanting the white tips.

Distribution.—The observations taken by various naturalists in Ceylon on the movements of this little Cuckoo tend to show that it does not make its appearance in all parts of the north of the island at the same time, the truth, doubtless, being that it arrives in one district and then wanders thence over the country, its distribution being materially influenced by climate. In the north-east, about Trincomalie, I have known it appear in the beginning of October, at which time it has scarcely done breeding in the south of India; it was common enough in suitable places in the interior long before Christmas. Layard, however, remarks that it appeared about Jaffna in February, a time when it should have been assembling for its return northward, and under which conditions he most probably saw it there. Mr. Holdsworth's experience is again scarcely less noteworthy; he did not notice it in the Aripu district before the beginning of January, from which it would appear that it visits the west coast considerably after its arrival on the other side of the island. It would not, however, be safe to assign to it any general period of arrival on the evidence of one or two seasons, as no doubt its appearance, as is the case with most migratory birds, varies considerably according to the kind of season and prevailing weather at the time at which it should be expected.

In the Galle district I have met with it in December, and in the Western Province have seen it about the same date. In these latter districts it does not occur in any great numbers, being a lover of dry climate. In the Hambantota country and all round the south-east coast it is very numerous. From the north down to Chilaw it is common, and in the Seven Korales and along the base of the Matale hills towards Kurunegala I have found it abundant in March. It has, I believe, been found in Dumbura, but I am not aware of its visiting any higher parts of the Kandyan country than that: in Uva it probably occurs at a greater elevation.

Concerning its distribution in India, Jerdon writes, "The Plaintive Cuckoo is found all over India in wooded countries. It is most abundant on the Malabar coast, in the Wynaad, and on the warmer slopes on the top of the Nilgherries, save in the Carnatic, but found here and there in jungly places and on the Eastern Ghauts; rare in Lower Bengal, and up to the foot of the North-west Himalayas." Its distribution seems to be rather peculiar in some districts; Mr. Ball says that it occurs rather sparingly in Chota Nagpur, that Captain Beavan procured a specimen in April in Maunbhoom, and that he himself got another in Sirguja in the same month. In the coast-region to the eastward he found it not uncommon in Orissa, but did not see or hear of it in travelling southward till he reached the western part of Raipur on the road to Nagpur.

Captain Butler writes, "The Indian Plaintive Cuckoo is not uncommon at Mount Aboo; it arrives about the beginning of June, and its mournful ventriloquistic note soon makes one aware of its presence." Mr. Hume follows with the observation that it is found nowhere else throughout the whole region round about Aboo. From these remarks it appears that this species moves about in India to a considerable extent, migrating in the northern parts to the westward during the breeding-season.

Habits.—The Plaintive Cuckoo certainly does not lay much claim to such a title in Ceylon, for there it is one of the most silent of birds, which fact leads one to the inference that its notes are chiefly uttered in the breeding-season. It frequents open scrubby lands, plains dotted with jungle, bushy wastes, and such like; when disturbed it flies from one low shrub to another, and perches generally upon the topmost branches. It is seen moving about a good deal in the early morning, and in the evening, in districts where it is numerous,

assembles in small parties and roosts in thick bushy trees. I found it in considerable numbers once on the Kimbulana-oya, an affluent of the Dedura-oya, flying in and out of the trees growing on the banks; the birds were very wary, and it was with difficulty that I could get within shot of them. It is usually not very prone to allow of a near approach, being of a restless disposition; but when met with alone is not nearly so shy as when associating together. It feeds on caterpillars, Coleoptera, and other large insects, and may often be seen taking them on the ground; its stomach is villous in a high degree.

Concerning its note, which is so well known in India, Jerdon writes that it is "a plaintive call of two syllables, the last one lengthened out, which Mr. Elliott made *whi, whew—whi whew whew*, and which may be written as *ka-veer, ka-vee-eer*, and to which the bird, by pointing his head in different directions as he sits calling, gives a most ventriloquistic effect." I would remark, it is by a similar means that the Hawk-Cuckoo imparts such a singular sound to its call.

Nidification.—This little Cuckoo lays its eggs in the nests of Wren-Warblers, the Yellow-eyed Babbler (*Pyctorhis sinensis*), and also in that of the Grey-backed Shrike (*Lanius erythronotus*). Miss Cockburn, a lady who has done much towards furthering our information on the oology of the South of India, is, according to Mr. Hume, the only person who has identified its eggs, having found them in the nest of the Common Wren-Warbler (*Drymoipus inornatus*) on the slopes of the Nilghiris. I subjoin the following note from her, which Mr. Hume gives in 'Nests and Eggs of Indian Birds':—"On the 17th of September, 1870, the nest of a Common Wren-Warbler, which had two small eggs, and a third, which was much larger, but of something the same colour. A few hours after another Common Wren-Warbler's nest was found, which also contained two small eggs, one of which was broken, and a large egg. These two nests were not far from each other; I took them both. On the 22nd September another nest of the same Warbler was found, which also contained a large egg and two small ones.

"The same day one of my servants, seeing a Plaintive Cuckoo sit very quietly on a hedge, shot it. On examination it was found to contain an egg ready to be laid, of the same colour and spots as those found in the little Warblers' nests. On the 26th September, a Common Wren-Warbler's nest was found, which had only a Cuckoo's egg in it. The Cuckoo was seen near the nest, and the little Warblers in a great fright; for the appearance and flight of the Cuckoo very much resembles that of a small hawk. On looking in the nest there was the egg. It was left for two or three days; but on going to the spot the nest was found to be deserted, so the Cuckoo's egg was brought away.

"On the 5th October, 1870, another Common Wren-Warbler's nest was found; but this time it was occupied by a young Plaintive Cuckoo, which entirely filled the wee nest, and had the boldness to peck at my finger every time I tried to touch it. The nest had no young Wren-Warblers. Whether the young Cuckoo had pushed the little Warblers out, or whether no other egg, except the Cuckoo's, was hatched, it is impossible to say. I regret not having seen the nest till at this stage of the young Cuckoo's existence. A week after it had left the nest, but was caught among the bushes close by. Considering the smallness of a Common Wren-Warbler's nest and one of the Warbler's eggs having been found broken in one of the nests, as mentioned above, there can, I think, be little doubt but that this bird, like its European namesake, must carry her egg in her mouth and drop it into the nest."

The eggs thus found were of "a delicate pale greenish blue, blotched and spotted boldly but sparsely, and almost exclusively towards the large end of the egg, with reddish or purplish brown and pale reddish purple. The markings seem generally to form a very imperfect and irregular, but still more or less conspicuous, zone round the large end."

In size they varied from 0.78 to 0.81 inch in length, and from 0.53 to 0.57 inch in breadth.

CUCULUS MACULATUS.

(THE INDIAN EMERALD CUCKOO.)

Trogon maculatus, Gm. Syst. Nat. i. p. 404 (juv.) (1788).

Chrysococcyx lucidus, Blyth, J. A. S. B. 1842, xi. p. 917; Jerdon, 2nd Suppl. Cat. B. S. India, Madr. Journ. 1845, xiii. no. 225.

Chrysococcyx smaragdinus, Blyth, J. A. S. B. 1846, xv. p. 53.

Cuculus (Chrysococcyx) xanthorhynchus, Layard et Kelaart, Prodromus, Cat. Suppl. p. 60 (1853).

Chrysococcyx hodgsoni, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 705 (1856); Jerdon, B. of Ind. i. p. 338 (1862); Swinhoe, P. Z. S. 1871, p. 394.

Lamprococcyx smaragdinus, Cab. et Heine, Mus. Hein. iv. p. 13, note, no. 6 (1862).

Lamprococcyx maculatus, Holdsworth, P. Z. S. 1872, p. 432.

Chalcites hodgsoni, Gould, B. of Asia, pl. xxi. (1877).

Le Curucui tacheté, Brown, Ill. Ind. Zool. pl. 13.

Angpha, Lepchas (Jerdon).

Adult male and female. Length 6·0 to 6·4 inches; wing 4·0 to 4·3; tail 2·7 to 2·9; tarsus 0·5; outer anterior toe (without claw) 0·62; bill to gape 0·75.

Iris brown or reddish brown; bill yellow at the base, with the terminal portion brown; legs and feet reddish brown. Above brilliant emerald-green, with more or less of a coppery tinge, most prevalent at the margins of the feathers; the back and scapulars with a golden lustre when viewed in some lights; quills metallic brown-green, the inner webs of the primaries rufous at the centre and white at the base; tail much tinged with coppery, the outermost feathers barred with white and the interspaces blackish green; throat metallic green; under surface white, crossed with bold bands of bronzed green.

Young. The immature bird has the back, wings, and rump metallic green, more or less overshot with a coppery gloss, and the feathers barred terminally with rufous and dusky green; the head and hind neck rufous, with a strong coppery lustre, the feathers barred with blackish brown, and sometimes with whitish as well; tail green, the feathers rufous externally, the outermost feathers mostly white, barred with black-green or blackish, the next two pairs barred with blackish and tipped with white; barring of the under surface duller than in adults.

Immature examples vary much in the extent and character of their rufous coloration. An individual in my collection has the back, scapulars, and wings brilliant emerald-green as in the adult, with the head and hind neck rufous, strongly illumined with coppery; the crown and nape barred with whitish and brown, the former across the centres of the feathers; the outermost feathers are white externally and rufous internally, barred with greenish black, the penultimate almost entirely rufous, with green cross bands on the inner webs and a broad subterminal bar of the same, the extreme tip being white; the next pair are rufous on the outer webs, barred with green.

Obs. This species is not very aptly named *maculatus*. It was figured by Brown from a young bird with spotted wing-coverts sent from Ceylon by Governor Loten; he named it the "Spotted Curucui," from which Gmelin gave it its title of *maculatus*, looking upon the bird, however, as a Trogon.

C. lucidus, with which this Cuckoo has been occasionally confounded, is found over most of the Australian continent, and differs from the Indian bird in being of a paler, more coppery, and less lustrous green on the upper surface, and the whole of the under parts are barred with metallic greenish copper-colour. The young bird is brownish above, the green colour being confined to the back and tail; the throat and chest tinged and barred with pale brownish. The wing in this species varies from 4·1 to 4·3 inches.

Distribution.—The fact alone of Brown recording his specimen of the "Spotted Curucui," figured in his 'Illustrations of Indian Zoology,' as having been sent from Ceylon by Governor Loten, entitles this species to a place in our lists. It has not, to the best of my knowledge, since been met with or heard of even in the

island; Layard knew nothing of it, and I conclude entered it in the catalogue of Ceylon birds by himself and Kelaart, published in the Appendix to the 'Prodromus,' solely on the authority of Brown.

It has not as yet been detected in Southern India, and Jerdon says it has been rarely procured even in the central part of the Peninsula; its habitat is essentially the sub-Himalayan region, and (according to Blyth) Arakan and Tenasserim. Jerdon obtained it at Darjiling, and Hodgson procured it in Nepal. Its occurrence in Ceylon can only be accounted for on the supposition of its having migrated southwards in the usual manner, following thus the example of all the true Cuckoos which visit Ceylon.

Habits.—But little is known of the habits of this lovely little bird; but they may, I have no doubt, be considered to resemble those of other members of this beautiful group. Gould writes of *C. lucidus* that "while searching for food its motions, although very active, are characterized by a remarkable degree of quietude, the bird hopping about from branch to branch in the gentlest possible manner, picking an insect here and there, and prying for others among the leaves and the corners of the bark with the most scrutinizing care." The same interesting manners are doubtless possessed by the present species. Jerdon states that the food of the one he shot at Darjiling consisted of insects.

Genus HIEROCOCCYX.

Bill wide at the gape. Wings shorter than in *Cuculus*; the 1st quill short and the 3rd longer than the 2nd. Tail subeven.

Plumage Hawk-like in character, the young being striped beneath.

HIEROCOCCYX VARIUS.

(THE COMMON HAWK-CUCKOO.)

Cuculus varius, Vahl, Skriv. af Natur. Selsk. iv. p. 60 (1797); Strickland, Ann. & Mag. Nat. Hist. 1846, p. 398; Blyth, Cat. B. Mus. A. S. B. no. 339, p. 70; Layard et Kelaart, Cat. Ceylon B. App. Prodromus, p. 60 (1853); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 452.

Cuculus fugax, Horsf. Tr. Linn. Soc. xiii. p. 178 (1821); Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 219.

Cuculus lathamii, J. E. Gray, Ill. Ind. Zool. p. 34, fig. 2 (1832).

Hierococcyx varius, Horsfield & Moore, Cat. B. Mus. E. I. Co. ii. p. 700 (1856); Jerdon, B. of Ind. i. p. 329; Holdsw. P. Z. S. 1872, p. 431; Ball, Str. Feath. 1874, p. 393; Bligh, J. A. S. (Ceylon Branch) 1874, p. 67; Bourdillon, ibid. 1876, p. 392; Ball, ibid. 1877, p. 413.

Bychan Cuckoo; *Sokagu Cuckoo*, Latham, Hist. of Birds.

Kupak or *Upak*, Hind.; *Kokgallo*, Bengalese; *Kuttipitta*, Tel.; *Takkhat*, lit. "Custom-house Bird," in Deccan; *Irolan*, Malabar (*apud* Jerdon).

Adult male and female. Length 13.0 to 14.7 inches; wing 7.4 to 8.2 (*Hume*); tail 6.5 to 6.8; tarsus 0.9 to 1.0; outer anterior toe and claw 1.2 to 1.3; bill to gape 1.15 to 1.3.

Females are smaller than males. The above limit of the wing is that of a male, and must be exceptional. Several specimens I have examined from Ceylon and N.W. India vary from 7.5 to 7.8 inches, which I imagine is about the average limit.

Iris yellow; bill, upper mandible and tip of lower brown, base of under mandible and gape yellow; orbits bright yellow; feet gamboge-yellow, claws dusky at the tips.

Above dark ashen grey, darkest on the interscapular region and palest on the rump and upper tail-coverts; basal margins of the feathers on the hind neck more or less rufous, showing on the surface of the plumage; quills and winglet grey-brown; inner webs of primaries partly crossed from the edge with wide bars of white, more or less mottled with grey; extreme tips of the secondaries pale; tail brownish ashen, tipped with rufous and crossed with a broad subterminal band of blackish brown, above which are four narrow bars of the same, with an adjacent pale cross ray at the lower edge, which expands and is more conspicuous on the outer feathers; under surface of the light portions whitish.

Lores, cheeks, and ear-coverts bluish ashen; chin ashen, the extreme point darkest; throat and chest rufous, the centres of the feathers bluish grey in some, with the basal edges whitish, in others the whole basal portion of the feather is bluish grey; lower part of chest, breast, and flanks barred with the same on the rufous ground, which pales gradually into unmarked buff-white on the belly, vent, and under tail-coverts; under wing-coverts pale rufous or fulvescent, the greater series barred with bluish ashen; under surface of quill-bars buff-white.

When not fully adult the markings of the under surface are darker and the rufous is confined to the chest. A specimen shot by Mr. Bligh in Kotmalie has the lores whitish; the chin and cheeks dark slate, with the centre of the throat white; the chest is washed with rufous, this colour is barred with slate, which gradually darkens on

the breast into brown on a white ground-colour, the bands being at the same time edged with rufous; thigh-coverts, vent, and under tail-coverts pure white; under wing-coverts buff, cross-rayed with brown; under surface of the quill-bars pure white.

Young. Above dark cinereous brown, barred on the lower part of the hind neck, back, scapulars, and wing-coverts with rufous; on the hind neck the bases and margins of the feathers are of this colour; primaries and secondaries barred exteriorly with rufous, internally with buff, shading into rufous near the shaft; tail-feathers tipped with rufous and white, the subterminal bar very broad, and the remaining four more developed than in the adult, the pale succeeding cross rays being rufous and the interspaces ashen; on the three lateral pairs of feathers the cross rays are whitish on the inner webs; forehead and crown ashen brown, scarcely marked with rufous; beneath buffy white, the throat and fore neck marked with broad mesial stræ of cinereous brown; the feathers on the sides of the neck edged with rufous; breast with angular transverse spots of the same, which become more *bar-like on the flanks*; belly and under tail-coverts unmarked; under wing-coverts rufescent, barred with brown.

Obs. The closely allied species, *H. nasicolor* of Hodgson, from the Himalayas, may, Mr. Hume writes, be distinguished from the present by the young not having any barring on the flanks or abdomen, and also by its darker upper surface at all stages. It is, however, not likely ever to occur in Ceylon, as the larger form, *H. sparveroides*, common in South India, and which even migrates to China, has not yet been detected in the island.

Distribution.—This noisy Cuckoo arrives on the shores of Ceylon about the beginning of November, and makes its way at once to the hills, taking up its abode in considerable numbers in the forests of the main range. It is common about Nuwara Eliya, Kandapolla, and the “plains” lying between the Sanatorium and Totapella. On the Horton Plains themselves it is no less numerous, frequenting the picturesque woods which dot this beautiful and lonely spot. Layard was the first to record it from Ceylon, and writes that he shot three specimens in the old Botanical Gardens at Kew, Colombo; these were evidently new arrivals. Mr. Holdsworth met with it, as I did, at Newara Eliya, at the beginning of the year, and Mr. Bligh procured it in Kotmalie in the month of November. He writes me that it is not uncommon in the Haputale range, and that it was yearly to be found on the Harangolla patnas in considerable numbers, making itself heard by night as well as by day. Messrs. Whyte and Co. have lately sent home a specimen killed in the Kandy district, and I have no doubt it takes up its seasonal quarters on the slopes of the Knuckles range.

On the mainland the Hawk-Cuckoo is, says Jerdon, the common species “of the plains of India, being found throughout the whole country, though most abundant in wooded districts.” Mr. Bourdillon writes of it that it is abundant in the semicultivated land of the plains of Travancore, penetrating the jungles at the foot of the hills to 1000 feet elevation, but that it does not ascend the hill-slopes to any height, though common in the low country. Mr. Fairbank’s experience of it in the Palani hills is similar; he found it at the base and on the sides of the range only; it is singular, therefore, that it should resort to the very highest points in Ceylon. In Khandala it is common; and concerning its distribution in Chota Nagpur, Mr. Ball says that it is found in the jungly parts of the Province and that it inhabits the Rajmahal hills. In Jaipur and the south of Raipur, he remarks that it occurs in such abundance that its cry is a “positive nuisance and source of irritation both by day and night!” More towards the north-west of India it appears to be only a seasonal visitant; for Capt. Butler, in his very complete list of animal migrations to the Mount-Aboo district (‘*Stray Feathers*,’ 1877), records it as only remaining during the rainy monsoon—to wit, from June until October.

Habits.—Unlike many of the Cuckoos, which are silent in the non-breeding season, the present species is extremely noisy at all times; it frequents the high jungle in the upper ranges of the Ceylon hills, and is partial to the vicinity of the open grassy spaces called “plains” on the Nuwara-Eliya plateau. Its singular scale-like call, which is uttered while the bird twists its head round, is very characteristic of this region. In January it may be heard the whole morning in the picturesque woods on the Horton Plains, literally throwing its peculiar high-pitched notes in all directions: at one moment they seem to be in the distance; at the next, when it turns its head towards the listener, they swell with strange force on the ear, mounting higher and higher until the bird appears to be obliged to stop.

Jerdon writes of it as follows:—“It frequents gardens, avenues, groves, and jungles, and its loud crescendo

notes are to be heard in the breeding-season, from April till July in the south of India (but beginning earlier in Bengal, according to Blyth), in every garden or avenue. It sounds something like *pibuba*, *pibuba*, repeated several times, each time in a higher note than the last, till they become exceedingly loud and shrill. Mr. Elliott makes it *whi-wheeba*; Sundevall calls it *piripiu*. This author further remarks that each word is pronounced about twice, nearly in this manner in the musical scale, C B B A—A C C B—B D D C; and it thus mounts the scale of notes at every second cry, three or four times, till the note is as high as the bird can raise it, when it makes a short pause and begins anew. It lives both on caterpillars and other soft insects and on fruits, and it is very fond of the fig of the banyan and other *Fici*." It is said by the natives in India to be good eating; but Mr. Fairbank says that he tried it, and found the flesh intolerably strong-flavoured, which is not to be wondered at, as, according to his investigations, it feeds on lizards and insects. Its flight is strong and swift, and it has been noticed to have the habit of darting suddenly into bushes, to the manifest alarm of small birds, who sometimes mistake it for the Shikra and pursue it accordingly. Mr. Bligh informs me that it calls at night; he found it frequenting the skirts of the jungle bordering the grassy wastes on the Harangolla patnas.

Nidification.—The eggs of this species have not yet been identified, as far as I have been able to ascertain. It is believed to deposit them in the nests of the *Malacocerci*, or Babblers. Jerdon saw these birds feeding a young one, which was following them about screaming; he writes that, "on one occasion, at least, there were two or three young *Malacocerci* in company; so that the young of this species of Cuckoo does not always eject the young of its foster-parent from the nest."

Genus SURNICULUS.

Bill much as in *Cuculus*, the nostrils very protuberant and situated near the margin. Wings moderate, with the 3rd and 4th quills subequal and longest. *Tail forked*, with outer feathers short, and the penultimate the longest and forming the fork. Tibial plumes very long. Tarsus partly feathered down the exterior side.

SURNICULUS LUGUBRIS.

(THE DRONGO-CUCKOO.)

Cuculus lugubris, Horsf. Trans. Linn. Soc. 1820, xiii. p. 179 (Java).

Cuculus albopunctatus, Drap. Dict. Class. d'Hist. Nat. iv. p. 570 (1823), juv.

Pseudornis lugubris, Hodgs. J. A. S. B. 1839, p. 137.

Pseudornis dicruroides, Hodgs. J. A. S. B. 1859, p. 136 (Mountains of Nipaul).

Cuculus dicruroides, Jerd. Cat. B. S. India, Madr. Journ. 1840, xi. p. 221; Layard et Kelaart, Cat. Prodromus, App. p. 60 (1853); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 453.

Surniculus dicruroides, Blyth, Cat. B. Mus. A. S. B. p. 72 (1849); Horsfield & Moore, Cat. B. Mus. E. I. Co. ii. p. 695 (1856); Jerdon, B. of Ind. i. p. 336 (1862); Swinhoe, Cat. B. of China, P. Z. S. 1871, p. 394; Holdsworth, P. Z. S. 1872, p. 431; David & Oust. Ois. de la Chine, p. 61 (1877).

Cacangelus lugubris, Cab. et Heine, Mus. Hein. iv. p. 17 (1862).

Surniculus lugubris, Walden, Ibis, 1872, p. 368.

The Fork-tailed Cuckoo, Europeans in Ceylon; *The Black Fork-tailed Cuckoo*, Jerdon
The Fork-tailed Drongo-Cuckoo, Blyth.

Kurrioviyum, Lepchas (Jerdon); *Awon-Awon*, Java.

Adult male and female. Length 10.0 to 10.3 inches; wing 4.8 to 5.3; tail 5.4 to 5.7 (to tip of penultimate), middle feathers about 1.5 shorter; tarsus 0.55 to 0.65; anterior toe 0.6, claw (straight) 0.25; bill to gape 0.9 to 0.95.

Iris brown; bill black; gape and inside of mouth orange-red; legs and feet blackish or deep reddish black, the edges of the tarsal scales whitish; claws black.

Plumage above and beneath black, with a blue and a green gloss or sheen, brilliant above and subdued on the lower surface; the head and tail have the blue lustre the strongest, and the back and wings green (in some specimens there are one or two white feathers on the occiput); the lateral tail-feathers are tipped and crossed with slanting bars of white, the penultimate has a series of white spots adjacent to the shaft, and all the rectrices a fine whitish edge at the base; the under tail-coverts, which are glossed more highly than the breast, are tipped and banded with white, and there is a conspicuous white tuft on the outer thigh-coverts.

Young. Iris red-brown; legs paler than the adult. In the first plumage the upper and lower surface have white tips to the feathers; the wing-coverts and rectrices are similarly tipped, and some of the underlying upper tail-coverts are barred as well; the head, back, and wings are less glossed than the adult, and the under surface is brownish black; the tail is more barred, the penultimate being thus marked instead of spotted, and the next feather has a series of median white marks. In this stage the tail is rounded, the penultimate being shorter than the adjacent inlying feather.

With age the spots disappear from portions of the upper surface, remaining longest on the upper tail-coverts, and some

birds, not quite mature, have fine white tips to the wing- and upper tail-coverts, and a greyish-white edging to the under-surface feathers.

Obs. The Indian species, *S. dicruroides* of Hodgson (which was described from a specimen from "the mountains" in Nepal), has generally been kept distinct from the much earlier described and reputedly smaller Javan species, *S. lugubris*. I notice, however, that so high an authority as Lord Tweeddale remarks (*loc. cit.*) that "Himalayan, Ceylon, Malaccan, and Javan individuals do not differ," and are all the same as an example from Borneo, which is the subject of his notes. It appears to be a very variable species as regards size. The wings of two adults from Java, as given in the note in question, measure 5.75 and 4.82 inches, one from Nepal 5.37, one from Darjiling 5.75. I have examined a good series of Ceylonese examples and have found none to exceed the limit given above (5.3), and the usual dimension is from 5.0 to 5.1 in fully adult black birds.

Distribution.—This singular Cuckoo is rather locally dispersed in Ceylon, being common in one district and absent in another adjacent tract of country. As regards the Western Province, it is occasionally found not far from Colombo, and is very common in the Three Korales and country intermediate between that and Ratnapura, and it extends into the hills, above the latter place, to a moderate elevation, occurring at Gillymally. In the south-west it is less frequent; in the Kurunegala and Puttalam district it is fairly represented, and it occurs here and there throughout the northern forest-tract at all times of the year, from the latter place across to Trincomalie, where it is not uncommon in the forests. In the Eastern Province I saw many examples, but did not meet with it in the Kattregama and Hambantota districts. In Madulsima and Uva I have seen it up to 4000 feet elevation, and procured it once near the Debedde gap; in the Kandy country it is found towards the Hangerankette side and in Dumbara valley. Layard mentions, in his notes, that Mr. Thwaites sent him numerous specimens from the neighbourhood of Kandy; it is probably more plentiful there some seasons than others.

In India it is sparingly distributed throughout the country. Jerdon writes, "I have procured it on the Malabar coast, the Wynaad, in Central India, and at Darjiling. I have found it in other parts of the Himalayas, and in Tenasserim and Burmah." Mr. Hume records it as rare in Tenasserim. It has been procured in different parts of the Malaccan peninsula and in Sumatra at Lampong, and, as above noticed, was first described from Java, where, according to Horsfield, it is found "in districts of secondary elevation, which are diversified with extended ranges of hills and covered with luxuriant forests." To the east of that island it has been found in Labuan and Borneo; and Mr. Swinhoe remarks that it was procured by him in Szechuen, China, in the month of May. In India, judging by the experience of collectors recently, it is less common than in Ceylon.

Habits.—The Fork-tailed Cuckoo frequents a variety of situations, inhabiting the interior of dry forests throughout the north, scrub and low jungle in other places, grassy patnas dotted with isolated trees, and last, but not least, burnt clearings and vegetable plantations in the woods of the interior. In the latter it is chiefly observed in Saffragam and at the base of the western ranges, delighting in perching on the charred stumps and saplings which remain after the first firing of a cheena. It is exceedingly docile in its disposition, sometimes alighting on a fence by the side of a jungle-path and flying tamely on in front of the traveller, and at others sitting on a stump until approached within a few yards. At a distance, its tame habit will always serve, in conjunction with its small-looking head and bill, to distinguish it from a Drongo, to which it bears an otherwise absolute resemblance. Its remarkably human-like whistle, which consists of six ascending notes (sounding as if some one were practising a musical scale in the wilds of the jungle), is, I think, uttered chiefly in the breeding-season. I have heard it always in the north during the north-east monsoon; at other times, in July and August, in the Western Province, it is quite mute. Its diet is mixed, consisting chiefly of caterpillars and beetles, but often combined with various seeds.

When on the wing it is very different from a Drongo, flying along with a steady movement, and not dipping in its progress through the air.

Nidification.—Judging from my examination of various specimens shot in the north, the breeding-season of this species appears to be in the early part of the year; it is most noisy then. I have no information as to

its eggs, or the bird in whose nest they are deposited. Jerdon suggests that it may possibly lay in those of King-Crows, to which it bears such a wonderful resemblance. He writes, "One day, in Upper Burmah, I saw a King-Crow pursuing what at first I believed to be another of his own species; but a peculiar call that the pursued bird was uttering, and some white on his plumage, led me to suppose that it was a Drongo-Cuckoo, which had perhaps been detected about the nest of the *Dicrurus*. Mr. Blyth relates that he obtained a pure white egg in the same nest with four eggs of *D. macrocerus*, and which, he remarks, may have been that of the Drongo-Cuckoo." It is extremely probable, I think, that it was.

Genus COCCYSTES.

Head crested. Bill more curved and compressed than in the preceding genera. Nostrils ovate, basal, exposed, and placed near the margin. Wings rather short, rounded, the 4th quill the longest. Tail long, much graduated. Tarsus longer than in *Cuculus*, exceeding the inner anterior toe; the upper portion feathered, the rest covered with broad transverse scales; outer posterior toe considerably longer than the inner one.

COCCYSTES JACOBINUS.

(THE PIED CRESTED CUCKOO.)

Cuculus jacobinus, Bodd. Tabl. Pl. Enl. 872 (1783).

Cuculus melanoleucos, Gm. Syst. Nat. i. no. 35, p. 416 (1788); Lath. Ind. Orn. i. p. 211 (1790).

Oxylophus edolius, Jerd. (*nec* Cuv.) Cat. B. S. India, Madr. Journ. 1840, xi. p. 222.

Oxylophus melanoleucos, Blyth, Cat. B. Mus. A. S. B. p. 74 (1849); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 451.

Oxylophus serratus, Kelaart, Prodrömus, Cat. p. 128 (1852).

Coccytes melanoleucos, Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 694 (1856); Jerdon, B. of Ind. i. p. 339.

Coccytes jacobinus, Cab. et Heine, Mus. Hein. iv. p. 45 (1862); Holdsworth, P. Z. S. 1872, p. 432; Hume, Nests and Eggs (Rough Draft), p. 137 (1873); Sharpe, P. Z. S. 1873, p. 597; Legge, Str. Feath. 1874, p. 366; Ball, *ibid.* p. 394; Butler, *ibid.* 1875, p. 461; Legge, Ibis, 1875, p. 284; Morgan, *ibid.* 1875, p. 315; Hume, Str. Feath. 1876, p. 457.

Jacobin huppé de Coromandel, Daubent. Pl. Enl. pl. 872; *The Pied Cuckoo*, in India; *Popiya*, Hind., also *Chatak*; *Kola Bulbul*, Bengal.; *Gola kokila*, lit. "Milkman Cuckoo," also *Tangada gorankah*, Telugu (Jerdon).

Konde koha, lit. "Crested Cuckoo," Sinhalese.

Adult male and female. Length 12.0 to 13.0 inches; wing 6.4 to 6.7; tail 5.4 to 5.5; tarsus 1.0; outer anterior toe 0.8, its claw (straight) 0.3; bill to gape 1.1.

Iris dark brown; bill black; legs and feet bluish slate, edges of scales whitish, claws blackish.

Head, cheeks, upper surface, tail, and wings glossy green-black, the crown-feathers lanceolate and rather stiff, forming a fine crest one inch in length; quills dull black; basal half of primaries, with the exception of that part of the outer web of the 1st and inner web of the last, white; central rectrices tipped white, and the terminal $\frac{1}{2}$ inch of the rest the same hue; entire under surface and under wing-coverts sullied white, which passes up behind the ear-coverts on to the sides of the neck; greater lower primary-coverts blackish.

Young. Birds of the year have the bill pale at the base; the legs and feet paler than the adults. The upper surface is sepia-brown, with the nape, ear-coverts, and sides of neck blackish; the forehead paler than the head, and the lesser wing-coverts are edged with greyish; beneath fulvous-grey or buff-white, with the sides of the throat brownish from the chin to below the ear-coverts.

Obs. An individual from the hills in the north-west of India measures—wing 5.7 inches, tail 6.8, bill to gape 1.3

another from Pegu, wing 5·9: both are identical with Ceylonese examples. Mr. Sharpe unites the African species with the Indian. A specimen from Damara Land, described by him *loc. cit.*, had the wing 6·4 and the tail 8·0 inches.

Distribution.—The Pied Cuckoo, which is a showy species, is widely distributed over the low country of Ceylon, but is subject to a partial migration away from the wet regions on the western and south-western sea-board during the prevalence of the S.W. monsoon. It appears about Colombo in November and December, and, when first arrived, lurks in any thick cover that may be to hand. I have seen it in the trees on the borders of the Slave-Island lake, but it soon disappeared for the jungles of the interior. In the Galle district it arrives about the same time and frequents the low jungle in the cultivated portions of the country. In the scrubby jungles of the Girawa and Magam Pattus and throughout the Eastern Province, in the jungles between the Mahawelliganga and the coast, in the maritime portions of the north and west, as far south as Chilaw it is a resident species, and in some of these districts is abundant. It is partial to those dry districts which are covered with low scrub, such as the neighbourhood of Hambantota and many similar spots on the east coast, the Jaffna peninsula, the N.W. coast, and the island of Manaar, as also the Puttalam and Chilaw district. I have seen it occasionally in the interior of the northern division of the island, but it is scarcer there than in the maritime portion. It ranges into the Central Province to a considerable elevation, occurring in Uva up to 3000 feet; but in the western portions (to wit, the valley of Dumbara and adjacent districts) it is not found at such an altitude.

This Cuckoo enjoys a wide range on the main land. Jerdon sketches out its distribution as follows:—“It is found all over India, being rare on the Malabar coast, common in the Carnatic, and not uncommon throughout Central India to Bengal, where it is only at all common in the rains. It is more abundant in Upper Pegu than anywhere else that I have observed it . . . I have seen it on the Nilghiris up to 5000 feet.”

It does not appear to be found on the hills of the peninsula, but is common in the low country, on the Madura coast, and in Ramisserum Island. In Chota Nagpur it occurs rarely, as also in the Sambhur district. As regards Mount Aboo and Northern Guzerat, Captain Butler says it is very common, arriving just before the monsoon. In Cachar, Mr. Inglis met with it but once, and that was in May; but in Upper Pegu I find that Captain Butler and Mr. Oates corroborate Jerdon in saying that it is common; further south I observe that it has not been actually procured in Tenasserim, though it is doubtfully included in Mr. Hume's first list of birds from that Province. In North-east Africa it is, according to Mr. Sharpe, probably a migrant, and has been found in various parts of that region from August to November. Mr. Blanford has procured it in the Anseba valley, Antinori on the Blue Nile, and Ehrenberg in Nubia. It has been met with on the east coast and in various parts of South Africa, in Natal, the Transvaal, and other localities, and in the south-west of the continent it has been obtained in Damara Land.

Habits.—Low scrub, thorny jungle round the edge of forest, and open plains dotted here and there with brush-wood are the localities chiefly frequented by this Cuckoo; but it now and then occurs in avenues of trees or isolated shady groves, particularly when newly arrived in a district and the first cover to hand is being eagerly sought after. It is tame and usually solitary, although now and then I have seen a pair together; and in Pegu Mr. Oates has observed five or six in company. It is commonly seen sitting on the top of a low bush, and when flushed takes a short flight, but does not seek concealment in the bushes to any great extent. It has a rather plaintive, not unmelodious call, uttered when perched on some low tree; but at the commencement of the breeding-season, Mr. Holdsworth writes, “they are very noisy and incessantly flying from one place to another, one or more males apparently chasing the female, and uttering their clamorous cries.” Jerdon remarks the same fact, and says that the call which the males utter at this time “is a high-pitched metallic note.”

Its diet is insectivorous, consisting of caterpillars and various larvæ, grasshoppers, Mantidæ, &c.

Nidification.—In Ceylon the Pied Crested Cuckoo lays its eggs during the N.E. monsoon, choosing the nest of the Mud-birds or Babblers (*Malacocercus*) to deposit them in. Mr. Holdsworth observed them fighting

with these birds at Aripu, and Layard records an instance at Port Pedro of a pair of these Babblers tending a young Crested Cuckoo in a bush; and when he drew near they flew away before him, feigning lameness, and endeavoured to draw off his attention from their fosterling. An egg taken from the oviduct of a female killed in the Puttalam district was of a pale greenish or faded greenish-blue colour, and measured 0.95 by 0.74 inch.

In Aboo, Captain Butler states that they chiefly lay in the nests of the Striated Bush-Babbler (*Chaturrhaa caudata*), and also in those of the Bengal Babbler (*Malacocercus terrior*). The eggs are highly glossy and closely resemble, says Mr. Hume, those of the first-named species, so that they are well fitted for deposit in Babblers' nests; in shape they are "round ovals . . . very glossy, and of a delicate full sky-blue," and average 0.91 by 0.73 inch.

COCCYSTES COROMANDUS.

(THE RED-WINGED CRESTED CUCKOO.)

Cuculus coromandus, Linn. Syst. Nat. i. p. 171. no. 20 (1766); Lath. Ind. Orn. p. 216 (1790).

Cuculus collaris, Vieillot, N. Dict. d'Hist. Nat. viii. p. 229 (1816).

Oxylophus coromandus, Jerd. Cat. B. S. Ind., Madr. Journ. 1840, xi. p. 272; Blyth, J. A. S. B. 1842, p. 920; id. Cat. B. Mus. A. S. B. p. 74. no. 363 (1849); Kelaart, Prodr. Mus., Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 451.

Coccystes coromandus, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 693 (1856); Jerdon, B. of Ind. i. p. 341 (1862); Cab. et Heine, Mus. Hein. iv. p. 45 (1862); Holdsworth, P. Z. S. 1872, p. 432; Hume, Nests and Eggs (Rough Draft), p. 138 (1873); id. Stray Feath. 1875, p. 82; David & Oustalet, Ois. de la Chine, p. 61 (1877).

Coucou huppé de Coromandel, Buffon, Pl. Enl. p. 274; *Coromandel Cuckoo* of some; *The Collared Crested Cuckoo*, Kelaart.

Yerra gola Kohila, Telugu; *Tseben*, Lepchas (Jerdon).

Konde-koha, lit. "Crested Cuckoo," Sinhalese.

Adult male. Length 15.0 inches; wing 6.3; tail 9.3; tarsus 0.9; outer anterior toe 0.95, claw (straight) 0.35; bill to gape 1.3.

Adult female. Length 16 inches; wing 6.7; tail 9.7; bill to gape 1.4.

Iris hazel-brown; bill black, inside of mouth and nostrils coral-red; legs and feet bluish slate, claws black.

Above, the head, including the lores, upper part of cheeks and ear-coverts, the hind neck, back, scapulars, tertials, and least wing-coverts black, with a bronze-green lustre on the upper parts, and a deep blue-green gloss on the upper tail-coverts and tail; the head is less glossed than the back and crest, which latter is $1\frac{3}{4}$ inch in length, and stands out boldly from the nape; the green of the tertials is paler or more overcast with a brownish lustre than other parts; a conspicuous collar of white across the hind neck; quills, greater and median wing-coverts rich chestnut, the primaries dusky towards the tips; tips of rectrices fulvous-white, the centre pair only edged with it; beneath, the throat, fore neck, and sides are yellowish ferruginous, paling into white on the breast and upper part of belly, the abdomen, vent, and thigh-coverts becoming dusky grey; under tail-coverts green-black, edged with fulvous-white, some of the feathers having pale centres.

Female. Differs slightly; somewhat less deep in hue above; tips of rectrices whiter; throat not so rich, the colour not extending to the chest, and the lower part of breast not so pure, the grey of the abdomen pervading it somewhat.

Young. In Hodgson's drawing of the "young, hardly fledged," the bill and eyelid are pale red; the iris is pale brown, and the legs and feet reddish fleshy.

Head, upper surface, and tail brown, the feathers of the head, back, rump, and scapulars with broad fulvous margins; the quills and wing-coverts more deeply margined with the same; tail-feathers edged outwardly and tipped with pale rufous; ear-coverts and entire under surface white.

The bird of the year has the green portions of the upper surface, including the upper tail-coverts, tipped and edged towards the extremities of the feathers with rufous, and the ground-colour brownish metallic green; throat whitish, washed with yellowish rufous; under tail-coverts and abdomen tipped with ferruginous.

Distribution.—The Red-winged Crested Cuckoo, one of the handsomest of its tribe in Ceylon, is a migratory bird to the island, arriving about October and departing again in April. Whether or not it leaves the extreme north of the island altogether, I have been unable to ascertain with certainty; but there is no question about its being a visitor to the southern parts of the west coast, for in October 1876, while I was at

Colombo, an individual was captured on a canoe, some miles from the coast, and on which it had alighted in an exhausted state. When it first arrives it is not unfrequently seen in the Western Province, and then disappears from the sea-board, taking up its quarters in the interior of the low country and ascending the hills to some altitude. It occurs sometimes in Dumbara, and in March 1877 Mr. Bligh saw an example near his bungalow on the Catton Estate at an elevation of more than 4000 feet; he informs me that they are very rare in the Haputale district, and, indeed, its numbers throughout the island are very limited. The island of Manaar and the adjoining coast may perhaps be considered an exception; in the former I saw a good many in March, and Mr. Simpson says it is found about Illepekadua, and in the interior between that place and Mahintale. Mr. Holdsworth does not record it from Aripu. Layard procured it at Ratnapura.

On the mainland the Coromandel Cuckoo enjoys a wide range, but seems to be nowhere numerous. Jerdon writes of its distribution:—"It appears to be a rare species everywhere, though generally spread through India and Ceylon, extending into Burmah and Malayana. It is said to be common in Tenasserim and the Malayan peninsula. I have seen it in Malabar and the Carnatic, and it is also found in Central India and not very uncommonly in Bengal; in the latter country only during the rains. I obtained it in Sikkim in the warmer valleys."

It has been procured by very few collectors of late years either in South or Central India. I find no record of it in 'Stray Feathers' from the Peninsula; but I am aware that it is not uncommon in Ramisserum Island, having received specimens from there, and it must consequently be found on the adjacent coast about Tuticorin. Concerning its range to the east of the Bay of Bengal, Mr. Oates writes that in Pegu it is widely distributed, but not common. Captain Feilden seems to have fallen in with it to a much greater extent; he says:—"This bird is the commonest Cuckoo at Thayetmyo; in the thicker parts of the jungle every bamboo valley contains one or more pairs. They arrive in the beginning of the rains, and the young birds do not leave until October." This is the period at which the species visits us in Ceylon, so that there would appear to be a regular migration north and south at the beginning and end of the rains. In Tenasserim Mr. Davison only found it at a place called Meeta myo, which is about the centre of the province. There is a specimen in the British Museum from Sarawak; it goes, as we know, to Celebes, and it probably occurs in intermediate localities, perhaps in Java, but from there I have not heard as yet of any specimens. It is very desirable that we should know more of the movements and seasonal distribution of this bird, as it is one of the most attractive of its tribe in India. Swinhoe procured it at Amoy.

Habits.—I have observed this species in thick scrub and thorny jungle. A specimen was shot by Mr. MacVicar in the cinnamon-gardens near Colombo, a locality decidedly favourable to its habits. It is very shy, flying quickly up from the ground on being surprised, alighting then on the nearest bush or low tree, and speedily threading its way through the branches to the other side, when it again takes wing. The stomachs of those I have procured contained beetles, grasshoppers, Mantidæ, and other large insects. Captain Feilden notices that they have a Magpie-like chatter usually, but that they utter a "harsh, grating, whistling scream when watching over their young;" and this, I imagine, would be their ordinary note of alarm.

Nidification.—The breeding-season appears to be during the rains, *i. e.* from June until October. Mr. Hume describes an egg, which was taken from the oviduct of a female shot in Tipperah, as being a broad oval and of a "fine and glossy texture; in colour it was a moderately pale, somewhat greenish blue, without any specks or spots."

Captain Feilden has reason to believe that it lays in the nests of Quaker-Thrushes (*Alcippe phayrei*?). He writes, "I have frequently shot the young bird from the middle of a brood of young Quaker-Thrushes; and, as far as I could see from the thickness of the jungle, the old Thrushes were feeding the young Cuckoo. An egg taken from the nest of a Quaker-Thrush, that I believe to have belonged to this bird, was very round and pale blue."

The dimensions of the egg alluded to above are 1.05 by 0.92 inch.

Genus EUDYNAMYS.

Bill stout, wide at the base, not so much compressed as in *Coccyzus*. Nostrils oval, exposed, not so near the margin as in the last. Wings long; the 3rd and 4th quills subequal and longest, the 1st nearly equal to the innermost. Tail not so much graduated as in the last genus. Legs and feet stout. Tarsus about equal to the anterior toe, and shielded with stout, broad, transverse scutæ.

EUDYNAMYS HONORATA.

(THE INDIAN KOEL.)

Cuculus honoratus, Linn. Syst. Nat. i. p. 169 (female) (1766); Lath. Ind. Orn. i. p. 214 (1790).

Cuculus niger, Linn. Syst. Nat. i. p. 170. no. 12 (male) (1766).

Cuculus indicus, Lath. Ind. Orn. i. p. 221 (1790).

Eudynamys orientalis, Sykes (*nec* Linn.), P. Z. S. 1832, p. 97; Jerd. Cat. B. S. India, Madr. Journ. 1840, xi. p. 222; Blyth, J. A. S. B. 1847, p. 468; id. Ann. & Mag. Nat. Hist. 1847, p. 385; id. Cat. B. Mus. A. S. B. p. 73 (1849); Kelaart, Prodr. Mus. Cat. p. 129 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 451; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 708 (1856); Jerdon, B. of Ind. i. p. 342; Irby, Ibis, 1861, p. 230; Legge, *ibid.* 1874, p. 16.

Cuculus (Eudynamys) honoratus, Blyth, J. A. S. B. 1842, p. 912 (female).

Eudynamys honoratus, Gray, Gen. Birds, ii. p. 464 (1845).

Eudynamys honorata, Walden, Ibis, 1869, p. 327; Holdsworth, P. Z. S. 1872, p. 432; Hume, Nests and Eggs (Rough Draft), p. 139 (1873); Ball, Str. Feath. 1874, p. 394; Anderson, Ibis, 1875, p. 142; Hume, Str. Feath. 1876, p. 463.

Eudynamys horonata, Hume, Str. Feath. 1873, p. 173.

The Black Indian Cuckoo, Edwards, Nat. Hist. Birds, p. 58 (male); *Brown and Spotted Indian Cuckoo*, Edwards, *tom. cit.* p. 59 (female); *Coucou tacheté de Bengal*, Daubent. Pl. Enl. pl. 294 (female); *Black Cuckoo* of some; *Koel*, Hind. (female), sometimes *Koreyala*, lit. "spotted"; *Kokil*, Bengal.; *Kokila*, Tel. (male *Nalak*, female *Podak*).

Kaputa koha (male), *Gomera koha* (female).

Coosil and *Koel*, Ceylonese Tamils (*apud* Layard).

Adult male. Length 15.0 to 15.3 inches; wing 7.0 to 7.4; tail 7.0 to 7.5; tarsus 1.15 to 1.2; outer anterior toe 1.25, its claw (straight) 0.45; bill to gape 1.55.

Iris crimson; bill pale bluish green, blackish or dusky round the nostrils; legs and feet leaden blue.

Entire plumage black, with a strong metallic green lustre; the scapulars, wing-coverts, and tail with a bluish sheen as well.

Adult female. Length 15.5 to 16.5 inches; wing 7.3 to 7.75; tail 7.8; tarsus 1.25; outer anterior toe 1.3, claw (straight) 0.45.

Iris red; bill faded bluish, dusky at base and round the nostrils; legs and feet dusky slaty green or faded bluish.

Above metallic brownish green; hind neck, back, and lesser wing-coverts spotted and barred with white, the markings on the first-named part are limited to spots, and the barring on the wing-coverts consists of interrupted bar-like spots; the wings vary considerably in the character of their markings; quills, upper tail-coverts, and tail

barred with white, tinged generally to a greater or less extent with fulvous; forehead marked with fulvous terminal spots or broad mesial stripes; beneath white, with basal or longitudinal blackish marks on the throat, angular or arrow-headed on the chest, gradually changing into wavy bars on the breast; the flanks and the under tail-coverts boldly barred with dark greenish brown: the lower parts from the breast downwards more or less washed with fulvous.

Young. Males in nestling plumage have the iris mottled red; bill greenish, dusky at the base; legs and feet plumbeous. Upper surface and wing-coverts dingy or brownish metallic green, the feathers with white terminal spots; under surface the same, with terminal bars of white; under tail-coverts and under wing-coverts barred with white; tail-feathers tipped and adjacently marked with whitish.

The female in immature plumage has the head, hind neck and its sides, face, and throat striated with rufous; the spottings on the back and wing-coverts, and the bars on the scapulars and tertials, tinged strongly with the same; the bars on the tail-feathers rich tawny, and the under surface washed with the same.

Young females vary in their coloration, as, in fact, the adults also do; scarcely any two female Koels are marked *exactly* alike, differing in the extent of the spotting and barring of the upper surface, and in the amount of rufous on the forehead, of which our birds seem to have more than Indian.

Obs. A comparison of a series of Indian examples with my Ceylonese specimens does not disclose any points of difference between the two races except in the above-mentioned respect. A male from Madras has the wing 7.2 inches, and is identical with examples in my collection; another from Central India is larger, wing 7.8 inches. The several species of Koel which inhabit the region to the east of the Bay of Bengal and the Malayan archipelago are closely allied, the males being black, and the chief specific difference lying in the coloration of the females.

E. malayana, Cab. et Heine, from Assam, Burmah, Tenasserim, Malacca, and Sumatra, has a larger bill than our bird, is longer in the wing, and the females are boldly marked with rufous. I have measured examples in the national collection varying from 7.4 to 7.6 inches in the wing, but it is said to reach 8.0 inches.

E. ransomi, from Ceram and Bouru, is a very fine species, with the wing 8.6 to 9.0 inches, tail 8.0 to 9.0, bill to gape 1.4; the female is very handsomely marked, its coloration being likewise rufous.

E. orientalis. An example, male, from Lombok has the wing 8.1 inches: a female is greenish black, barred with fulvous and white; the forehead and a superciliary band yellowish rufous, centre of the crown dusky green; wings and tail barred with rufous: another female is rufous beneath, barred with black; the upper surface dark green, barred with black.

Distribution.—The Koel is found all over the low country. It is equally common in the northern and southern portions of the island, including the Jaffna peninsula. Mr. Holdsworth only observed it at Aripu from November till April, and inferred that it was migratory to Ceylon. It moves about a good deal according to the weather, leaving the sea-board of the Western Province for the interior during the wet windy months from May until October; but this is all: away from the sea I have seen it at all seasons. On the east side of the island it appears to be stationary, being at all times to be observed in that part; and this is likewise true of the north-east. It is numerous in the delta of the Mahawelliganga and on the coast in places to the north of Trincomalie. In the interior it is much rarer, and, in fact, is liable to be passed over in a cursory inspection of many parts of the northern half of the island, as it is local in its distribution there. I have not seen it from the hills, but have been given to understand that it has occurred in Dumbura.

On the continent this noisy bird is very common in most parts of the Indian peninsula. It is abundant in Ramisserum Island and on the south coast of India; in the Palani hills it likewise occurs; in the Deccan it is common and widely distributed. Mr. Ball says it is tolerably common in the eastern parts of Chota Nagpur, but is seldom met with in the western, more jungly districts. Further to the west it appears to be a visitant only in the breeding-season, from April until October. Mr. Adam remarks that during his stay at Sambhur it only visited the place once or twice during the rains; in Sindh it is likewise non-resident, and in the Mount-Aboo district it occurs during the above-mentioned period of the year. Its inhabiting the Laccadive islands is especially worthy of remark. Mr. Hume found it on every inhabited island that he visited; he writes that, "unless perhaps at Amini and one or two of the Cannanore Islands, where there are Crows, they can only be, as the people affirm, seasonal visitants, there being no bird in whose nests they could lay their eggs."

Habits.—This is one of the noisiest birds in Ceylon, making the woods and paddy-fields ring with its

peculiar scale-like call. It frequents groves of trees, compounds, wooded knolls in paddy-fields, and jungle near water or bordering open ground. It is a skulking bird, loving concealment in thick trees and tangled bushes, and delighting in the shady foliage of trees which are matted at the top with creepers. It moves actively about when flushed and driven into a tree, hopping along the slanting limbs, and springing from branch to branch till it gains the other side, and then escapes to a further place of concealment. It is the male which utters the peculiar note *ku-il, ku-il*, or *koyo koyo*, which mounts each time higher and higher and increases in vigour until it fairly rings through the woods; he is usually perched in some thick tree, and when he has finished his vociferation one or two females may be seen issuing from their places of concealment and flying towards him. This cry may often be heard at night. Adult males seem usually to be in the minority, or else they do not move about as much as the other sex, many more of which may always be seen in the course of a day's ramble.

The Koel is almost exclusively a fruit-eating species, and feeds greedily on all sorts of luscious seeds and berries; from the stomach of a male I once took two entire nuts of the Kitool-palm: it is fond of the banyan-fruit, but in Ceylon does not much affect localities in which this tree grows. Blyth states that it ejects the large seeds of any fruit that it has eaten by the mouth: he syllabizes another note uttered by the male as *ho-whu-ho*; but I have not heard this. Both sexes are much more noisy in May and June than at other times, as this is the breeding-season in Ceylon.

Layard remarks that the natives so much admire the note of this bird, that their poets compare it to the voices of their mistresses, which, however, as he aptly continues, cannot be very soft, for the Koel can be heard a mile away!

Nidification.—In the Western Province this parasitic Cuckoo breeds in May and June, laying nearly always in the nest of *Corvus leuillanti* (the Black Crow), and not in that of the smaller citizen species, as in India, for the simple reason that the latter does not inhabit the jungle to which the Koel resorts to rear its young. I am indebted to Mr. MacVicar for many valuable notes on the nesting of this bird, a number of whose eggs he has taken in the Western Province, and more especially in the vicinity of Kæsbawa. The following are the particulars of four nests found in the months of May and June, 1875:—

(1) Eggs: 4 Crow's; 4 Koel's.

Differed considerably, as if they had been laid by different birds. Two were of a pale green ground, spotted rather thickly with longitudinally-directed markings of olive-brown, confluent slightly round the obtuse end, and laid over numerous blotches of lilac or pale bluish grey: dimensions, 1.24 by 0.93 inch and 1.2 by 0.9 inch. The other two were of a light brown colour, covered with small reddish-brown and purple spots: dimensions, 1.35 by 1.1 inch and 1.34 by 1.0 inch.

(2) Eggs: 5 Crow's; 3 Koel's.

Ground-colour olivaceous green, blotched and marked (sparingly at the small end) with two shades of olive-brown over numerous smaller spottings of indistinct bluish grey; the markings almost confluent at the obtuse end.

(3) Eggs: 2 Crow's; 4 Koel's.

Two distinct types. Ground-colour of two olive-brownish grey, marked all over, but mostly at the large end, with reddish brown, over numerous smaller spots of bluish grey; at the obtuse end the spots are large, but all over the rest of the surface in the form of small specks: dimensions, 1.32 by 1.0 and 1.38 by 1.0. The other two were of a greenish ground-colour, speckled with purplish and brown spots, mostly towards the obtuse end, where the markings become confluent: dimensions, 1.36 by 0.95 inch and 1.25 by 0.96 inch.

(4) Eggs: 2 Crow's; 2 Koel's.

In shape very stumpy. Colour dark olive-green, spotted with dark reddish brown, confluent round the obtuse end. Dimensions, 1.18 by 0.92 inch and 1.15 by 0.95 inch.

The average size of these eggs was 1.31 by 0.95 inch.

In India the Black Crow lays too early for the Koel; and my lamented friend Mr. Anderson* remarks

* In Mr. Hume's 'Nests and Eggs of Indian Birds' will be found a lengthy extract from a paper by this observant naturalist on the nesting of the Koel.

that this is why the nest of the Common Grey Crow is chosen. These clever birds seem to know that they are imposed upon by the Koels, and consequently hold them in strong dislike, constantly attacking and pursuing them during the breeding-season. When the female Koel is about to intrude her egg into the Crow's nest she is accompanied sometimes by the male. It is supposed that the young Koel ejects the Crows from the nest, as in the case of the Common Cuckoo; for Mr. Hume found a young one in a nest with three Crows newly fledged, and a week later "the Crows were missing, and the young Cuckoo thriving." The young Cuckoos persistently follow the Crows for some time after they have "flown," and are even then fed by them with as much care as if they were their own offspring.

Subfam. PHŒNICOPHAINÆ.

Bill robust, in most species higher than wide; culmen much curved. Nostrils not swollen and more or less linear. Tail long and graduated. Tarsi robust and naked, or slightly feathered on the upper part.



FIGURE 1. *TOUCANUS CEPHALUS*

PICARIÆ.

CUCULIDÆ.

PHÆNICOPHAINÆ.

Genus PHÆNICOPHÆS.

Bill stout, wide at the base, and suddenly compressed, the tip well bent down; the upper mandible very high: the nostrils linear and close to the margin, which is lobed just beneath them. Face clothed with a short papillose substance. Wings rounded; the 5th quill the longest and the 1st the shortest. Tail very long, broad, and much graduated. Tarsus longer than the middle toe and its claw, covered with broad transverse scales; outer anterior toe considerably longer than the outer posterior one; claws short and much curved. Feathers of the throat with stiff shafts projecting beyond the webs.

PHÆNICOPHÆS PYRRHOCEPHALUS.

(THE RED-FACED MALKOHA.)

(Peculiar to Ceylon.)

Cuculus pyrrhocephalus, Forster, Ind. Zoologie, p. 16, pl. vi. (1781); Gmelin, Syst. Nat. i. p. 417. no. 40 (1788); Lath. Ind. Orn. i. p. 222 (1790).

Phœnicophæus pyrrhocephalus, Stephens, Gen. Zool. ix. i. p. 59 (1825); Blyth, J. A. S. B. 1842, p. 927; Bonap. Consp. Gen. Av. i. p. 98 (1850).

Phœnicophaus leucogaster, Vieill. N. Dict. d'Hist. Nat. xviii. p. 461 (1816).

Melias pyrrhocephalus, Less. Traité d'Orn. p. 131 (1831).

Phœnicophaus pyrrhocephalus, Blyth, J. A. S. B. 1845, p. 199; Gray, Gen. Birds, ii. p. 459; Blyth, Cat. B. Mus. A. S. B. p. 75. no. 369 (1849); Kelaart, Prodrum, Cat. p. 129 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 453; Legge, J. A. S. (Ceyl. Br.) 1870-71, p. 37; Holdsworth, P. Z. S. 1872, p. 433; Legge, Str. Feath. 1873, p. 346; id. Ibis, 1874, p. 16, et 1875, p. 285.

Phœnicophaus ceylonensis, Licht. in Mus. Berl.

Phœnicophaës pyrrhocephalus, Cab. et Heine, Mus. Hein. pt. iv. p. 68 (1862).

The Red-faced Cuckoo (*rothköpfige Kukkuk*), Forster; *Malkoha*, Pennant and Kelaart.

Mal-kændetta, Sinhalese, Western Province; *Warrelliya*, in Friars-Hood district.

♂ *suprà* metallicè viridis, alis dorso concoloribus, primariis extùs vix cyanescentibus: rectricibus olivascenti-viridibus, latè albo terminatis: pileo colloque postico nigricantibus, plumis albido marginatis, quasi striolatis: facie laterali totà nudâ, papillosâ, rubrà: genis et regione paroticâ, mento gulâque summâ striolatim albis: gutture reliquo nigro: præpectore et colli lateribus nigris albido striatis: corpore reliquo subtùs albo: tibiis fusciscenti-viridibus: subalaribus metallicè chalybeo-viridibus, remigibus quoque subtùs chalybeo nitentibus: rostro flavicanti-viridi, mandibulâ pallidiore: pedibus cyanescenti-schistaceis, unguibus brunnescenti-corneis: iride brunneâ.

♀ *mari similis*, sed iride albâ distinguenda.

Adult male. Length 17.8 to 18.2 inches; wing 6.0 to 6.2; tail 10.5 to 11.1 (lateral feathers only 5); tarsus 1.3 to 1.4; anterior toe 1.1, claw (straight) 0.35; bill to gape 1.5 to 1.6. Expanse 17.5.

Iris brown; bill apple-green, paling at the tip, and the lower mandible lighter than the upper; legs and feet bluish slate, claws brownish horn.

Female. Length 18.0 to 18.7 inches; wing 6.2 to 6.4; tail 11.0 to 11.3; bill to gape 1.5 to 1.65.

Iris white.

Whole face as far back as the ears, passing over the eye and across the base of the upper mandible, clothed with a short blade-like crimson substance, resembling a rudimentary feather; crown, back, and sides of neck greenish black, with the terminal margins of the feathers white; back and wings deep brilliant metallic green, blending into the hue of the neck; quills slightly darker, with a bluish lustre; tail metallic bronze-green, the terminal portion white, increasing from about an inch on the central feathers to two inches on the laterals, and separated from the green by a smoky-brown margin; throat and upper part of chest deep black, the feathers of the chin and of the space beneath the crimson cheeks white, with black shafts; breast and lower parts pure white, changing abruptly from the black of the chest, at the lower edge of which the feathers are tipped with white; flanks and thighs dark greenish black; under wing-coverts metallic green. The tips of the head- and neck-feathers are furcate, the shaft protruding from the fork.

The extent of the striations on the hind neck, and the amount of white tipping at the edge of the black chest, vary in individuals. Some examples, probably immature birds, have the thigh-coverts and lower flanks tinged with fulvous.

Obs. This remarkable genus has no representative in India. Jerdon speaks of *Ph. curvirostris*, an inhabitant of Burmah; but this bird has a very different shaped and situated nostril, on account of which Mr. Sharpe, and justly so it would appear, has made it into a new genus, *Rhinococcyx*. It has the same singular facial clothing, but not to so great an extent as in our bird.

The most singular feature in the economy of the present species is the difference in the colour of the eye in the two sexes, as noticed in my description above. Layard probably procured a female and noted the colour as white: specimens sent to Lord Tweeddale, and a living bird which Mr. Holdsworth had, appear to have been males and had brown eyes. I was fortunate enough, on two occasions, to shoot a pair together, and was able to demonstrate the fact of the sexual difference.

Distribution.—The Malkoha is found in most of the forests and heavily-clad jungle-districts of the low country; but, notwithstanding, has always been considered one of our rarest species, an idea which naturally arose from the extreme difficulty of penetrating its haunts. It occurs sparingly throughout the south-western hill-region, or the tract of country extending from the Kaluganga, through the Pasdun and Hinedun Korales, to the eastern confines of the Morowak Korale. It is likewise to be found in most of the damp forests of the Western Province, particularly in the hills stretching from the neighbourhood of Avisawella to Kurunegala, and occurs even at Mahara and Kotté, in the vicinity of Colombo. It occurs throughout the jungles of the great northern forest-tract, extending from the Western Province through the Seven Korales to the Vanni, the most northerly point in which I have seen it being the forests on the road from Trincomalie to Anaradjapura. In the Eastern Province, however, it is far more numerous than in the aforesaid districts, for I have met with it in flocks of ten or a dozen in the jungles at the base of the Friars Hood, and also near Bibile beneath the Madulsima range. Mr. Bligh has procured it at a considerable altitude in the Lemastota hills, into which it doubtless ascends from the Wellaway-Korale forests in the dry season. On the western side of the hill-zone Mr. Holdsworth has observed it in the Kandy district; but I have no evidence of its being found at a greater elevation than that.

This species is one of the earliest known Ceylon birds. Its gay plumage no doubt made it an object of attraction to the early travellers; and Forster described it in his 'Indische Zoologie' so far back as 1781, giving a plate of it done in the crude style of that period. He, however, does not make any mention of the discoverer of this interesting Ceylonese form, which leads to the inference that natives first made it known to Europeans in the island.

Habits.—This handsome bird is a denizen of forest and heavy jungle, and is of such a shy and retiring disposition that it is but little known to Europeans, even those who are stationed in the wilds of the interior.

The natives of the Western and Southern Provinces, a part of the island in which the population is chiefly located in the cultivated districts, are less acquainted with it than with most birds ; but the inhabitants of the northern and eastern jungles, whose scanty villages are situated, for the most part, in the depths of those primæval wilds, recognize the *Mal-kāndetta*, without hesitation, as a not uncommon bird. Layard, who considered its range to be limited to the mountain-zone, speaks of it as being eaten by the natives, and probably alludes to the Kandyans of the Dumbara district before it was denuded of forest, and when it contained this bird in much greater numbers than it does now. The natives of the "Friars-Hood" jungles, where it is commoner than in other parts of the island, call it "Warreliya," or "long tail."

The Malkoha is fond of tall or shady forest in which there is a considerable amount of undergrowth or small jungle, into which it often descends, after making a meal off the fruits of the lofty trees overhead. When flushed it invariably flies up into high branches and is difficult to come up with, as it quickly makes off, taking short flights from tree to tree. I have seen a flock of six or seven feeding among the topmost boughs of one tree, and noticed that they moved very quickly about among the leaves, sharply wrenching off the berries which they were seeking and devouring them whole. As a rule it is a silent bird, the only note with which I am acquainted being a rather low monosyllabical call like *kāā*, which it utters when flying about. Although I have occasionally found the remains of small insects in its stomach, it is almost exclusively a fruit-eating species, and its flesh is consequently by no means to be despised. It is tender and not unpleasantly flavoured ; and Layard remarks, with justice, that the natives consider it a great delicacy. I have known an individual persistently return to a tree, on the berries of which it had been feeding, a few minutes after being shot at.

Nothing is known of the nidification of this species.

In the Plate accompanying this article, the figure in the background with the white eye represents a female shot in the Vanni.

Genus ZANCLOSTOMUS.

Bill more slender than and not so deep as in the last genus, not so inflated near the base ; the gape more festooned. Nostrils ovoid, basal, and placed higher up than in *Phœnicophaës*. Eye surrounded by nude skin. Wings with the 4th and 5th quills subequal and longest. Tail, legs, and feet much as in the last. Shafts of the throat-feathers rigid.

ZANCLOSTOMUS VIRIDIROSTRIS.

(THE GREEN-BILLED MALKOHA.)

Zanclostomus viridirostris, Jerd. Cat. B. S. India, Madr. Journ. 1840, xi. p. 223, et Ill. Ind. Orn. i. pl. 3 ; Blyth, J. A. S. B. 1845, p. 200 ; id. Cat. B. Mus. A. S. B. p. 76. no. 375 (1849) ; Bonap. Consp. Gen. Av. p. 99 (1850) ; Kelaart, Prodr. Mus. Cat. p. 129 (1852) ; Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 453 ; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 690 (1856) ; Jerdon, B. of Ind. i. p. 346 (1862) ; Holdsworth, P. Z. S. 1872, p. 432 ; Legge, Ibis, 1874, p. 16, et 1875, p. 284 ; Hume, Str. Feath. 1876, p. 458 ; Fairbank, ibid. 1877, p. 397.

Phœnicophaus jerdoni, Blyth, J. A. S. B. 1842, p. 1095.

Rhopodytes viridirostris, Cab. et Heine, Mus. Hein. pt. iv. p. 63 (1862).

The Small Green-billed Malkoha, Jerdon, B. of India.

Kappra-popya, Hind. ; *Wamana kaki*, lit. "Dwarf Crow," Telugu.

Mal-kændetta, Sinhalese ; also *Handi-koota* (apud Daniell) ; *Koosil*, Ceylon. Tamils (Layard).

Adult male and female. Length 15.0 to 15.75 inches ; wing 5.1 to 5.4 ; tail 8.4 to 9.3 ; tarsus 1.3 to 1.35 ; outer anterior toe 0.9, its claw (straight) 0.3 ; bill to gape 1.2 to 1.4.

Iris deep brown ; bill pale leaf-green ; orbital skin in front of eye cobalt-blue, paling behind into pale bluish ; legs and feet dusky green or greenish blue.

Above greenish grey, overlaid with a strong green gloss from the hind neck down to the rump ; lores, at the base of the bill, and round the orbital region shading into blackish ; wings and tail deep metallic green, the tips of the quills dusky ; terminal portion of tail-feathers white, deepest on the outer webs of all but the central pair, which are evenly tipped and with less white than the rest ; throat blackish, with greyish or pale fulvous striæ, formed by the double tips of the feathers being of that colour, and exceeding the black shaft ; on the chest the feathers gradually become fulvous-grey, and from that pure fulvous on the breast and abdomen ; flanks, thighs, and under tail-coverts cinereous, the two latter washed with fulvous.

Some examples, probably immature birds, have the under surface paler than the above, and the upper surface less glossed with green ; the striæ of the throat are less fulvous in some than in others.

The furcate formation of the throat-feathers is most singular, and was, it appears, first pointed out by Blyth, with his usual habit of minute and accurate observation.

Obs. On comparing Ceylonese with South-Indian examples, I find no appreciable difference ; an individual from Madras measures as follows—wing 5.1 inches ; tail 9.2 ; tarsus 1.35 ; bill to gape 1.23.

This species does not differ widely in plumage from the North-Indian *Z. tristis*, which has not got the under parts rufous, and has the throat whiter, with the nude skin round the eye crimson, instead of blue. The latter species, however, is much larger, the wing measuring $6\frac{3}{4}$ inches according to Jerdon, and it is consequently styled the "Large Green-billed Malkoha."

Distribution.—This Cuckoo is widely diffused throughout the low country of Ceylon, being most numerous

in the northern half and south-eastern division of the island, including, as regards the former, the Puttalam and Chilaw districts and the Seven Korales.

It does not, as far as I am aware, ascend into the hill-zone to any considerable altitude, although it is found in the hilly country at the base of the Hewa-Elliya ranges, at an elevation of about 1000 feet. In the above-mentioned low-country districts it is dispersed throughout the forests and low jungle, being everywhere to be found by those who know what sort of locality it frequents; in the south and west, however, it affects only those spots which are suitable to its habits. It is found in tangled thickets here and there throughout the Colombo district, and in the south-west corner of the island is more local still; for instance, it frequents the thorny tangled brake covering the peninsula on the east side of Galle harbour, and is scarcely to be found anywhere else in the neighbourhood. Mr. Holdsworth records it as abundant at Aripu; and further north, as well as in the island of Manaar, it is equally so. It is found in the Jaffna peninsula.

Elsewhere this Malkoha is found only in the south of India. In Ramisserum Island it is common, and likewise on the mainland of the peninsula. In the Palani hills Mr. Fairbank procured it at the eastern base. Jerdon says that it is found as far north as Cuttack, where it meets the larger species. "In the bare Carnatic and the Deccan," he writes, "it is chiefly to be met with in those districts where the land is much enclosed, as in part of the zillah at Coimbatore, where large tracts of country are enclosed by thick and, in many cases, lofty hedges of various species of *Euphorbia*. Throughout the west coast, where jungle and forests abound, it is much more common, especially in those parts where bamboos occur, and where numberless creepers entwine themselves and hang in luxuriant festoons from every tree."

Habits.—The Green-billed Malkoha frequents dense low jungle, the tangled edges of forest, scrub near the sea-coast or surrounding large woods, thickets, and so forth. It is not particularly shy, but does not care to subject itself to long observation, making off with a stealthy flight, and threading its way quickly through the most tangled underwood. I have often noticed it in pairs, but just as frequently flushed it singly, its mate being probably not far distant. In the Northern Province and the jungles to the south of Haputale, where it is abundant, it may frequently be seen flying across the roads. Its diet consists of various fruits and berries and also insects; in the stomach of one I found a large locust almost whole. In India it is said to be almost entirely insectivorous. Jerdon writes that it "diligently searches the leaves for various species of *Mantis*, Grasshopper, and Locust, whose green colours and odd forms, though assimilating so strongly to the plants on which they rest, are but of little avail against its keen and searching eye." In his 'Birds of India,' he remarks that he never found it feeding on fruit; in Ceylon it is the exception to find that it has partaken of any thing else. It is difficult to flush a second time; for when thoroughly alarmed it skulks in the thickest underwood it can find, or escapes, by the use of its legs, among the branches forming its retreat. Its note is a low crake, sounding like *krāā*, generally uttered after it has been flushed; but it is usually of a silent habit.

Nidification.—We are indebted to Miss Cockburn for the only information yet to hand of this bird's nesting. She obtained one nest in March on the Nilghiris. It was large, and consisted of sticks, put together much in the style of a Crow-Pheasant's nest. It contained two white eggs.

Genus CENTROPUS.

Bill very strong, high at base, well curved throughout. Nostrils lateral, and protected by a membrane. Wings rounded, the 6th quill the longest. Tail long, wide, considerably graduated. Tarsi stout and shielded with broad transverse scales, longer than the anterior toe with its claw. Toes stoutly scaled; hind claw very long and straight. Feathers of the head, neck, and throat spinous.

CENTROPUS RUFIPENNIS.

(THE COMMON COUCAL.)

Centropus rufipennis, Illiger, Abhandl. Akad. Wiss. Berl. (1812) p. 224; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 681 (1856); Jerdon, B. of Ind. i. p. 348 (1862); Holdsworth, P. Z. S. 1872, p. 433; Jerdon, Ibis, 1872, p. 15; Hume, Nests and Eggs (Rough Draft), p. 142 (1873); Legge, Ibis, 1874, p. 16; Morgan, Ibis, 1875, p. 315.

Centropus philippensis, Sykes, P. Z. S. 1832, p. 98; Blyth, J. A. S. B. 1842, p. 1099; id. Ann. & Mag. Nat. Hist. 1847, p. 385; id. Cat. B. Mus. A. S. B. p. 78 (1849); Kelaart, Prodromus, Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 450.

Centropus castanopterus, Steph. Gen. Zool. xiv. i. p. 215 (1826).

Centropus pyrrhopterus, Jerdon, Cat. B. S. Ind., Madr. Journ. 1840, xi. p. 224.

Centrococcyx rufipennis, Ball, Str. Feath. 1874, p. 394; Fairbank, Str. Feath. 1877, p. 397.

The Philippine Ground-Cuckoo, Kelaart; *The "Crow-Pheasant,"* Europeans in India and Ceylon, also "*Jungle-Crow*," in Ceylon; "*Lark-heeled Cuckoo*," Jerdon's Catalogue.

Mahoka, Hind.; *Kuka*, Beng.; *Marmowa*, at Monghyr; *Jemudu-kaki*, lit. "*Euphorbia Hedge-Crow*," Tel.; *Kalli-kaka*, lit. "*Hedge-Crow*," Tam. (Jerdon).

Ætti-kukkula, Sinhalese; *Chembigum*, Ceylonese Tamils.

Adult male and female. Length 17.5 to 18.5 inches; wing 7.3 to 8.1; tail 9.5 to 10.0; tarsus 1.9 to 2.0; outer anterior toe (with claw) 1.75 to 1.9; hind toe 0.6, its claw 0.8 to 0.83; bill to gape 1.65 to 1.85.

Females appear to average larger than males.

Iris vermilion; eyelid blackish leaden; bill black; legs and feet black.

Entire plumage, with the exception of the scapulars and wing-coverts (which are glossy cinnamon-rufous) black, dull on the crown and throat, and with the hind neck and its sides, as well as the chest and upper breast, illumined with steel-blue edgings, blending into a greenish hue at the centres of the feathers; these hues are brightest on the hind neck; back, rump, and flanks moderately glossed with greenish; tail-feathers glossed with green, mostly on the four lateral feathers; forehead and chin brownish, gradually darkening into the hue of the crown and throat respectively; tips of the quills smoky brown; scapulars somewhat darker rufous than the wings; under wing-coverts shaded with blackish.

The gloss on the tail-feathers varies in individuals: in some the central pair have scarcely any, the ground-colour partaking slightly, if examined carefully, of a ruddy-brown hue.

Young. The yearling bird has the head and nape marked with rufous striæ; hind neck barred with fulvous; scapulars and wings crossed with rather broad bars of blackish; tail barred with spear-shaped bands of dusky whitish; throat-feathers centered and barred with fulvous; breast and thighs the same.

The above description of the young is from an Indian individual; I have not had the opportunity of examining Ceylonese examples in the immature stage, but they have been described to me as similar to the one here noticed.

Layard procured an albino of this Cuckoo at Pt. Pedro, in which "the black and purple portions were changed to a dirty creamy white, the dark red portions to a light brown."

Obs. Ceylonese *C. rufipennis* differs from the Indian bird of this species in its paler forehead and throat, these parts, as a rule, being in the latter concolorous with the adjacent dark plumage. I say, as a rule, because I find that, as in Ceylon, so in India, examples vary *inter se* in this respect; an example from Kamptee and another from the North-west Province are so close to the insular bird that the latter cannot well be discriminated as a separate race. Mr. Swinhoe, when at Galle, shot a pair of Coucals, which he considered ('Ibis,' 1873, p. 230) distinct from the true *C. rufipennis*, on account of their smaller size and larger bills (the size of bill is not given), as well as their broader tail-feathers barred obscurely across. The wings measured $7\frac{1}{4}$ inches, which corresponds with those of Indian specimens; the tails evidently point to the individuals being immature.

An example in the British Museum from Kamptee measures 7.3 inches in the wing, and four measured and recorded by Mr. Ball are as follows:—Sex ?, Gangpur, 7.7; ♂, Rajmehar hills, 7.2; ♂, Satpuras, 7.8; ♂ juv., Calcutta, 7.55. These would compare very well with five Ceylonese examples taken at random from a series. The tails of the first three here enumerated measure 10.8, 10.5, 10.5 inches respectively; this is longer than they ever attain to in the insular bird, and I have observed the same inferiority in this respect when comparing my specimens with those in the national collection.

The larger species (*C. eurycercus*) from Borneo, Labuan, Sumatra, Java, as well as from Tenasserim, Burmah, Nepal, Sindh, Sikkim, and other parts of India (if the continental species be the same), differs from *C. rufipennis* in having the back coloured red like the wings, which are a paler rufous than in the latter species; likewise in the blue-glossed tail and the much more metallic blue lustre of the hind neck, and finally in the darker under wing-coverts: it is, in all its races, a larger bird than *C. rufipennis*. A Labuan specimen measures 8.8, a Sumatran 8.7, and a Bornean 8.6 inches in the wing; the Sindh and Sikkim birds vary from 9.0 to 9.5 according to Mr. Hume, and some I have measured from other localities 7.9 to 8.3.

Distribution.—The "Jungle-Crow," or "Crow-Pheasant" as it is popularly called, is found throughout all the low country, including the island of Manaar and the Jaffna peninsula, in which latter districts, as well as in most of the north of the island, it is extremely abundant. It ascends the hills, ranging up to 3000 feet throughout the year in some districts, and reaching the altitude of the Nuwara-Elliya plateau in the cool dry season. In June I have met with it in Upper Hewahette, and in January I have heard it behind Hakgala mountain and in the railway gorge.

It is very abundant in the south-west and west of the island, and is tolerably numerous in the Eastern Province and along the north-east coast. At Trincomalee it frequented the native gardens in the heart of the Bazaar. In forest-districts it is local, being chiefly found where the jungle has been cut down and low scrub grown up. It is common in Dumbara, and particularly about Kandy, Paradeniya, and generally along the banks of the Mahawelliganga. On the Uva patnas it is not uncommon; and in Haputale Mr. Bligh has seen it above 4500 feet.

On the continent the Common Coucal inhabits chiefly the southern and central portions of India. It is common in Ramisserum Island and on the adjacent coast, and Mr. Fairbank observed it up to 3500 feet in the Palani hills; it likewise inhabits and breeds in the Nilghiris. It is common in the Deccan and in the Khandala district especially. Mr. Ball writes, "The Crow-Pheasant is tolerably common throughout the Chota-Nagpur division," but "circumstances, which it is not easy to detect, seem to influence the distribution of this bird. In some portions of the district I have been for weeks without seeing a single specimen, suddenly then I come upon a tract in which I do not fail to hear or see several every day."

In the North-west Provinces it is also found, as well as in the plains of Upper India. Mr. Hume remarks that it is abundant along the banks of the larger rivers in Sindh, but that in lower Sindh it is less common than in upper. In the Sambhur-Lake district it is "very rare" (*Adam*).

Habits.—The Common Coucal inhabits almost every variety of situation except gloomy forest, the interior of which it shuns. In the south and west of the island it is found in low woods, cultivated lands, the outskirts of heavy jungle, compounds, native gardens, and the borders of paddy-fields, and is usually a shy bird, betaking itself, when flushed in the open, to the cover of the adjacent wood, and quickly climbing and making its way through the branches out of sight. In the north, particularly in the Jaffna peninsula, it is the very reverse of

shy, walking about the native compounds sometimes close to houses, and exhibiting no concern with regard to the inmates. It may be that it finds its food scarcer here in the dry season than in the less parched-up districts in the south. It walks with an even and stately gait, or proceeds with long hops, and, when winged and pursued, runs with great speed through the jungle, and is exceedingly difficult to capture unless stopped with a second shot. Some of its habits are very curious; and Layard remarks with truth, "On being alarmed it scrambles rapidly to the summit of the tree in perfect silence, and glides away in a contrary direction to that whence the cause of its terror sprung." It resorts often to a favourite tree to roost, probably a shady "Jack," or, better still, an Arcca-palm, of which it is very fond, and which generally stand in the vicinity of native houses. Into these it flies late in the evening, when it can take refuge in them unobserved, and then hides itself in the thickest part of the foliage. At daybreak the following morning its deep notes are heard issuing from the thick foliage and answered by the bird's mate, who is in another tree close at hand; but there is not a sign of either to be seen: this conversation goes on at intervals, and I have known it sometimes to last for twenty minutes before either of the Coucals stirs from the spot in which it has passed the night: when the time has come for a move, they hop out from their night's quarters, and fly away sometimes in opposite directions, and are seldom seen in close company during the day.

There is perhaps no bird-note in Ceylon so well known, nor one which strikes the new arrival from Europe with such astonishment, as the wonderful sound which this Cuckoo issues from its capacious throat. It is heard far and wide for miles on a still evening, and is so deep and weird-like that it is difficult to imagine it is produced by a bird, still less by so small a one as this. It consists of a single call quickly repeated, which may be syllabized as *hooop*, *hooop*, *hooop*; and this is uttered with the mouth wide open and the bird's head thrust down sideways at each note, an exertion which appears necessary to bring out such a voluminous sound. The most lengthy description on paper would fail to give any idea of the nature of the voice of this and, still more, of the next species; but I am perhaps not wrong in maintaining that the luxuriant woods, the sequestered vales waving with verdant fields of rice, the forest-clad hills and shady palm-groves, all of which go to form the smiling face of nature in Lanka's isle, would lose no little of their charm for the ornithologist were they devoid of the Crow-Pheasant's resounding call.

It feeds on a great variety of insects and even reptiles, consuming beetles, slugs, scorpions, centipedes, lizards, and, I believe, small snakes sometimes. It pilfers birds' nests, and eats either eggs or very young birds. Mr. Parker informs me that he has seen one trying to get up the tube of a Weaver-bird's nest to attack the young in it, but in this it failed. Jerdon records the fact of a gentleman in the Indian Custom's department having seen one of these birds dragging along a young hedgehog by the ear, a task which it could not well have undertaken had it not contemplated making a meal off the unfortunate animal.

Nidification.—The species breeds from May until September. Its nest, which is not often discovered, is built in a low tree, generally in the midst of thick woods, and is a large globular structure, composed of twigs and small sticks, with an opening in the side near the top, and is fixed in a fork of a branch or among a mass of small thick boughs. One which I found close to the bungalow on the Gangaroowa estate was placed in a *Lantana*-thicket; it was near the top of a tangled mass of the branches of this well-known pest (*Lantana mixta*); the body of the structure rested in a large saucer-like foundation constructed by the bird of the branches of the *Lantana*, mixed with others brought to the spot; it was about a foot in external diameter, and the exterior was lined with roots. The eggs were two in number, stumpy ovals in shape, and of a chalky texture, although the surface was smooth; the colour was pure white in one and buff in the other, and they measured 1.54 by 1.14 inch and 1.45 by 1.16 inch.

In India it has been observed by Mr. Blewitt that the nests are not always domed, some that he has found being simply structures about the size of a large round plate, with a depression in the centre for the eggs; in some instances the nests are placed high up in large trees and in an exposed situation. Three appears to be the normal number of the eggs, although four or five are sometimes met with.



CENTROPUS CHLORORHYNCHUS.

(THE CEYLONESE COUCAL.)

(Peculiar to Ceylon.)

Centropus chlororhynchus, Blyth, J. A. S. B. 1849, xviii. p. 805; Gray, Gen. Birds, iii. App. p. 22 (1845); Blyth, Cat. Birds A. S. B. p. 78 (1849); Kelaart, Prodrusus, Cat. p. 128 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 450; Cab. et Heine, Mus. Hein. iv. p. 116 (1862); Blyth, Ibis, 1867, p. 298; Holdsworth, P. Z. S. 1872, p. 433; Legge, Ibis, 1874, p. 16.

Green-billed Jungle-Crow, Europeans in Ceylon.

Ætti-kukkula, Sinhalese, Western Province.

Similis *C. rufipennis*, sed rostro viridi et magis curvato: pileo et collo postico amethystino-purpureo nitentibus: inter-scapulii plumarum apicibus scapularibusque concoloribus: remigibus terminaliter magis quam in *C. rufipennis* infuscatis.

Adult male and female. Length 16.2 to 17.75 inches; wing 6.3 to 6.5; tail 9.0 to 9.5; tarsus 1.7 to 1.8; outer anterior toe 1.35 to 1.5, its claw (straight) 0.5; outer posterior toe and claw 1.4, long posterior claw 0.7; bill to gape 1.6 to 1.75.

Iris deep red or dull crimson; bill pale apple-green, slightly pale along the margins; inside of mouth, except towards the tips, orbital skin, and nostril-membrane black; legs and feet black; claws dusky, greenish at the base.

Entire plumage, except the wings, scapulars, and tips of interscapular feathers, black, glossed on the back of the head, hind neck, upper part of interscapular region, and the throat with purple, changing towards the tips of the feathers into beautiful amethystine; the lower parts and upper surface of tail with blue, and the back with obscure metallic green; the quills are dark chestnut, much more infuscated at the tips than the last species; the wing-coverts and scapulars are darker still, or of a dull maroon, with the bases of the feathers blackish; under wing-coverts blackish.

Young. The fledged nestling has the iris slate-grey; bill dusky at base and along the culmen, with the apical portion greenish; legs and feet dusky flesh-colour.

Wings and scapulars red as in adult, black plumage the same; but the feathers of the head are encased in soft sheaths or "pens," each of which terminates in a long white hair-like process, which in time drops off, the feather emerging from the tip.

The *yearling* bird has the bill as in the adult, but with the tip of the lower mandible dusky. The upper plumage is not so highly bronzed as in the old bird; wing-coverts obscurely barred with blackish, tips of quills more infuscated; inner webs of tertials concolorous with the tips.

Obs. This species is closely allied to the preceding, its most conspicuous distinguishing characteristic being its green bill, which is also more curved than that of *C. rufipennis*; but the richer metallic hues and dark-tipped wings would well suffice to separate it even were the bill of the same colour.

Distribution.—This handsome species was discovered by Layard in 1848 on the Avisawella road; but one specimen was then procured by him, which was forwarded to Blyth and described by this naturalist under its present title. In 1852 Layard again met with it, securing another example at Hanwella and three more "in the dense jungle near Pallabaddoola, at the foot of the Peak." These researches, therefore, gave but a very small range, the extreme limits falling within forty miles. Mr. Holdsworth records the fact of seeing an individual of the species once, but did not procure it. Mr. Neville, I understand, obtained several specimens in the Western Province, probably between Ratnapura and Colombo, and was, prior to the date of my acquaintance with it, the only collector who, besides Layard, as far as I am aware, ever procured it.

Instead of being so rare as was hitherto supposed, this "Jungle-Crow" exists in considerable numbers throughout the tract of country which it inhabits. This consists of the south-west hill-region, ranging from

the many jungles near Galle up to the altitude of the coffee-districts of the Morowak Korale, the whole of the Western Province, and the strip of country lying between Kurunegala and Dambulla. In this latter region I do not think it extends into the Seven Korales beyond the influence of the hill rains. It is not uncommon on the Deduru-oya and in the jungles between the Ambokka range and the outlying rocky hills, of which the Dolookanda forms the most conspicuous point; and I have met with it as far north as the Kimbulana-oya, where it is crossed by the direct road from Kurunegala to Anaradjapura *via* Rambawe.

This portion of the Seven Korales is very dry, and this bird only inhabits there the heavy jungle on the borders of the seasonal rivers and streams. Whether it extends out to the north-west beyond the locality indicated I am unable to say; but near the hills I have traced it from Kurunegala up to the vicinity of Dambulla. To return to the Western Province, which is its head-quarters, this bird is there common in all the heavy forest and jungle, as well as in bamboo-cheena from Ambepussa to Ratnapura, inhabiting all outlying dense woods between this line and Colombo. About Hanwella, in the Ikkade-Barawe forest, in the jungles near Poré, and thence south to Horene, its deep booming note may always be recognized by those who know it, and in the forest named it is abundant. I found it numerous in the Ratnapura district, and traced it up to Pallabaddoola, which is high up (2500 feet) in the Peak forest. To this elevation, and perhaps somewhat higher, it doubtless ascends all along the western slopes of the Kandyan hills and round through the Peak jungles for some distance east of Ratnapura. Westward of this place I met with it through the Pasdun Korale to Agalewatta; and southward of this it will be found to occur sparingly in the jungles on either side of the Bentota river, and other heavily timbered localities between there and the Hinedun-Pattu hills. I have heard it near Denniya and in the Singha-Rajah forest. Near Galle it is met with in the Kottowe jungles. I have thus far taken pains to trace out the distribution of this little-known bird perhaps more minutely than may at first sight be thought necessary; but it seems expedient so to do, as it is so seldom seen that many who are not acquainted with its note would pass it over entirely did they not know in what districts to look for it. I cannot say how far eastward of Ratnapura it extends, nor whether it occurs on the eastern slopes of the Kolonna Korale; but in all probability future research will much extend its limits both in the south and probably also round the northern base of the Kandyan hills.

Habits.—Of all our forest birds perhaps the present species is the most wary and seldom seen, scarcely ever emerging from the almost impenetrable fastnesses in which it lives. The Ceylon Coucal almost defies all discovery except by those who have made themselves acquainted with its note and care to follow it into its retreat. It is a denizen of tangled thickets, underwood in forests and on the banks of rivers, dense bamboo-jungle (to which it is especially partial), ratan-cane brakes, and such like, and rarely shows itself in the open except by the side of a road passing through forest, to which it will drop for an instant from an adjoining tree on espying a grasshopper or other insect, quickly retreating again under cover before any but the quickest shot can secure it. In the early morning, when the bamboo-cheenas in the wild parts of the Western Province are resounding with its deep far-reaching call, it mounts up from the underwood into some creeper-covered tree, which is a favourite situation with it, and gives forth its sonorous, long-drawn *hoo—whoop*, *whoop*, which can be heard with distinctness for many miles round, echoing far over the luxuriant glades and waving rice-fields into the distant beetling wooded crags, from which it is answered back by more than one of its lurking fellow mates; for, as is the case with its congener, one note thus given out is the signal for many more, called forth from all sides, until there is a sudden cessation, as if by common consent. As will be gathered from my remarks on its habits, it is an exceedingly difficult bird to procure; for years I had been seeking it in the jungles of Ceylon, knowing well that the loud peculiar Coucal-notes which I often heard in the damp forests of the west could not be those of any other bird, but was never able to procure a specimen, until one morning, in the Hewagam Korale, I penetrated into a dense bamboo-thicket towards a huge overgrown tree, in which one of these birds was sending forth an unusual number of its sepulchral calls, and succeeded in bagging it, thus identifying the species with its note and enabling me, by adopting this device, to procure many specimens, and to jot down in my notebook, on auricular testimony, its distribution wherever I went. Its habit is to call for several hours in the morning and evening, or after a shower of rain, when it mounts up into a tree to escape the dripping underwood and dry its plumage. When disturbed, or after re-alighting on being flushed, it has a very singular monosyllabic note, somewhat resembling the dropping of a

stone into deep water, and which may be likened to the syllable *dhjōonk*; this is uttered by both sexes; but whenever I procured a specimen uttering the loud call in question it proved to be a male. Its diet consists of Coleoptera, spiders, snails, and grasshoppers, and in the stomach of one example I found a number of minute Ammonites. When winged it runs, like the preceding, very rapidly through the dense jungle and quickly escapes pursuit.

Nidification.—The breeding-season probably begins in April or May and lasts until July. In August I procured the nestling which forms the subject of the accompanying Plate, and which had not long left the nest. It was seated on a low branch in some dense underwood and uttered a sound resembling the note of the adult, but not so deep. On the first occasion that I heard it I was unable to find the bird, supposing it to be an old one which had flown away on my approaching it; but on passing the exact spot the following day I again heard the note, and succeeded in finding its author, which must have remained in precisely the same position during the 24 hours that had intervened. The nest and eggs are, in all probability, almost identical with those of the Common Coucal, the latter being perhaps somewhat smaller.

The figure in the Plate represents an adult bird, shot in the Seven Korales, feeding the nestling alluded to, which was procured in Mr. Chas. de Zoysa's fine forest at Kuruwite, where the species is abundant.

Genus TACCOCUA.

Bill higher than wide at the nostrils, the culmen much curved and hooked at the tip, the margin boldly lobed at the base. Nostrils exposed, basal, almost linear and pierced in a depression near the margin. Wings short and rounded, the 4th quill the longest. Tarsus as long as the inner anterior and outer posterior toes without their claws, covered with very broad scales.

Feathers of the fore neck and chest with very stiff shafts. Eyelid furnished with stout eyelashes.

TACCOCUA LESCHENAULTI.

(THE DARK-BACKED SIRKEER.)

Taccocua leschenaulti, Lesson, *Traité d'Orn.* p. 144 (1831); Blyth, J. A. S. B. 1845, xiv. p. 201; id. *Cat. B. Mus. A. S. B.* p. 77 (1849); Jerdon, B. of Ind. i. p. 352 (1862); Holdsworth, P. Z. S. 1872, p. 433 (first record from Ceylon); Hume, *Nests and Eggs* (Rough Draft), p. 145 (1873); Legge, *Ibis*, 1875, p. 285; Hume, *Str. Feath.* 1877, p. 219.

Zanclostomus sirkee, Jerdon, *Cat. B. S. India, Madr. Journ.* 1840, xi. p. 223; Blyth, J. A. S. B. 1842, xi. p. 98.

The Southern Sirkeer, Jerdon.

Jungli totah, Hind.; *Adavi chilluka* and *Potu chilluka*, lit. "Jungle-Parrot" and "Ant-hill Parrakeet," Telugu (*apud* Jerdon).

Adult male and female. Length 15.5 to 16.0 inches; wing 5.9 to 6.25; tail 8.2 to 9.0; tarsus 1.6 to 1.7; outer anterior toe 1.0, its claw (straight) 0.35; bill to gape 1.4 to 1.55. Weight 5½ oz. Longest upper tail-covert feather 4.5 (about). The bill is very variable in size.

Iris reddish, with a brown inner circle and sometimes a yellowish exterior edge; bill cherry-red, with the tips yellowish and an angular black marginal patch continued along the edge to the gape; legs and feet bluish plumbeous or plumbeous, claws blackish; orbital skin blackish(?).

Above olivaceous brown, with a strong greyish-green lustre on the back, scapulars, and wings; the shafts of the head, neck, interscapular region, as well as the throat bristly and blackish in colour; tail metallic brownish green, becoming much darker towards the sides, the two outer pairs of feathers being deep brown above; all but the centre pair deeply tipped white, increasing towards the outer feathers.

Orbital bristles or eyelash black, with white bases; feathers of the lores and round the orbital skin whitish; chin and upper part of throat whitish, passing into pale brownish on the fore neck and chest; beneath this the under surface is rufous, deepest on the lower parts and tinged with yellowish on the breast; vent and under tail-coverts grey-brown, the feathers of the latter tinged with rufous at their extremities; rectrices dark brown beneath.

Examples vary in the depth of the rufous of the under surface, and in those which have it deep the throat is pervaded with a fulvous hue.

Young. Birds of the year have the wing-coverts, tertials, and scapulars tipped strongly with fulvous.

Obs. Ceylonese examples all belong to the dark-backed race, considered to be the typical *leschenaulti*. Four species have been recognized of this genus, two of which were separated by Mr. Bligh from Lesson's and Gray's types (*T. leschenaulti* and *T. sirkee*) and styled by him *T. infusata* and *T. affinis*. All four are very closely allied; and

Mr. Hume, who appears to have now a larger series than has ever before got together, writes that he can only satisfy himself of the existence of two forms—the present, with the dark olive-brown back, and *T. sirkee* with the pale sandy or satiny-brown upper surface. From an examination of a small series in the British Museum from different localities, I think that his conclusions are likely to prove correct. Three examples from Capt. Pinwill's collection, now in the British Museum, measure in the wing 6.4, 5.9, 6.3 inches, two exceeding my maximum dimension; these are the dark-backed race; but they differ slightly from the Ceylonese bird in the forehead being somewhat rufous and in the rufescent hue of the breast ascending up the throat: the island race is characterized, on the contrary, by its darker or grey fore neck and whitish chin, and the forehead is concolorous with the crown. Typical specimens of *T. sirkee*, the Bengal species, have the back, scapulars, and wing-coverts very pale sandy yellowish above, and the throat and fore neck very pale rufous.

Distribution.—The first specimen of this curious Cuckoo procured in the island was killed by Mr. Forbes Laurie in Dumbara, whither the species ascends from the low country at Bintenne. It is not a rare bird, but, being very shy and inhabiting the densest thickets, appears to have escaped the researches of ornithologists previously working in Ceylon. Its head-quarters, I consider, are the hot jungle-clad districts lying to the south of Haputale and stretching thence from the eastern slopes of the southern ranges through the Bootala and Maha Vedda Ratas to the country lying between Bintenne and the east coast. Thence it ascends the mountain-slopes—on the south, those of the Badulla and Haputale ranges; on the east, those extending from Hewa Elliya past Maturata to Medamahanuwara. Although I have not met with it north of the latter region, it is most probable that it inhabits the whole of the Vedda country round the “Gunner's Coin” mountain almost to the Virgel river, for this is precisely similar in character to that about Kattregama, where I first saw it and where it is common. I have procured it in the Wellaway Korale, and Mr. Bligh has killed several specimens above Lemastota at about 2500 feet elevation. It is pretty common near Nilgalla, inhabiting the open jungle on the elevated cheenas between Kaloday and Bibile. Here I saw three or four specimens in a single day. The most elevated region in which it has as yet been observed is the Uva patna-district, in which I have met with it near Wellemade on a hill about 3500 feet in altitude. This portion of the Central Province, consisting of steep patnas and deep wooded ravines, is little known to naturalists, or, in fact, to any but occasional sportsmen, who descend to it from the neighbouring coffee-estates either for Snipe- or Partridge-shooting. It attains an altitude near Banderawella of about 4000 feet, and on the north-east slopes away to Badulla, and thence into the low country at Teldeniya, where the Sirkeer is found, and whence it ascends into the patnas, very probably inhabiting the whole region. On the mainland this species is found in Southern India. Jerdon writes that he procured it on the Eastern Ghâts, in the Deccan, and on the Nilghiris, finding it in grassy slopes from 5000 to 6000 feet elevation. Its range, however, would appear to extend to the north of India. I have seen specimens from the N.W. Provinces; and Mr. Hume has it from Dchra Doon and Kumaon Bhabur (still further north), as also from Sumbhulpoor, Raipoor, Khandala, and other places in Central India. The Bengal species is found in the Sambhur, Guzerat, Kutch, and other western districts, as well as in other parts of the Presidency.

Habits.—The Sirkeer is a shy bird, frequenting dry jungle in open grassy country, low scrub, tangled thickets, and bushy patna-tracts in the Central Province. It feeds almost entirely on the ground in long grass, never straying far from its native fastnesses, and, as far as I have been able to observe, only issuing from them in the morning and evening, at which times it principally feeds. It is found by the sides of jungle-roads and on patches of ground under native cultivation which are surrounded by dense scrub. I have, following the winding native track, more than once entered these enclosures, generally from 5 to 10 acres in extent, and immediately on my emerging from the wood into the open have espied one of these birds at the far end making off instantly for the cover; on alighting at the edge of the jungle they quickly thread their way, like a *Centropus* (“Jungle-Crow”), from branch to branch, and are not many seconds before they disappear into the impenetrable thicket around them.

Its diet principally consists of grasshoppers, Mantidæ, and other insects, which it captures in long grass and with which it crams itself to excess. Mr. Bligh writes me that since I left the island he shot one near Lemastota with a freshly killed brown lizard in its stomach; it was very thick and about 8 inches long, and

was coiled away neatly, even to the tip of its tail ; it had one deep cut across the brain-region nearly severing its head in two.

Jerdon writes that in India it is seen much about white ants' nests, whence its Telugu name, "the appellation of Parrot being given to it from its red bill."

I know nothing of its nesting ; but Mr. Bligh writes me that a female killed during the S.W. monsoon showed signs in its breast-plumage of having lately incubated, which points to the breeding-season being in June and July.



Fam. TROGONIDÆ.

Bill short, stout, very wide at the gape, and consequently somewhat triangular ; culmen curved. Nostrils concealed by bristles. Tail of twelve feathers, long and broad, sometimes surmounted by a long caudal train. Tarsus very short ; feet small and zygodactyle.

PICARIÆ.

TROGONIDÆ.

Genus HARPACTES.

Bill very short and broad ; upper mandible deep ; culmen much curved, the tip with a small notch ; gonys short, deep, and much ascending. Nostrils basal, narrow, situated in a membrane, which is protected by bristles. Chin furnished with weak bristles. Wings short, the primaries much decurved ; the 4th and 5th quills the longest, the 1st rather short. Tail broad, much graduated, even at the tip. Tarsus half-feathered ; inner anterior toe slightly longer than the outer ; inner posterior toe much longer than the outer one.

Eye surrounded by a naked skin.

HARPACTES FASCIATUS.

(THE CEYLONESE TROGON.)

Trogon fasciatus, Forster, Ind. Zool. p. 34, pl. 5 (1781) ; Gm. ed. Linn. Syst. Nat. i. pt. 1, p. 405 (1788).

Trogon ceylonensis, Briss. Orn. vol. ii. p. 19 (1763).

Trogon malabaricus, Gould, Mon. Trogonidæ, 1st ed. pl. 31 (1838).

Harpactes malabaricus, Sw. Classif. Birds, vol. ii. p. 337 (1839) ; Jerd. Cat. B. S. India, Madr. Journ. 1840, xi. p. 232.

Harpactes fasciatus, Blyth, Cat. B. Mus. A. S. B. p. 80 (1849) ; Kelaart, Prodrömus, Cat. p. 118 (1852) ; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 171 ; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 714 (1856) ; Legge, J. A. S. (Ceylon Br.), 1870-71, p. 35 ; Holdsworth, P. Z. S. 1872, p. 422 ; Hume, Str. Feath. 1873, p. 432, et 1876, p. 498 ; Ball, ibid. 1874, p. 385, et 1876, p. 231 ; Legge, Ibis, 1874, p. 13, et 1875, p. 281 ; Bourdillon, Str. Feath. 1876, p. 382 ; Fairbank, ibid. 1877, p. 393.

Pyrotrogon fasciatus, Cab. et Heine, Mus. Hein. iv. p. 156 (1862).

Der Band-Kuruku, Forster ; *The Fasciated Curucui*, Gmelin ; *The Fasciated Trogon*, Kelaart ; *Red Flycatcher*, Europeans in Ceylon.

Kufni churi, Hind. ; *Karra*, Mahrattas ; *Kakarne hakki*, Canarese.

Nawa nila kurulla, *Ranwan kondea*, *Ginni kurulla*, Sinhalese.

Adult male and female. Length 10·5 to 11·2 inches ; wing 4·4 to 5·0 (average about 4·7) ; tail 5·4 to 6·0, outermost feather 3·0 shorter ; tarsus 0·55 to 0·7 ; inner anterior toe 0·6, its claw (straight) 0·3 ; inner posterior toe 0·4 ; bill to gape 0·9 to 1·05.

Females slightly the smaller of the sexes.

Iris hazel-brown or reddish brown, in some with a pale outer circle ; bill, orbital skin, eyelid, and gape French blue, the orbital skin being the palest ; culmen and tips of mandibles black ; legs and feet delicate greyish blue, claws bluish horn.

Male. Head, nape, face, and chin dull black, paling gradually to dark slate on the fore neck and upper part of the chest ; hind neck partially denuded of feathers ; back and scapulars yellowish olive-brown, paling into rufescent

fulvous on the rump and upper tail-coverts; least wing-coverts concolorous with the back, the remainder of the wing black, crossed with narrow bars of white on the wing-coverts, tertials, outer webs and tips of secondaries; all but the first primary with a clearly-defined white outer edge; the three centre pairs of tail-feathers cinnamon-rufous, the central pair almost entirely so, with a fine black tip; the next two black at the tip and on the terminal portion of the inner web; the next two with almost all the inner webs black; the three outer pure white on the terminal half, black on the basal, and with a rufous edge except on the outermost.

Female. Has the back and rump as in the male; but the head and hind neck are brown, darker than the back; the throat and fore neck light olive-brown and the chin blackish; the wing-coverts, outer webs of secondaries, and the tertials are barred with bands of fulvescent-rufous, broader than the white bars of the male; breast and under surface fulvous, the white pectoral band wanting.

Young male. Bill and orbital skin duller than in the adult. In nest-plumage the male has the head and face slaty black, back and tail as in the adult; the median wing-coverts barred with narrow bars of fulvous, and the outer webs of the secondaries with broader bars of the same, slightly paler than these markings in the female; the chin is black and the fore neck slate-colour; the under surface is paler fulvous than the adult female, and the white pectoral band is present. An individual shot in January, in the Northern Province, has the wing-coverts with white-and-rufous barred feathers, and the under surface with fulvous and scarlet ones.

Obs. Mr. Hume has called attention (*loc. cit.*) to the fact that Ceylonese examples are smaller than Indian; and he points out the following difference in the tail of the island race:—"Instead of the central tail-feathers being entirely chestnut with moderately black tips, and the next pair entirely black, they have all the four central tail-feathers black on the inner webs and on the outer webs for about one inch, the rest of the outer webs being chestnut." As a matter of fact the pair adjacent to the central one have the black only on the inner web, at least in a good series I have obtained, so that these feathers may be said to be almost entirely rufous, which is a great dissimilarity to the same in the Indian bird. I have not been able to examine any South-Indian specimens, and cannot express an opinion as to whether it is the rule to find them with such black tails. If the Indian species is to be separated, it must bear another name, as it is the Ceylonese bird which is *fasciatus*, it having been described by Forster, in his 'Indische Zoologie,' from Ceylon.

Mr. Fairbank gives the following measurements of specimens killed in the Palanis:—♂, length 12.5 inches, wing 5.0, expanse 16.0, tail 7.0, bill from gape 1.1; ♀, length 12.0, wing 5.0, expanse 15.75, tail 7.0, bill from gape 1.0. An individual shot in Sambalpur by Mr. Ball measures—length 11.5, wing 5.0, tail 7.0. From these dimensions it would appear that Indian examples differ chiefly in the length of the tail, but do not much exceed Ceylonese ones in the wing.

Forster's plate of this species is a good representation of it; the figure is that of a male bird lying on the stump of a tree.

Distribution.—This very handsome bird is widely diffused throughout Ceylon, and is by no means uncommon, although, being entirely a denizen of the forest, it is not much known among Europeans. In all parts of the island it is found wherever there is lofty jungle, which it frequents by choice. It is met with near Colombo, at Atturugeria and Ikkade Barawe, and inhabits the forests in the interior of the Western Province. In the south it is found in the timber-jungles near the Gindurah, those throughout the Hinedun Pattu, and in the Kukkul and Morowak Korales. The Singha-Rajah forest is a great stronghold of this species; its gloomy ravines clothed with fine timber-jungle, entwined in many places with enormous ratan-canes, which flourish on the incessant rains of that region, afford it a paradise. In the Eastern Province I found it common in the Friars-Hood hills, in the Nilgalla district, and other localities clothed with heavy jungle. In the north it is locally distributed, being confined to heavy forest, in which I have procured it about 15 miles from Trincomalie. At the northern base of the Matala ranges it is common, and is diffused throughout all the coffee-districts, ascending to the upper ranges in the dry season. Mr. Holdsworth met with it at Nuwara ELLIYA in February, and I have seen it at Kandapolla in January.

In India Jerdon found it in the forests of Malabar, from the extreme south up to about north latitude 17°, reaching up the Ghâts and hill-ranges to at least 3000 feet. Referring to 'Stray Feathers,' we find Mr. Fairbank procuring it first on the Palani hills at an elevation of 3500 feet, and finding it up to 5000 feet elevation. Mr. Bourdillon records it as a common bird in heavy jungle on the Travancore hills above 1000 feet; north of this region the former gentleman notices it as found in the woods of Sawant Wade, in the Khandala district. In the Central Provinces Mr. Thompson has procured it in the Ahiri forests, in lat. 19° 30'; Mr. Ball at

Jaipur, and also at Rehrakole in 21° N. lat.; and Mr. Blanford has obtained it further to the east in the Godavari valley. Rehrakole appears to be the most northerly locality to which its range has as yet been traced.

Habits.—The gloomy recesses of the forests this Trogon inhabits serve to bring out its beautiful plumage in striking relief; nothing can form a greater contrast than its brilliantly-coloured breast does with the sombre trunks and subdued foliage of the timber-jungles in the south of Ceylon. Were it not for its shyness in taking wing at the sight of man, it would seldom be observed; for it loves to perch across some horizontal limb, many feet from the ground, and there remains utterly motionless, with its head sunk between its shoulders, until the sight of a passing moth rouses it into activity, and it launches itself out with a loud fluttering of its wings, seizes the prey, and starts off to another branch not far distant from its first. It sits bolt upright, and when viewed from behind appears to have no neck and but very little head! The natives of India have named it *Kufni churi*, from this singular appearance, as if dressed in a fakir's "kufni." I have usually found it in pairs, and not solitary, although the two birds are seldom seen close together; but if one be shot the other will almost sure to be seen close at hand. It is this bird which makes the curious monosyllabic note *chok*, which is often heard in the Ceylon forests; for many years I was unable to identify this sound with any species, until I saw a Trogon in the act of uttering it in some dense forest near Ambepussa. It has another purring call, which it commonly utters; but I am not aware that the Ceylonese birds have any querulous note like the mewling of a cat. Mr. Bourdillon says that it gives this out continuously in the Travancore forests. In the recesses of the timber-jungles in the south of Ceylon, considerable tracts of forest may be traversed without seeing or hearing a single bird; as the naturalist is perhaps commenting on the dearth of bird-life, he suddenly comes on a sociable little troop of his feathered friends, who seem to have collected together in these lonely solitudes for companionship's sake: several Forest-Bulbuls (*Crimiger ictericus*) and some Black-headed Bulbuls (*Rubigula melanicteria*) are sure to be among the assembly, the rest of which is made up with one or two Azure Flycatchers (*Myiagra azurea*) and a casual *Pomatorhinus* leisurely uttering its melodious call as it clings to the mossy bark of some giant trunk, while, lastly, at a little distance from the sociable gathering, sits aloof a solitary Trogon, as if it had come to see what was the matter, but scorned to associate with its lively neighbours. Jerdon remarks that he has sometimes seen four or five of these birds together.

The food of this species consists chiefly of coleopterous insects, bugs (Hemiptera), moths, &c., which it catches on the wing like a Flycatcher; and hence its ordinary name with gentlemen in the Survey Department, and others who frequent the jungle and have made its acquaintance. It is peculiar for the extraordinarily delicate nature of its skin and consequent looseness of the body-feathers, which fall out in abundance on the bird striking the ground when shot. It is on this account that the Trogon is the most difficult of all Ceylonese species to preserve for the cabinet.

I know nothing certain as to its nidification; but a gentleman in the Survey Department assured me that he found a nest with two young ones in a Kitool-palm during the month of May. It was situated in a hole in the trunk of the palm which stood near his hut in the Three Korales, and the young were lying on the hard wood of the nest-cavity.

PICARIÆ.

Fam. BUCEROTIDÆ.

Bill very large, curved from the base, with or without a casque on the upper mandible. Nostrils small, pierced in the bill, without a membrane, at the junction of the casque with the upper mandible or near the ridge. Wings short. Tail long, of ten feathers. Tarsus short. Feet syndactyle; three toes in front.

Tongue short and heart-shaped. Sternum wider at the posterior edge than in front, and with a shallow emargination on each side.

Genus ANTHRACOCEROS.

Bill enormous, curved from the base to the tip; the upper mandible surmounted by a long, high, and sharp casque, its anterior edge projecting forward. Nostrils narrow, situated at the base of the casque; orbital and gular skin nude. Wings short and rounded, the 1st three quills evenly graduated; the 1st short and the 5th and 6th the longest; tertials reaching beyond the primaries. Tail very long, of ten feathers. Legs and feet stout, covered with broad, prominent, transverse scales. Tarsus longer than the middle toe; toes syndactyle, the outer connected with the middle as far as the last joint; sole very broad, claws short and stout.

ANTHRACOCEROS CORONATUS.

(THE CROWNED HORNBILL.)

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- Buceros coronatus*, Bodd. Tabl. Pl. Eul. p. 53 (1783); Blyth, Ibis, 1860, p. 352.
Buceros violaceus, Shaw, Gen. Zool. viii. p. 19 (1811); Blyth, J. A. S. B. 1849, p. 803;
Kelaart, Prodromus, Cat. p. 126 (1852).
Buceros malabaricus, Tickell, J. A. S. B. 1853, ii. p. 579; Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 38; Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 260.
Anthracoceros coronata, Reich. Syst. Av. pl. 49 (1849).
Hydrocissa coronata, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 588 (1856); Cab. et Heine, Mus. Hein. ii. p. 170 (1860); Jerdon, B. of Ind. i. p. 245 (1862); Holdsworth, P. Z. S. 1872, p. 425; Ball, Str. Feath. 1874, p. 387.
Anthracoceros coronatus, Elliot, Mon. Bucerotidæ, pt. iv. (1877).
The Large Hornbill, Kelaart; *The Malabar Pied Hornbill*, Jerdon; *Toucan, Double-billed Bird*, Europeans in Ceylon; *Danchuri*, Hind.; *Bagma-dunes*, Bengal.; *Wayera*, Mahrattas; *Peshta-ganda*, Gonds; *Suliman murghi*, lit. "Solomon's Fowl," Musselmen in South India; *Kuchla-kha* in Goomsoor (Jerdon).
Porowa kändetta, lit. "Axe Hornbill" (from the shape of the bill), Sinhalese; *Attakändetta*, apud Layard; *Errana-chundoo-kuruvi*, Ceylonese Tamils, lit. "double-billed bird" (apud Layard).

Adult male. Length 36.0 inches; wing 13.0 to 13.3; tail 13.0; tarsus 2.5; middle toe 2.1, its claw (straight) 0.75; hind toe 1.1, its claw (straight) 0.8; bill from gape to tip across the arc 7.0, casque along ridge 7.5 to 9.5, height of bill with casque 4.0.

Adult female. Length 34.5 inches; wing 12.75; tail 14.0; bill from gape to tip across arc 6.8, casque along the ridge 7.0 to 8.5.

The casque projects back over the crown and gradually becomes compressed to a sharp edge at its anterior part, which recedes downwards to the mandible, joining it about $2\frac{1}{2}$ inches from the tip. The size of the projection forward beyond the point of contact and the consequent angle of connexion depend on age.

Iris crimson; eyelid black; orbital skin and gular region "fleshy;" bill and casque fleshy white; above and beneath the gape, the posterior face of the casque and its anterior three fourths black, the colour *never descending onto the mandible*, and not reaching quite to the anterior edge of the casque; legs and feet blackish leaden colour; edges of tarsal scales whitish, soles yellowish.

In the female the black at the gape does not extend to the upper mandible, nor is the posterior edge of the casque black.

Entirely glossy green-black, except the under surface from the chest downwards, the terminal portion of the secondaries and all but the first two primaries, the three outer tail-feathers, and terminal half of next pair, all of which parts are pure white; base of primaries whitish.

In some examples the tips of some of the tertials are white, as also those of the centre tail-feathers; while the 4th tail-feather is sometimes entirely white, and the corresponding one perhaps of the normal colour.

Young. In the bird of the year the casque is partly undeveloped, the posterior edge is perpendicular, and the anterior portion grades into the bill, the curve of the ridge being continuous with that of the tip. In the second year the anterior projection of the casque begins to develop. The bill is devoid of the black, there being merely a dusky patch at the gape and a slight dark wash near the anterior portion of the casque.

A male shot at Jaffna measures:—wing 12.3 inches; tail 13.2; tarsus 2.5; bill across arc, gape to tip 5.4, along gape 5.5.

A female:—wing 11.8 inches; tail 11.5; tarsus 2.5; bill, gape to tip across arc, 4.85.

The terminal 2 inches of the primaries only are white, while in the adult this colour extends to 3 inches from the tip; on the secondaries the white diminishes to $\frac{1}{2}$ inch on the innermost feather.

Obs. Ceylonese individuals are quite as fine as those from India. Mr. Ball gives the wing of a Chota-Nagpur male as only 11.25 inches, and the bill from gape 6.2. The present species is closely allied to *A. malabaricus*, which has been described under the names of *Hydrocissa albirostris* and *H. affinis*, and frequently referred to by these titles in the writings of Indian naturalists. It differs from the present species in the slightly smaller casque, which has the black patch *extending onto the upper mandible*, and in the coloration of the tail-feathers, the three outer pairs of which have the terminal portions only white instead of being entirely so, as in *A. coronatus*.

Distribution.—This fine Hornbill frequents the wild *dry* jungle-districts of the low country, perhaps ascending into the Haputale range and up the eastern slopes of Madulsima, Medamahanuwara, and the Knuckles to some elevation during the N.E. monsoon. Commencing in the south, its range begins in the Hambantota district, where it is numerous, and, taking in all the forest-country up to Lemastota, extends northward through the eastern and northern portions of the island of Jaffna. Down the west coast it is found as far south as Chilaw and the Seven Korales; but near Kurunegala itself I was unable to detect its presence, although I searched diligently for it. I have seen specimens from the Kurunegala district; but I imagine they must have been killed nearer Puttalam than that place, for Mr. Parker tells me that it is found at Uswewa, but probably does not extend further inland than Nikerawettiya. It occurs throughout the interior of the north-central part of the island, but not so commonly as near the coast, along which it is always more abundant than further inland.

Layard speaks of a second species of Pied Hornbill which he said he saw twice in the hills; he supposed it to be the *Buceros albirostris*, above referred to. On one occasion his collector "Muttu" saw it at Gillymally in forest. As will be seen, the slight differences existing in this species are not such as could ensure its identification on the wing; and I am therefore of opinion that Layard must have met with the immature of the present bird, the peculiar bill of which might have led to the supposed identification of a

new species. I was told by a native superintendent that a large black-and-white Hornbill is seen sometimes in the jungles at the eastern end of the Haputale range; but I have no doubt that it is the present species, which ascends from the low country to the higher jungles during the N.E. monsoon.

Jerdon remarks that the Malabar Pied Hornbill is found in all the heavy jungles of Southern India, and that he met with it in Malabar, Goomsoor, and Central India. It does not seem to be an inhabitant of the hills in the extreme south of the peninsula, where, however, the Great Hornbill (*Homraius bicornis*) is found. Mr. Fairbank records it from Ratnaghiri, near Bombay, and Mr. Ball from Chota Nagpur; the latter writes, "The Malabar Pied Hornbill affects certain localities in Chota Nagpur, where it may generally be found in a flock numbering from 6 to 10 individuals. I have shot it in Manbhum, Singhbhum, and Sirguja, and seen it in the fine jungles which border the Ghât from the Ranchi plateau to Purulia."

Habits.—The Crowned Hornbill lives in small parties, frequenting the tops of trees and feeding on the many fruits with which the Ceylon jungles abound. These it swallows whole, whether large or small. Layard says that to procure its food, "when attached to a branch, it resorts to an odd expedient—the coveted morsel is seized in its powerful bill, and the bird throws itself from its perch, twisting and flapping its wings until the fruit is detached; on this the wings are extended, the descent arrested, and the bird regains its footing."

An individual which Layard kept in captivity was observed to use its bill in recovering its perch in the same manner that a Parrot would do, except that instead of the upper mandible only it employed the whole of the bill to hook itself on by. It is a shy bird, taking wing at once on seeing itself approached; but it usually does not take long flights; when it does the momentum of its huge bill and heavy neck are such as to cause it on alighting to topple forward before gaining its equilibrium. When flying it proceeds with rather quick flapping of the wings, and then sails along with them outstretched, its long tail and motionless primaries giving it a singular aspect. It has a loud harsh note, and is very noisy in the morning and evening, three or four together without much difficulty making themselves heard far and wide. In the jungles of the eastern side of the island it is partial to the tall forest-trees growing on the margins of the rivers, as in the less fertile tracts away from the influence of the water there is not so much means of subsistence for it, except where the iron-wood tree is to be found, the luscious fruit of which attracts to it every fruit-eating bird in the forest. It is likewise very fond of the banyan fruit. Layard remarks that they are often to be seen feeding on the ground; but this I have never been fortunate enough to see myself.

Nidification.—This bird breeds in the cavity of a tree, and the male, as is the case with other species, closes up the entrance while the female is incubating her eggs, leaving a small hole only sufficiently large to admit of his feeding his imprisoned partner. After the young are hatched the mud wall is broken down either by the male or the female, and both assist in feeding their offspring. In the case of the present species we have nothing but native evidence in support of this extraordinary habit; but I think it may well be credited, in the face of what has been seen by reliable witnesses of the nesting of other Hornbills. The natives attribute the cause of this strange proceeding to the birds' fear of the monkeys, which inhabit the Ceylon forests in such numbers: be this as it may, I doubt not that the incarceration actually does take place; and it would be very interesting if some undeniable proof of it could be obtained by observation on the part of some of my readers in the Ceylon Civil Service or the Public Works Department, who, by offering a reward for the finding of a nest in the forests surrounding their Station, might perhaps succeed in making some valuable notes on the subject. I have no information concerning the eggs of the Crowned Hornbill, for they do not appear, as yet, to have been procured.



Genus TOCKUS.

Bill much smaller than in *Anthracosceros*, without the casque, but with the ridge of the culmen sharp and slightly elevated, and with the sides of the upper mandible vertical at the base; the cutting-edge serrated. Nostril basal and round; orbital region wide. Eyelids furnished with stiff lashes. Wings, tail, and feet as in the last genus.

TOCKUS GINGALENSIS.

(THE CEYLONESE HORNBILL.)

(Peculiar to Ceylon.)

Buceros gingala, Wilkes, Encycl. Lond. iii. p. 480 (1808).

Buceros gingalensis, Shaw, Gen. Zool. viii. p. 37 (1811); Temm. Pl. Col. ii. p. 17 (1824);

Blyth, Cat. B. Mus. A. S. B. p. 44 (1849); Kelaart, Prodromus, Cat. p. 126 (1852);

Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 260; Schlegel, Mus. P.-B. 1862, p. 12.

Buceros pyrrhopygus, Wagl. Syst. Av. (1827).

Tockus gingalensis, Bonap. Consp. Gen. Av. 1850, p. 91; Jerdon, B. of Ind. p. 250 (1862, in part); Blyth, Ibis, 1867, p. 296; Jerd. Ibis, 1872, p. 5; Holdsworth, P. Z. S. 1872, p. 425; Legge, Ibis, 1874, p. 14, et 1875, p. 282; Elliot, Mon. Bucerotidæ, pt. iv. (1877).

Rhinoplax gingalensis, Bonap. Consp. Vol. Anisod. 1854, p. 3.

Buceros (Penelopides) gingalensis, Von Mart. Journ. für Ornith. 1866, p. 18.

The Small Hornbill, Kelaart; *Toucan*, Europeans in Ceylon; *The Grey Hornbill* or *Jungle Grey Hornbill*.

Kāndetta, Sinhalese.

♂ *ad.* suprâ sordidè cinerascens, pilei plumis vix brunnescentioribus medialiter albido obscurè lineatis; tectricibus alarum purius cineraceis, nigro limbatis: remigibus nigris vix viridi lavatis, primariis ad basin extremam albis, primariis medialiter albo extûs marginatis et albo latè terminatis, secundariis extûs cineraceis angustè albo limbatis, intimis dorso concoloribus: rectricibus centralibus cineraceis, reliquis viridi-nigris, basaliter cineraceis, exterioribus latè albo terminatis: regione paroticâ nigricanti-brunneâ, albido angustè striolatâ: genis et corpore subtûs toto albidis, crisso rufescente: tibiis cineraceis: rostro albido, frontem versûs rufescente, culmine et mandibulâ nigricantibus: pedibus cinereis, unguibus nigris: iride rubrâ.

♀ haud a mare distinguenda.

Adult male and female. Length 22 to 23 inches; wing 8·0 to 8·3; tail 9·0 to 9·5; tarsus 1·6 to 1·7; middle toe 1·3, claw (straight) 0·55; bill, gape to tip, straight 3·9 to 4·3, along culmen 4·3 to 4·4. Expanse 27·0.

Iris red; orbital skin and eyelash black; bill fleshy white in some, with a reddish tinge adjacent to the forehead, the vertical part of the upper mandible black, lower mandible with a blackish patch beneath; legs and feet slaty bluish or greenish plumbeous, claws blackish.

Head and nape reddish cinereous brown, each feather with a pale mesial stripe; ear-coverts blackish brown, with pale centres; back and upper tail-coverts cinereous brown, paling to slaty on the hind neck, and with a slightly rufous cast on the back in some; wing-coverts greyish slate, the feathers margined with blackish; quills black, the outer webs of secondaries mostly slaty, with a still paler edge; terminal portion of 3rd, 4th, 5th, and 6th primaries white; tail greenish black, the central feathers pervaded with a cinereous hue, and the terminal portion of the remainder white; normally this extends to half the feather on the two outer pairs, and decreases on each

succeeding pair; beneath, including the sides of the neck, greyish white, the vent and under tail-coverts rufescent yellowish, and the thighs bluish cinereous.

Young. Birds of the year have a total length of about 20 to 21 inches; wing 7·7 to 7·9; bill from gape to tip (straight) 3·2 to 3·6.

The bill is shaped somewhat differently from the adult, inasmuch as the perpendicular lateral portion extends forward until it meets the margin; with age the upper edge of this "wall" disappears, leaving only about $\frac{3}{4}$ inch of this part at the base of the mandible.

Iris red; bill black, usually a white stripe of greater or less extent on the wall of the bill, and in some with patches of the same on the lower mandible; legs and feet bluish brown.

Head and hind neck darker than in the adult; under tail-coverts perhaps, as a rule, more rufous.

Obs. The amount of black even on the bill of the adult varies slightly. In the young stage this bird was thought by Layard to be perhaps a different race; he had only procured specimens in one district, viz. the south, which coincidence, I suppose, strengthened his belief as to there being two species in the island. I was, at one time, inclined to think that he might perhaps be correct in his supposition, basing my ideas, however, on a difference of size in the bill; but a good series, afterwards collected by me, demonstrated both the cause of the black bill and the variability in size of that of the adult. The development of white in some specimens is more than in others; in certain individuals the penultimates may both be entirely white, while one of the primaries in others may be similarly coloured.

Tockus gingalensis is allied to the South-Indian *T. griseus*, which Jerdon confounded with it in his notice of the Indian bird (*loc. cit.*). The latter has the plumage more of a brownish grey than a slate-colour; the bill is reddish at the base, paling to yellowish at the tip; the orbital skin is purplish.

Tockus griseus has not yet been detected in Ceylon.

Distribution.—This Hornbill, commonly known, as is also the last, by the name of Toucan, is an inhabitant of most of the tall forests and heavy jungles of the low country, ascending the mountains of both the Central and Southern Province, in the former of which I have met with it at an elevation of 4000 feet. It is plentiful throughout the northorn forests, and Mr. Holdsworth found it inhabiting the scrub-country round Aripu.

I do not know that it has been detected in the Jaffna peninsula, but it may possibly be found in the jungles near Elephant Pass. Passing over the Seven Korales and the Puttalam district, in which it is tolerably plentiful, we find it in the forests about Ambepussa and Avisawella, in the Raygam and Hewagam Korales, in Saffragam, the Pasdun and Kukkul Korales, and in the jungles between Galle and the "Haycock." In the forest of Kottowe I never failed to notice it whenever I visited that place. In the Wellaway Korale and the Friars-Hood Hills it is likewise tolerably frequent. As regards the Kandyan Province I think it is commoner in Uva than elsewhere; I have seen it from the Knuckles district, and have been told that it has occurred in the main range at Kandapolla; to such an elevated region, however, I should say it could only be a straggler during the dry season, unless, indeed, it be a resident in Udu-pusselawa, from which it would naturally extend to the jungles above the Elephant Plains.

Habits.—The Ceylonese Hornbill is a shy bird, frequenting the tops of tall trees, and rarely descending into the low jungle beneath them. In the lofty timber-forests of the south and west, therefore, it is difficult to procure; but in the north, where the jungle is of altogether a different character (thick, with rather low trees), it may easily be shot, as the dense wood conceals the sportsman, and the distance of the bird from him is much less than when it is feeding in the top of some noble Keena-tree, or *kaing* in the upper branches of a gigantic Hora. It generally consorts in troops of five or six and is very noisy, its note being a loud laugh, commencing with the syllables *kā-kā-kā*, slowly uttered, and then quickening into *kakakaka*. In the early morning it roams about a good deal in search of fruit, but after feeding is not much on the wing. Its flight, like that of the last species, is laboured and slow; it is a combination of flapping of the pinions and quick dips, particularly when descending to alight on a tree. Its diet consists mainly of fruit, that of the Banyan, Bo, wild cinnamon, and Dawata (*Carallia integerrima*) being much in favour with it; it also devours reptiles and insects, for I have found green lizards and scorpions in the stomachs of some individuals. Its flesh is tender and not distasteful, and when subjected to the usual jungle-test (curry), makes a meal which the hungry hunter is far from despising; on such occasions it is always in great demand with one's Cingalese and Tamil servants.

I have never been able to procure any information concerning its nesting beyond the native assertion that it breeds in hollow trees like the last species.

The figures in the Plate represent an adult in the foreground, and an immature bird (placed by the artist, failing a knowledge of its habits, upon a cocoanut-tree) in the background. The feet and legs, I regret to say, have been coloured much too dark.

PICARIÆ.

Fam. UPUPIDÆ.

Bill very slender, long, and curved from the base. Wings rounded. Tail moderately long, even or rounded at the tip. Tarsi short. Feet with three toes in front and one behind. Tongue small and heart-shaped. Sternum with either a notch on each side of the posterior edge or a foramen in place of a notch.

Subfam. UPUPINÆ.

Bill more slender and longer than in *Irrisorinæ*. Wings with ten primaries. Tail with ten feathers. Tarsus shielded in front with broad transverse scales.

Sternum with an open notch on each side of the posterior edge. Head crested.

Of terrestrial habits.

Genus UPUPA.

Bill typically long and slender, much compressed; gape rather wide. Nostrils round, partially concealed by the plumes. Wings with the 4th quill the longest, and the 1st a little more than half the length of the 4th. Tail even. Tarsus equal to the middle toe without the claw. Outer toe joined to the middle one at the base, and considerably longer than the inner; hind toe equal to the inner one, its claw long and straight.

Crest very large and deep.

UPUPA NIGRIPENNIS.

(THE SOUTH-INDIAN HOOPOE.)

- Upupa nigrispennis*, Gould, MS.; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 725 (1856); Jerdon, B. of Ind. i. p. 392 (1862); Holdsworth, P. Z. S. 1872, p. 435; Hume, Nests and Eggs, p. 163 (1873); Legge, Ibis, 1875, p. 286; Hume, Str. Feath. 1876, p. 458. *Upupa senegalensis*, Blyth, Cat. B. Mus. A. S. B. p. 46 (1849); Kelaart, Prodromus, Cat. p. 119 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 174. *Upupa ceylonensis*, Reich. Handb. Scansoriæ, p. 320. no. 753, tab. 595. fig. 4036 (1851). *Upupa indica*, Sharpe & Dresser, B. of Europe, pt. vii. *U. epops*, p. 6 (1871). *Hudhud*, Hind.; *Kondeh pitta*, lit. "Crested Bird," also *Kukudeu guwa*, Telugu. *Chaval kuruvi*, lit. "Cock Bird," Tamils in Ceylon.

Adult male. Length 10·8 to 11·75 inches; wing 5·1 to 5·5; tail 3·5 to 4·0; tarsus 0·85 to 0·9; middle toe and claw 0·85 to 0·95; bill from gape (straight) 2·1 to 2·56.

Female. Length 10·25 to 10·8 inches; wing 4·7 to 5·0; bill to gape 2·0 to 2·2.

Iris brown; bill black, pale brown at the base of upper mandible, fleshy red at the base of lower; legs and feet pale slate-blue or plumbeous, in some tinged with brown.

General hue of head, crest, hind neck, and throat fine cinnamon-brown, becoming smoky brownish on the interscapular region, and pale vinaceous on the fore neck and chest; crest-feathers, which are about 2 inches in length, with a terminal black bar and *occasionally* a *pale* adjacent patch; back, upper tail-coverts, tail, and wings black; the lower part of back crossed with white, and the rump entirely so; an angular bar across the centre of the tail, a broad band across the terminal portion of primaries (the first excepted), three on the secondaries, and another on the median coverts and scapulars white; 1st primary sometimes with a white spot, at other times without; tertials with white edges, an oblique streak across the inner webs and another down the centre from the base, the light parts often deeply tinged with buff; the point of the wing concolorous with the hind neck; beneath, from the upper breast, white, dashed on the belly in some, and in others on the sides only, with blackish mesial streaks; under wing pale cinnamon-red.

Young. The nestling is covered at first with pure white down, which is quickly interspersed with feathers of the normal colour, the crest showing at once.

Obs. In Ceylonese examples of this Hoopoe, a great variety in the depth of coloration is met with; this is particularly noticeable on the head and hind neck; again, scarcely any two specimens have the lower parts striated alike or the tertials similarly marked; the spot on the 1st primary is sometimes absent, and may perhaps be a character of nonage. I have noticed that the largest individuals that I have met with are the palest in colour and always have the white spot on the 1st primary. It is the exception to find an example with the *whitish* or *pallid* bar anterior to the black tips of the crest-feathers; but notwithstanding it does exist, though it is not so white as in examples from northern parts of India—the race, *U. indica*, of the European bird; and it is in the form of a marginal spot at each side of the shaft, the web next to which is of the same colour as the rest of the feather. The length and shape of bill cannot be relied upon at all as a characteristic of this Hoopoe; some are tolerably straight, others much curved; some long, others short.

The North-Indian variety (*Upupa indica* of Hodgson), if it be considered distinct from the present, has more white (and has it more constantly) at the edge of the black crest-bar; Hodgson's type was collected in Nepal, and the race it represents seems to me worthy of being considered intermediate between the present species and *U. epops*. Specimens from "North Bengal," in the British Museum, have the pale heads of the European bird; but they are longer in the bill than the generality of the latter, and the light patch anterior to the black tip is not so white; two examples have the wings 5·6 and 5·1 inches, and the bill to gape 2·4 and 2·3 respectively. In *U. epops* the bill is variable in length, but its pale plumage and white covert-bar make it very distinct from the North-Indian bird, than which also it has a longer wing.

As to the Ceylonese bird, it is *identical*, in all respects, with specimens I have examined from Mysore, which represent the true *nigripennis* of Gould.

The Burmese form (*U. longirostris*, Jerdon) has not got a longer bill than Ceylonese specimens often have; it has the white spot on the quill which I have shown to exist in the latter, although this is a worthless character in the present species, its absence in specimens which Jerdon handled probably causing him to err in saying that the species wanted it; this, however, was afterwards corrected by him in the 'Ibis,' 1872, p. 22. Both species want the white on the hinder crest-feathers; and examples of each may, I think, be found equally dark as to their rufous coloration; I therefore imagine that the two races are scarcely separable.

Distribution.—The Indian Hoopoe is an inhabitant of many of the dry districts in Ceylon. It is very common both in the north and south-east of the island. In the former district it spreads from the Jaffna peninsula down the west coast as far as the neighbourhood of Puttalam. I have seen it in the island of Manaar; and Mr. Holdsworth says that it is very abundant at Aripu during the winter months, its numbers being largely increased about October. In the south-east it is common throughout the year between Hambantota and Yāla, and likewise in portions of the Park country and the Eastern Province. I found it in August on the patnas near Bibile, at the foot of the Madulsima range. It is not unfrequent in Uva, and occurs occasionally on the Elephant and Kandapolla plains and at high elevations in Maturata. I am indebted to Col. Watson for the possession of an example which he shot at Kandapolla in May at an elevation of 6300 feet; and he informs me that he has often seen it in that locality. It is sometimes found in Dumbara, straying thither, in all probability, up the valley of the Mahawelliganga from the low country of Bintenne. Near this locality I have met with it at Minery Lake; but I never saw it nearer Trincomalie than this, although it may possibly visit the plains in the delta of the Mahawelliganga.

Layard writes that he procured a solitary specimen at Colombo; but any occurrence of it in that neighbourhood, or anywhere south of Chilaw, must be looked upon as that of a straggler down the west coast. It has never been found in the south-west.

Jerdon writes of this species that it "is found throughout Southern India, extending through part of Central India to the North-west Provinces and the Dehra Doon." Whether the examples from the latter locality really belong to this species or to the race *U. indica*, I am unable to say. In the Khandala district Mr. Fairbank says it is common, and Burgess writes of it as the same in the upper portion of the Deccan. Mr. Adam speaks of it as "not common" in the Sambhur-Lake district, and Captain Butler writes the same of it in the Guzerat region; but these birds, I imagine, probably pertain to the intermediate form. From Sindh, Mr. Hume remarks that he has never seen it. In the extreme south of India it appears to be chiefly restricted to the east coast; for it is found in the island of Ramisserum, and Mr. Fairbank observed it in the lower Palanis, whereas I find no record of it in Mr. Bourdillon's list of the birds of Travancore.

The Burmese race, *U. longirostris*, is common in the plains of Pegu throughout the year, but is, according to Mr. Hume, most numerous in February and March. In the Irrawaddy delta, Dr. Armstrong found it very abundant in open country. Swinhoe found it at Hainan, in China, and records it from Siam.

Habits.—This charming bird frequents, in the island of Ceylon, open sparsely-timbered ground, scrub-dotted plains, cultivated fields, dry grazing-land in the jungles of the interior, and patnas in the Central Province. In its nature it is a tame bird, and when scratching for insects, with its handsome crest depressed, allows a near approach before taking flight; when flushed it does not usually fly far, but takes refuge in a neighbouring tree, where it will sit quietly, giving out its soft and melodious call, *hōō-poo, hōō-poo*, accompanied by a movement of its handsome crest and an oscillation to and fro of its head at each note. In Jaffna it may be seen close to the houses of the English residents, and I have known it breed in the garden of a bungalow within a few yards of the verandah. It feeds entirely on the ground, strutting about with an easy gait, and scratching vigorously for insects in dry soil. It often scrutinizes the odure of cattle, beneath which it finds an abundance of food.

In India Jerdon remarks that it frequents "old deserted buildings, such as mosques, tombs, and large mud walls;" he found its food to consist of ants, Coleoptera, and small grasshoppers. Burgess says that in the Deccan it affects sandy plots of ground outside the walls of villages, where the ground is perforated with the conical holes of the ant-lion, on the larvæ of which it feeds.

There is something very striking in the soft tone of this bird's note when heard amidst the chatter and chirping of the numerous Passerine birds which inhabit the Ceylon coast-jungles. Though perhaps uttered tolerably close to the listener it seems to be wafted on the mild sea-breezes from afar off, and tends to rivet the sportsman's attention as he is returning to his bivouac beneath the already burning rays of an 8 o'clock sun, after a long morning's shooting in the parched-up scrubs of the northern coast. The flight of this Hoopoe is buoyant but undulating, and when pressed it is able to show considerable powers of wing, for in India a trained Hawk is said generally to fail in seizing it.

Nidification.—The breeding-season in the north of Ceylon lasts from November until April, and possibly a second brood may be reared later on in the year, as Layard mentions the shooting of young birds in August. It breeds in holes of trees, showing, in this respect, as well as in points of anatomy, its affinity to the last family, the Hornbills. It sometimes, however, chooses a hole in a wall, in which I have known it to nest in the garden of an English residence in the Jaffna fort. Burgess writes, with reference to its habit of building in walls in India, "it breeds in the middle of April and May, constructing its nest in holes in the mud walls which surround the towns and villages in the Deccan." The nests are composed of grass, hemp, and feathers. In the same district a nest made of soft pieces of hemp was found in a fort wall. Miss Cockburn, again, tells us that at Kotagherry it selects holes in stone walls and in earthen banks to build in, making a mere apology for a nest of a few hairs and leaves, which in a short time has a most offensive smell. This, it is asserted, arises from the oily matter secreted by the sebaceous gland on the tail-bone, which in the female at the breeding-time assumes an intolerable stench, whence obtains the idea, according to Jerdon, that the bird constructs its nest of cowdung.

Mr. Holdsworth found one in a hole in a small mustard-tree (*Salvadora persica*) at Aripu; the young were reposing on the bare wood at the bottom of the cavity. The same fact has been noticed by Indian observers, viz. that when holes in trees are resorted to no nest whatever is constructed.

The eggs vary from three to seven, five or six being the usual number. Mr. Hume writes that they "are commonly a very lengthened oval, almost always a good deal pointed towards one end, and sometimes showing a tendency to be pointed at the other end too—a most remarkable form of egg, which I cannot recall having observed in any other species When quite fresh they are of a pale greyish-blue tint, but many are of a pale olive-brown or dingy olive-green, and every intermediate shade of colour is observable. As a rule they have scarcely any gloss at all, and of course are devoid of markings. In length they vary from 0.9 to 1.05 inch, and in breadth from 0.65 to 0.73 inch."

Fam. CORACIDÆ.

Bill large, wide at the base, more or less curved and the tip hooked. Legs and toes covered with strong scuta.

Sternum with two emarginations of variable depth in the posterior margin.

Plumage gay, especially on the wing; feathers of the body with an axillary plume.

PICARIÆ.

CORACIIDÆ.

Subfam. CORACINÆ.

Bill variable in length and width. Wings moderately long. Tarsus shorter than the middle toe.

Genus CORACIAS.

Bill long, broad, and high at the base, from which the culmen is gradually curved to the tip, which is bent down. Nostrils basal, oval, and oblique; gape armed with short strong bristles. Wings long, the 3rd and 4th quills subequal and longest, the 1st longer than the 6th. Tail moderately even. Legs and feet robust. Tarsus subequal to the outer toe, and covered, as well as the toes, with strong transverse scales; inner toe much shorter than the outer, and slightly exceeding the hind one; claws strong, moderately straight.

CORACIAS INDICA.

(THE INDIAN ROLLER.)

Coracias indica, Linn. Syst. Nat. i. p. 159 (1766); Gmelin, Syst. Nat. i. p. 378 (1788); Sykes, Cat. Birds Deccan, J. A. S. B. 1834, iii. p. 541; Blyth, Cat. B. Mus. A. S. B. p. 51 (1849); Kelaart, Prodromus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 171; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 571 (1856-8); Jerdon, B. of Ind. i. p. 214 (1862); Holdsworth, P. Z. S. 1872, p. 423; Hume, Nests and Eggs, p. 103 (1873); id. Str. Feath. 1873, p. 167; Butler, *ibid.* 1875, p. 456; Morgan, Ibis, 1875, p. 314; Bourdillon, Str. F. 1876, p. 382; Fairbank, *ibid.* 1877, p. 394.

Coracias bengalensis, Linn. Syst. Nat. i. p. 159 (1766).

Garrulus navius, Vieill. N. Dict. d'Hist. Nat. xxix. p. 431 (1819).

Rollier de Mindano, Buffon, Pl. Enl. pl. 285; *Blue Jay from East Indies*, Edwards, Glean. pl. 326 (1764); *Blue Jay* or *Jay*, Europeans in India and Ceylon.

Subzak, lit. "Greenish bird;" also *Nilkant*, lit. "Blue Throat," Hind.; *Tas*, Mahratta; *Pálú pitta*, lit. "Milk-bird," Tel.; *Katta-kade*, Tamul; *Towe*, Mahri (Jerdon).

Doong-kowluwa, lit. "Smoke-bird," Sinhalese; *Panang karda*, Tamils, North Ceylon; also *Kotta-killi*, lit. "Palmyra-Parrot," *apud* Layard.

Adult male and female. Length 12·5 to 13·2 inches; wing 6·9 to 7·1; tail 4·6 to 4·9; tarsus 0·9 to 1·0; middle toe 1·0, its claw (straight) 0·38; bill to gape 1·8 to 2·1. The bill appears to vary in length without regard to size.

Male. Iris grey or yellowish grey, with a rufescent brown inner circle, orbital skin and eyelid dull orange-yellow; bill black or blackish, paling to reddish at base beneath; legs and feet olivaceous yellow or smoky yellow, claws brownish.

Head dusky bluish green, brightening above and behind the eye to turquoise-blue; above the nostril the forehead is greyish yellow, with a tinge of violet in some; lower hind neck, interscapular region, and scapulars dull brownish green, separated from the blue of the nape by a vinous collar; lower back cerulean blue; upper tail-coverts, base and terminal portion of all but centre rectrices, least wing-coverts, greater part of primaries, and terminal half of secondaries deep violet-blue, with a brilliant cobalt lustre close to the shafts and at the edge of the wing-coverts; central rectrices dusky green, with a blue wash at base; a broad band across the remaining rectrices, another across the six outer primaries, primary-coverts, and bases of secondaries pale cerulean blue.

Lores tawny brown; beneath the eye and the ear-coverts vinous-brown, with whitish mesial streaks; throat and chest pale greyish vinous, the feathers with mesial buff lines, and broadly margined on the fore neck and upper part of chest with purple-violet; beneath, from the chest, with the under wing, pale greenish blue.

Young. Iris brown, the grey outer portion in the adult reduced to a narrow ring; this latter increases with age very gradually, imparting considerable variation to the eye; bill blackish brown, pale or reddish at the base beneath; tarsus slightly tinted with olivaceous; gape yellowish.

Head and back duskier than in the adult; forehead with more of the pale colour; band across hind neck fawn; lesser wing-coverts (in the nestling) almost concolorous with the back; chin and throat paler than in the adult, the purplish lilac on the latter faint.

Obs. Ceylonese examples average, I think, smaller than Indian. Two of the latter from Kamptee measure 7.1 inches in the wing; another 7.4—the former being the maximum limit (according to my experience) of the insular bird. The lilac tints show considerable variation in continental as well as in Ceylonese specimens, the depth of tint depending on age.

Distribution.—The Roller has a peculiarly local distribution in Ceylon, dwelling in the dry portions of the island, and migrating to the damp district of the west chiefly during the dry season (N.E. monsoon). Its head-quarters may be said to be the Jaffna peninsula, the open portions of the northern sea-board, and certain parts of the interior of the Northern and N.W. Provinces. In these districts it is common in many places and absent from others. Neither Mr. Holdsworth nor myself observed it in the Aripu district, but on the adjacent island of Manaar it occurs. To the south of the jungles bordering the coast of the Bay of Kalpentyne it is not uncommon. I have seen it in the Kalpentyne peninsula itself, and about Puttalam and Chilaw it is a well-known bird. It is a resident as far south as Madampe, and likewise in the region between that and Kurunegala; but below this line it occurs chiefly as a straggler between the months of October and March. In this season it may often be seen about Veangodde and Ambepussa, and I have procured it in the Hewagama Korale, a little to the south of Colombo, in July. I doubt, however, if it resides in that district. I have never seen or heard of it to the south of the Kaluganga, nor did I meet with it in the very likely country between Haputale and Hambantota. It may occur in the Eastern Province, but I have no information to that effect. In the Trincomalee district it is now and then seen from December to February; but a little inland, about Ratmalie, it is common enough. Eastward of this point, through the centre of the island, it musters, as above remarked, strongly, confining itself, of course, to open districts, fields surrounded by the village tanks, and dried-up paddy-land. Even here, however, it is local; for although it is common near Hurullé, I have never seen it about Haboreenna, which is separated from the former place by a tract of forest.

It has been found now and then in the valley of Dumbara, but I do not know that it occurs elsewhere in the Kandyan country.

On the mainland this species is found throughout nearly all India, from the extreme south to the Himalayas; it does not extend into Burmah, being there replaced by the closely-allied race *C. affinis*. The two forms blend into one another in such a gradual manner that it is difficult to say where *indica* ends and *affinis* begins. Mr. Hume remarks of Mr. Inglis's specimens from N.E. Cachar, that "they are not very typical, but that they are nearer to typical *affinis* than to *indica*." Its range is not by any means so limited towards the north-west; for in that direction it extends through Persia to Asia Minor, mingling thus with its European ally *C. garrula*. Mr. Danford observed it in Asia Minor at the base of the Aladagh mountains; and Messrs. Selater and Taylor have seen a specimen in the Museum of the American College at Constantinople which was shot on the Asiatic side of the Bosphorus.

Returning to India we find that it is a seasonal visitant to some parts of the country, perhaps avoiding the extreme temperature of the hot season. It is said to leave the Deccan about the middle of April; and Captain Butler notices that it quits the hills at Aboo during the hot season, although the singular fact is testified to that it remains in the plains at that time. In the wooded and cultivated portions of Sindh, Mr. Hume observes that it is common, but absent from the desert tracts; he further remarks that it is in the Terai between Darjiling and in Eastern Bengal that the two races *indica* and *affinis* first commence to intermix.

Habits.—In Ceylon the “Jay” is found in open compounds, cocoanut-groves, tobacco-fields, waste scrubby land, grass-fields near the borders of tanks, and also newly cleared spaces in the forest. It perches on some bare tree, fence, or other prominent object, and sallies out after insects, which it captures cleverly on the wing, either returning to its original post or taking up another close by to devour its quarry. It is fond of perching on cocoanut-fronds, and in the Jaffna district often selects the lofty well-whips used to draw the water for irrigating the native tobacco, and presents a striking appearance with its head drawn into its shoulders and its bright plumage glistening in the sun. It is generally difficult of approach, flying from one fence or stump to another before one can get within shot of it; and when fired at, if not hit, flies off, mounting above the tree-tops and rolling from side to side in its course as if it had a difficulty in balancing itself on the wing. However much it is alarmed it generally returns to the field from which it has been chased, making a wide detour and reappearing perhaps at the opposite end from that at which it left. When the ripe paddy has been cut in the fields round the village tanks the Roller is sure to be seen taking his part in the harvest-making, which consists in consuming as many of the newly exposed terrestrial insects as it can, and flying in the meanwhile from one haystack to the other. Grasshoppers and beetles at such times form its chief diet. Its harsh cry is often uttered when it has been shot at and wounded, it being one of the few birds I have ever met possessed of this singular habit.

Its flight is performed with vigorous flappings of the wings, the points of which appear almost to meet beneath its body while it turns or rolls about in that strange manner which has acquired for it its peculiar name. It varies its course in the air by darting off sometimes at right angles to the original direction and then almost tumbling over in rapidly descending to the ground. These extraordinary evolutions it performs to some purpose when flown at by the Turumti, or Red-headed Merlin, mention of which I have already made at page 112.

Jerdon has some interesting notes on this handsome bird which I subjoin here. He writes, in his ‘Birds of India’ :—“It is often caught by a contrivance called the *chou-gaddi*. This consists of two thin pieces of cane or bamboo bent down at right angles to each other to form a semicircle and tied in the centre. To the middle of this the bait is tied, usually a mole-cricket, sometimes a small field-mouse (*Mus lepidus*). The bait is just allowed tether enough to move about in a small circle. The cane is previously smeared with bird-lime, and it is placed on the ground not far from the tree where the bird is perched. On spying the insect moving about down swoops the Roller, seizes the bait, and on raising its wings to start back one or both are certain to be caught by the viscid bird-lime. By means of this very simple contrivance many birds that descend to the ground to capture insects are taken, as the King-Crows (*Dicruri*), Common Shrikes, some Thrushes, Flycatchers, and even large Kingfishers (*Halcyon*)

“The *Nilkant* is sacred to Siva, who assumed its form; and at the feast of the Dasseragh, at Nagpore, one or more used to be liberated by the Rajah, amidst the firing of cannon and musketry, at a grand parade attended by all the officers of the station.

“Buchanan Hamilton states that before the Durga Puja the Hindoos of Calcutta purchased one of these birds, and at the time when they threw the image of Durga into the river, set the *Nilkant* at liberty. It is considered propitious to see it on this day, and those who cannot afford to buy one discharge their matchlocks to put it on the wing. The Telugu name of the Roller, signifying Milk-bird, is given because it is supposed that when a cow gives little milk if a few of the feathers of this bird are chopped up and given along with grass to the cow the quantity will greatly increase. It is one of the birds on whose movements many omens depend. If it cross a traveller just after shooting it is considered a bad omen.”

The Roller is very tenacious of life, requiring a large amount of hitting before coming to earth.

Nidification.—In Ceylon the Roller breeds from January until June, chiefly rearing its young about March. It nests in holes in trees, one which Mr. Parker found being situated in a palm-tree, and contained 3 white eggs, much resembling those of *Halcyon smyrnensis*. Mr. Hume writes :—"They build in hollow trees, in old walls, in roofs, or under the eaves of bungalows ; they sometimes make a good deal of a nest of feathers, grass, &c., especially when the site they choose is not well closed in ; but when they build in a small-mouthed hole there is usually a very scanty lining. I have found the nest in a large niche in an old wall, in which the birds had contracted the entrance with masses of torn vegetable fibre and old rags ; but this is quite exceptional ; and, again, I have taken the eggs from a hole in a Siris-tree, in which there was not the slightest lining beyond a few fragments of decayed wood. I have never found more than five eggs in any nest, and four I take to be the normal number . . . The eggs are very broad ovals, in some instances almost spherical and like those of the Bee-eater's ; they are of the purest china-white and highly glossy. The average of a large series of measurements is 1.3 by 1.06 inch."

Genus EURYSTOMUS.

Bill very broad at the gape, shorter than the last, much curved, abruptly so at the tip. Nostrils oblique and narrow ; rictal bristles absent. Wings longer than in the last genus ; 2nd quill the longest, the 1st slightly shorter. Feet differing from those of *Coracias* by having the outer toe slightly joined at the base to the middle one.

EURYSTOMUS ORIENTALIS.

(THE INDIAN BROAD-BILLED ROLLER.)

Coracias orientalis, Linn. Syst. Nat. i. p. 159 (1766).

Eurystomus orientalis, Steph. Gen. Zool. xiii. p. 99 (1826); Blyth, Cat. B. Mus. A. S. B. no. 220, p. 51 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 171; Horsf. & Moore, Cat. B. Mus. E. I. Co. no. 148, p. 121 (1854); Jerdon, B. of Ind. i. p. 219 (1862); Holdsworth, P. Z. S. 1872, p. 423; Hume, Str. Feath. 1874, p. 164; Morgan, *ibid.* p. 531; Bourdillon, *ibid.* 1876, p. 382.

Eurystomus cyanicollis, Vieill. N. Dict. d'Hist. Nat. xxix. p. 425 (1816).

The Oriental Roller (Horsfield); *Tiong Batu*, Sumatra (Raffles); *Tihong Lampay*, Malay.

Adult male and female. Length (from skin) 11·0 to 12·0 inches; wing 7·2 to 7·5; tail 3·7 to 3·9; tarsus 0·75; middle toe 0·85, claw (straight) 0·35; bill to gape 1·5.

The above are from 3 Ceylonese examples. A Nepaul bird in the British Museum measures, wing 7·4 inches; another from Labuan, wing 7·3 inches.

Iris hazel-brown; bill deep orange-red, the tip of the upper mandible red; orbital skin red; tarsi and feet orange-red; feet dusker than the tarsus.

Head, face, and chin brown, darker in some adults than in others, and slightly suffused with greenish on the nape, which passes into the opaque leaf-green of the hind neck, back, least wing-coverts, tertials, and rump; median and greater wing-coverts greenish blue, blending into the duller hue of the lesser coverts; primary-coverts, primaries, and secondaries black, washed on the outer webs and on the inner just inside the shaft with ultramarine; a broad band of pallid cerulean blue extending from the inner web of the 1st primary to the outer web of the 7th, and tinging the surrounding ultramarine at the point of contact; tail black, the feathers washed with ultramarine at the edges, and the reverse part beneath, except near the tip, blue; centre of the throat cerulean blue, blending into the obscure greenish blue of the fore neck and under surface; the centre of the breast and abdomen verditer-blue; under wing-coverts concolorous with the breast.

The above description is from Ceylonese examples. One from Nepal has the head and hind neck darker, and the blue colour of the breast not so bright; another is very similar to the Ceylonese birds, but has the back and wings more sombre, the wing-bar smaller (its hue spreading down the outer edges of the quills in the form of an edging), and the under surface much greener.

Young. Mr. Hume writes of the immature bird that the bill, which is much smaller than in the adult, is almost black, with the gonys pale orange, which gradually deepens in colour with the age of the bird and spreads over the whole mandible, the upper mandible becoming reddish black, after which the orange hue spreads from the gape over the whole upper mandible except the tip.

An example which I have examined from the Andamans is paler on the head and neck than an adult; the feathers of the upper surface are slightly pale-edged; chin and along the base of the under mandible brown; a portion of the throat tinged with hyacinth-blue, the rest greenish blue, and the feathers pale-tipped, with a faint tinge of the hyacinth hue on the centres of many. The under parts are paler than in the adult, and the feathers of the chest tipped with a light colour.

Obs. This is a variable species in colour, which character is no doubt due to the age of respective individuals: one example from Labuan corresponds with Ceylonese and Indian ones; it is slightly more nigrescent on the hind neck and interscapulars, and the blue of the throat is more extensive. Another from the island of Negros and one from Java are also not to be separated.

Eurystomus pacificus, of which I have examined specimens in the national collection from Ceram and the Sula Islands, is closely allied to *E. orientalis*. The wings of three specimens measure 7·8, 7·8, and 7·5 inches respectively. The upper surface is greener, the under parts paler, and the throat less coloured with blue than in *E. orientalis*; the basal outer margins of the tail-feathers are tinged with greenish blue. A Sula-Island individual, however, has

the throat quite as blue as a Ceylonese ; and a Pinang example has a slight inclination towards the greenish edging of the caudal feathers. It would seem that there are connecting-links between the two species.

Distribution.—This handsome Roller is, almost without exception, the rarest resident form in Ceylon. I conclude that it *is* resident, as the only two specimens I have ever met with, and both of which I failed in shooting, were seen during the south-west monsoon. One was at Maha-oya, on the new Batticaloa Road, and the other in Mr. Chas. de Soyza's timber-forest at Kuruwite, near Ratnapura. Layard remarks that but three specimens fell under his notice, one of which he killed in the Pasdun Korale, and the other two near Gillymally. In the British Museum is an example from the collection of Mr. Cuming ; but the precise locality is not stated. Another example was shot some years ago near Kandy, and preserved by Messrs. Whyte and Co. In addition to these instances of its capture I am indebted to Mr. Delaney, of the Kirimattie Estate, near Kadugannawa, for an account of three or four birds which visited the neighbourhood of his bungalow for several days at the close of 1875, and after remaining about some tall trees, disappeared again ; from his description of these visitors, and observations which he made on their habits, they must have belonged to the present species.

In Southern India it appears to make its appearance in certain localities and then disappear again. Mr. R. W. Morgan says that it is by no means rare in the Malabar forests, and he procured several specimens at Nellumbore. Captain Vipian observed it near the foot of the Carcoor Ghât of the Nilghiris ; Mr. Bourdillon remarks that it is nowhere abundant in the Travancore hills, and that it is, he thinks, only a visitor ; he has observed it "in August, during the winter months, in April, and as late as May." Regarding its distribution in the northern parts of India and elsewhere, Jerdon writes (*loc. cit.*) that "it is found at the base of the Himalayas in Lower Bengal, Assam, and the Burmese countries, extending to Malayana and China ;" and he further remarks that it is said to visit Central India in the cold weather. In Cachar, Mr. Inglis says it is not uncommon and is a resident in that district ; Mr. Oates records one specimen as being brought to him from the Arrakan hills, and remarks that it occurs rarely in Pegu. From Tenasserim Mr. Hume notices it as procured by Mr. Davison ; this gentleman writes to Mr. Hume that in the Andamans it is comparatively common about Fort Mouat, Mount Harriet, and other wooded places ; it has also been procured about Port Blair from December until April.

I have already remarked that specimens are in the British Museum from Pinang, Java, and Labuan, and there is likewise an example from Negros, in the Philippines, which I cannot separate from Indian. It is said to occur in Sumatra. Concerning Chinese individuals, the late Mr. Swinhoe writes ("Cat. Chinese Birds," P. Z. S. 1871, p. 347) that they do not agree quite with specimens from Java, India, and Lombok ; and therefore they are, as suggested by Blyth, referable to the nearly allied *E. pacificus*.

Habits.—On both occasions that I met with this species, it was frequenting lofty dead trees, on the outermost branches of which it was perched. On the Maha-oya, the individual which I attempted to shoot flew out of the tree and returned at once to its perch, which, being at the top of an enormous tree, was beyond the range of my shot, and on my firing a second time it flew off into the forest. In the distance it has the appearance of a short-tailed Nightjar when perched, its short neck and broad bill giving it a curious outline. Its flight has the same peculiar swerving or rolling character as that of the last genus, but in a modified degree. Layard shot all his specimens in the act of tearing away the decayed wood round holes in trees ; they clung to the bark after the manner of Woodpeckers, and were probably seeking a situation to nest in ; he found their stomachs full of wood-boring Coleoptera, swallowed whole, and he observed that they beat their food against the bark before swallowing it. It is entirely a forest species, and is only found in regions which are well-wooded throughout. Mr. Morgan writes that in the Malabar forests it may frequently be seen perched on a lofty bamboo in the neighbourhood of some forest-stream, and that it is an exceedingly silent bird, sitting for hours together on a twig, occasionally taking a short flight after some passing insect, but almost invariably, unless disturbed, returning to the same perch. Blyth had one, which he kept in confinement for some time, and which displayed the somewhat abnormal propensity of eating plaintains ; it devoured them eagerly, and would fly to him for one when he had it in his hand. The experience of Messrs. Motley and Dillwyn of it in the Malay Islands was that it is a most active and lively bird, haunting very tall jungle in parties of five or six

together; these fly rapidly in large circles with quick strokes of the wing, like Woodpeckers, frequently swooping down upon one another with loud chattering. When perched, their note is a single, full, deep-toned whistle, or something between that and the sound "you" when uttered with forcible expulsion of the breath. Its mode of flight, when executing these circular manœuvres, must be somewhat abnormal, for any thing less like those of a Woodpecker than its actions when ordinarily on the wing cannot be imagined!

Nidification.—Mr. Bourdillon has lately had the good fortune to discover this interesting bird breeding in Travancore. Mention is made of this occurrence by him in his interesting paper on the birds of the Travancore Hills; and I am indebted to Mr. Hume for the following account written to him by Mr. Bourdillon for publication in the revised edition of 'Nests and Eggs of Indian Birds':—

"On March 17th I was attracted by hearing the chattering of a pair of these Rollers. On going to the spot I found them engaged in ejecting from a hole in a Vedu-plâ stump (*Cullenia excelsa*), about 40 feet from the ground, a pair of our Hill-Mynahs (*Eulabes religiosa*). One of the Rollers was in the mouth of the hole, and enlarging it by tearing away with its beak the soft rotten wood. The other Roller, seated on a tree close by, was doing most of the chattering, making an occasional swoop at the Mynahs whenever they ventured too close. I watched the birds for some time, until the Mynahs went off and there and then began building in a 'Pinney'-tree (*Calophyllum elatum*) within the distance of 100 yards. Ten days after I sent for some hill-men ('Khanirs,' we call them here), who managed to ascend by tying-up sticks with strips of cane, in the way that they erect ladders to obtain the wild honey from the tallest trees in the forest. It was past six o'clock in the evening before the Khanir reached the hole in which the birds had bred. He found not the slightest vestige of a nest, but a few chips of rotten wood, upon which were laid the three eggs. These I found to be slightly set. While the man was climbing the tree, the birds behaved in a very ridiculous and excited manner. Seated side by side on a bough, they alternately jerked head and tail, keeping up an incessant noisy chatter, and as the crisis approached, and the man drew nearer their property, they dashed repeatedly at his head.

"After the eggs were taken, the birds disappeared for about a fortnight, but returned, and, I believe, laid again in the same position. I did not molest them this time, wishing to get the young. Unfortunately I had to leave home, and on my return I found the birds, old and young, had disappeared."

Mr. Hume writes:—"Eggs of this species, sent me from Mynall by Mr. Bourdillon, closely resemble those of the Indian Roller, but are somewhat larger, though not quite so large as those of the European Roller. They are very broad ovals, pure white, and faintly glossy.

"The specimens I have vary in length from 1.34 to 1.42 inch, and in width from 1.14 to 1.16."

Fam. ALCEDINIDÆ.

Bill long, straight, conical, and very acute at the tip; gape wide and smooth. Wings with 10 primaries. Tail short. Legs and feet small; the toes syndactyle, the inner one sometimes wanting; soles broad and flat. Sternum with two emarginations on the posterior edge. Head large. Tongue diminutive.

PICARIÆ.

ALCEDINIDÆ.

Subfam. ALCEDININÆ.

Bill long, compressed, with the culmen keeled and the gonys straight. Wings reaching, when closed, beyond the middle of the tail; the 1st quill longer than the 5th. Tail moderate or short. Legs and feet small. Tarsus hardly longer than the inner toe; outer toe nearly as long as the middle, and united to it as far as the last joint; inner toe united to middle as far as the first joint.

Genus CERYLE.

Bill typically long, very straight, the culmen scarcely bent towards the tip, flattened above, with a well-pronounced groove adjacent to it; gonys very long and straight; gape angulated. Nostrils linear and oblique. Wings moderate; the 2nd and 3rd quills subequal and longest, and the 4th considerably longer than the 1st. Tail moderately long, about equal to the bill from tip to the gape, even at the tip. Tibia bare above the knee. Tarsus smooth, very short, much less than the middle toe; feet with a broad sole. Outer toe nearly as long as the middle, and joined to it as far as the last joint; inner toe much shorter, and joined to the middle as far as the 1st joint; hind toe very short.

CERYLE RUDIS.

(THE PIED KINGFISHER.)

Alcedo rudis, Linn. Syst. Nat. i. p. 181 (1766); Sykes, P. Z. S. 1832, p. 84; Gould, B. of Eur. pl. 62 (1837).

Ceryle rudis, Boie, Isis, 1828, p. 316; Blyth, Cat. B. Mus. A. S. B. p. 49 (1849); Kelaart, Prodromus, Cat. p. 119 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 172; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 131 (1854); Jerdon, B. of Ind. i. p. 232 (1862); Layard, B. of S. Africa, p. 67 (1867); Tristram, Ibis, 1866, p. 84; Sharpe, Monog. Alced. pl. 19 (1868-71); Holdsworth, P. Z. S. 1872, p. 424; Shelley, B. of Egypt, p. 167 (1872); Hume, Nests and Eggs, p. 109 (1873); Legge, Ibis, 1874, p. 14, et 1875, p. 282; Hume, Str. Feath. 1875, p. 52.

Ispida rudis, Jerd. Madr. Journ. 1840, p. 232.

Ceryle varia, Strickl. Ann. & Mag. Nat. Hist. 1837, vi. p. 418.

Ispida bitorquata, Swains. Classif. B. p. 336 (1827).

Ceryle leucomelanura, Reichenbach, Handb. Alced. p. 21, pl. 309. fig. 3488 (1851).

The Black-and-white Kingfisher, Edwards, pl. 9; Kelaart, Prodromus. *Martin Pêcheur noir et blanc de Sénégal*, Buffon, Pl. Enl. 62.

Korayala kikkila, lit. "Spotted Kingfisher," Hind.; *Phutka match-ranga* and *Karikata*, Beng. (Jerdon); *To-he-haw*, lit. "Fishing Tiger" (Swinhoe).
Pelihuduwa, *Waturanuwa*, *Gomera pelihuduwa*, Sinhalese.

Adult male and female. Length 11.5 to 11.75 inches; wing 5.3 to 5.6; tail 3.0; tarsus 0.4 to 0.45; middle toe 0.6, its claw (straight) 0.35; hind toe 0.25; bill to gape 2.8 to 3.0, at front 0.23. Females average slightly larger than males.

Iris brown; bill black, the tip somewhat pale; legs and feet blackish, soles paler.

Adult male. Head, nape, terminal portions of the back, rump, and wing-covert feathers, primaries, and secondaries, central portion of tail, cheeks, a broad band across the chest (sometimes complete, at others interrupted in the centre), and another narrower one across the breast black; a broad patch above the lores continued as a supercilium to the nape, basal half and tip of tail, basal portion of the primaries and secondaries, the inner webs and tips of the latter, lateral margins of the crown and nape-feathers, the tips of the back, scapular, and wing-covert feathers, the major portion of the median wing-coverts, and the entire under surface with the under tail- and under wing-coverts pure white; edge of 1st primary likewise white; the lower plumage with a silky texture; the forehead more or less uniform black; a few fine black streaks on the white of the lower part of cheeks; a patch of feathers at each side of the belly, with large black subterminal markings.

Female. Differs from the male in wanting the lower or breast-band of black, and in having the upper broad chest-band interrupted in the centre.

The extent of the white edgings on the upper surface is variable in both sexes, and the older the bird the greater the gap in the breast-band of the female.

Young. Iris pale brown; bill reddish black, with a considerable portion of the tips yellowish white; legs and feet brown.

Very similar to adults, but with more white perhaps about the back of the neck; the feathers of the back more deeply tipped, and the wing-coverts and outer webs of the secondaries more marked with white. In the female, the chest-band is rather narrow and *complete*, dividing in the centre more and more as the bird grows older; in the male it is very broad, and likewise uninterrupted in the centre; more of the feathers of the lower flanks are spotted with black than in the adult. As considerable confusion has existed concerning the pectoral bands in the two sexes, I have noted the above peculiarities from a male and female nestling, able to fly, taken from the same nest.

Obs. Mr. Hume observes that in India females are larger than males; Ceylonese examples correspond in size with those from the mainland. Four females in the national collection measure as follows:—(1) wing 5.6, bill to gape 3.0 (Assam); (2) wing 5.4, bill to gape 2.8 (Kamptee); (3) wing 5.6, bill to gape 2.85; (4) wing 5.5, bill to gape 2.55. Four males:—(1) wing 5.2, bill to gape 2.7; (2) wing 5.4, bill to gape 2.95; (3) wing 5.5, bill to gape 2.85; (4) wing 5.45, bill to gape 2.85. The fourth female example is exceptionally short in the bill. The white of the primaries appears, as a rule, to approach nearer the tips of the feathers than in Ceylonese specimens that I have examined; in one Indian example it is 1.3 from the tip of the first quill, while in Ceylonese it varies from 2.0 to 1.5 inch from it. I also observe that the heads of the specimens above enumerated are more conspicuously striated with white; but this, as I have remarked with regard to Ceylonese examples, is variable. Reichenbach separated the Ceylon *Ceryle* as *C. leucomelanura*, on account of what he stated to be a large roundish spot under the shoulder, and of the band on the outer tail-feathers being divided into two parts: the first characteristic is nothing more than the incomplete breast-band in the *female*; and with regard to the second feature, this band will be found to be more or less divided in specimens from all districts; in scarcely any two examples are these feathers the same. A Mesopotamian female example measures 5.7 in the wing, another from Knysna, South Africa, the same, and one from Egypt 5.65. Western-Assam and African birds would seem, therefore, to be larger than Ceylonese.

Distribution.—The Black-and-White Kingfisher is more or less common throughout the whole sea-board, and in the northern half of the island its range extends inland to the great tanks, such as Kanthelai, Minery, Topare, &c., where it is tolerably frequent. In the Western Province it is found on the Kaluganga, and on the Bolgodde and Pantura lakes, the Negombo and Puttalam Canal, and other waters which are surrounded with open land. It is likewise common on the Gindurah and other large rivers in the south, keeping chiefly to those parts which flow through cultivated districts. On all the leways and salt lakes of the south-east and

round the whole of the east and north coasts it is common ; on the Batticaloa lakes it is especially numerous. I have not observed it on any waters near the base of the hill-zone, nor have I any testimony of its having ever been procured in Dumbara or in other valleys in the upland.

This is the most widely-distributed of any Kingfisher, being found throughout the greater part of the continents of Asia and Africa. Commencing with India, we find it recorded by all observers as common in all open and well-watered districts, be they inland or skirting the shores of the peninsula. It is plentiful in the south, in the Deccan, in Chota Nagpur, and lower Bengal, but locally rare about the Sambhur Lake and in Rajpootana, though very abundant further east in Sindh ; it extends to the base of the Himalayas, but does not ascend above the low country, as is the case in South India. Eastward of India it is found throughout Burmah and Tenasserim, extending thence into Siam and northwards into China, in some parts of which it is plentiful and in others rare. Of the latter localities Mr. Swinhoe cites Ningpo as one ; on the Yangtze, according to him, it does not occur below Szechuen, and this river seems to be its northernmost limit in China. Capt. Blakiston, however, records it from Hakodadi in Northern Japan. Turning westwards from India, we find Canon Tristram speaking of it as the commonest and most conspicuous Kingfisher in Palestine, being particularly abundant about Tyre and Sidon, along the shore to Mount Carmel, on the Jordan, and on the lake of Gennesaret. In Asia Minor, Mr. Durnford observed it at the waterfalls of the Cydnus.

On the sister continent of Africa it is equally well distributed : Captain Shelley and Mr. E. C. Taylor have it as common in Nubia and Egypt ; but Mr. Drake does not seem to have observed it in Morocco. On the Gold Coast, again, Captain Shelley with Mr. Buckley met with it, and Governor Ussher writes of it as very common in Fantee generally, and it literally swarms on the river Volta. Messrs. Layard, Shelley, and Buckley all record it from South Africa—the latter gentleman mentioning it as pretty common in Natal, but much more so in the north of the Transvaal.

As regards Europe, Degland recorded it from Spain ; but Mr. Saunders says that he has no authentic information of its occurrence there. Malherbe records it from Sicily. Lindermayer, as quoted by Mr. Sharpe, observes, in his ‘ Birds of Greece,’ that it is found on the islands of Thermia and Mykone, and that Erhardt includes it as a summer visitant to the Cyclades. Demidoff says that it is confined, as regards the Black Sea, to the Sea of Marmora, not being found on the northern coast of the Euxine.

Habits.—This interesting Kingfisher is not particular in its choice of position, provided a plentiful supply of fish exists to tempt its clever fishing-powers ; it certainly avoids rivers and water in forest-country, but otherwise it is equally at home on freshwater tanks or lakes, the half-dried leway, the broad and brackish estuary, the meadow-lined river or winding canal, the salt lagoon or land-locked bay, or even, in some parts of the world, the foaming shore. Although found in all such situations in Ceylon, it is, I think, most partial to brackish lagoons or backwaters, whereon it is a most persevering fisher, perching on stakes driven in to assist in laying nets or to mark the road across the shallows, or seating itself on some outstanding rock ; thus it is to be seen flying about in the blazing noonday heat when scarcely another bird is abroad, and patiently hovering with downward-pointed bill about 30 feet in the air over some “ fishy ” spot, until with a sudden plunge it captures its well-earned prey and makes off to its favourite perch. It is generally in pairs and is most wary and watchful in its nature, starting off long before it is observed, and flying straight away to a place of safety ; but when not alarmed it is constantly on the wing, flying up and down in a restless manner, and uttering its querulous quick-repeated note generally while on the wing. In addition to being so shy, it is a bird which is exceedingly tenacious of life, flying away more or less no matter how hard it is hit, and even when picked up exhausted from its wounds is hard to deprive of life. It darts invariably on its food from the wing, and descends perpendicularly and not in a slanting direction like other Kingfishers. Governor Ussher has seen them “ hawking over the surf, and picking up waifs and strays brought in by the rollers, or now and then pouncing on an unwary fish.” On the shores of the Holy Land, to which these birds resort in immense numbers in winter, Canon Tristram observed them “ hovering by dozens over the sea about a hundred yards from the land, and occasionally perching with loud cries on an outlying rock. . . . During the most stormy gales of winter they continue, regardless of the weather, to hover over the breakers, ever and anon dashing down into the surf, and apparently diving to the bottom for their prey.” I have observed them hover three

successive times without flying back to their perch ; but they usually settle down again after making a plunge, from which they do not often return empty-mouthed.

Nidification.—Throughout the northern countries included in its geographical range this Kingfisher breeds in March, April, and May. In the former month I found it nesting in Ceylon in the earthy or alluvial banks of the Gindurah : the nest was situated about 3 feet from the entrance of the hole, which was about 4 inches in diameter ; the eggs were deposited in a cavity of some 7 or 8 inches in diameter. As a rule grass is found on the floor of the chamber ; and Canon Tristram speaks of finding an “ abundantly heaped nest of grass and weeds ” in all that he dug out in Palestine ; bones, however, do not seem to be used, although by the time the young leave the nest it is a mass of such, the refuse of the large supply of food brought for their sustenance. Captain Marshall, as quoted by Mr. Hume (*loc. cit.*), notices a singular feature in this bird’s economy, viz. that it is sometimes a gregarious breeder ; he speaks of finding a hole leading to a sort of cavern about 3 feet across which was plentifully strewn with grass and rubbish and contained eggs in different corners. The number of eggs is usually four, but sometimes six ; they are, of course, white and glossy, sometimes nearly spheroid and at others pointed at one end ; they average, says Mr. Hume, 1·15 by 0·92 inch.

Mr. Blewitt witnessed these birds constructing the hole leading to their nest, and writes as follows :—“ They alternately relieved each other at the work, and when tired sat together some short distance off for a few minutes.” When the young first leave the nest they sit together on the bank near at hand, while the old birds bring them food ; this I have observed in the meadows bordering the Gindurah river.

In South Africa, where the seasons are opposite to ours, it breeds at the end of the year. Layard found its nest in November, and says that it was composed entirely of fish-bones and scales.

Genus *ALCEDO*.

Bill not so straight as in the last, the culmen perceptibly curved from the base, not flattened above, compressed throughout ; the groove slightly developed. Nostrils oblique and nearer the commissure than in *Ceryle*. Wings moderately rounded ; the 2nd and 3rd quills subequal and longest ; the 4th shorter and slightly exceeding the 1st. Tail very short and rounded at the tip. Legs and feet as in *Ceryle*, the hind toe longer in proportion to the inner.

ALCEDO BENGALENSIS.

(LITTLE INDIAN KINGFISHER.)

Alcedo bengalensis, Gm. Syst. Nat. i. p. 450 (1788); Kittl. Kupf. Vög. pl. 29 (1832); Sykes, P. Z. S. 1832, p. 84; Jerd. Madr. Journ. 1840, p. 231; Blyth, Cat. B. Mus. A. S. B. p. 49 (1849); Kelaart, Prodromus, Cat. p. 119 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 172; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 129 (1854); Temm. & Schl. Faun. Jap. Av. pl. 38 (1850); Jerdon, B. of Ind. i. p. 230 (1862); Sharpe, Mon. Alced. pl. 2, p. 11 (1868-71); Holdsworth, P. Z. S. 1872, p. 424; Hume, Nests and Eggs, p. 107 (1873); id. Str. Feath. 1873, p. 168, et 1875, p. 173; Ball, ibid. p. 387; Legge, Ibis, 1874, p. 14; Oates, Str. Feath. 1875, p. 52; Butler, ibid. p. 456; Armstrong, ibid. 1876, p. 307; Inglis, ibid. 1877, p. 19.

Alcedo minor, Schl. Mus. P.-B. *Alced.* p. 7 (1863).

Alcedo japonica, Bonap. Consp. Vol. Anis. p. 10 (1854).

The Little Blue Kingfisher of some; *The Common Indian Kingfisher*, Jerdon; "*King of the Shrimps*," China (Swinhoe).

Chota kilkila, Hind.; *Chota match-ranga*, Beng.; *Nila buchê gadu*, Telugu; *Ung-chim-pho*, Lepch.; *Gārūn*, natives in Himalayas; *To he-áng*, lit. "Fishing Reverence," or "the old gentleman that fishes!" Chinese of Amoy (Swinhoe).

Mal-pelihuduwa, lit. "Flower-Kingfisher," from its bright colours; also *Diya pelihuduwa*, Sinhalese.

Adult male and female. Length 6.0 to 6.3 inches; wing 2.7 to 2.82; tail 1.2 to 1.4; tarsus 0.3 to 0.4; middle toe and claw 0.67; bill to gape 1.72 to 1.95, average length 1.8.

Iris deep brown; bill, upper mandible blackish brown, lower yellow or reddish yellow; legs and feet coral-red, claws dusky.

Some male specimens which I have shot, and which seem fully adult, have the under mandible black, from which it appears that the coloration of this is uncertain. Mr. Armstrong notes it in some Irrawaddy examples as brownish white.

Basal portion of feathers of the head, hind neck, and a broad stripe leading from the lower mandible down the sides of the neck blackish brown; the terminal parts of these feathers, together with the tips of the wing-coverts, French blue; scapulars, ground-colour of the wing-coverts, outer webs of the quills, and the tail-feathers duller blue; back, rump, and upper tail-coverts bright cerulean blue (this colour becomes a shining green if held away from the light); inner webs of the primaries and secondaries, and terminal portions of the latter, dark hair-brown; lateral feathers of the rump and upper tail-coverts cobalt-blue.

Lower part of loreal region black; upper part of the same, a broad streak passing over the ears, chest, and under surface, with the under tail- and under wing-coverts orange-rufous; chin, throat, and a continuation of the ear-stripe white, the latter separated from the throat by the blue cheek- and side-neck stripe; bases of the under-surface feathers white, imparting a non-uniform appearance to the plumage.

Young. Bill in some examples (males) with the under mandible black, like the upper, and tipped with whitish; in a female example which, from the green hue of the blue parts and the state of the organs, appears to be immature it is yellowish.

The distribution of the colours in the nestling is the same as in the adult, but the blue tints are greener than when older. This greenish blue is an individual peculiarity, as some immature examples are quite as blue as old birds.

Obs. This species is a small race of *A. ispida*, the European Kingfisher, differing from it in its proportionally longer bill and much less bulky body, although it measures very nearly as much as the latter in the wing. Ceylonese and

Indian specimens of *A. bengalensis* correspond very fairly in size, the balance perhaps being in favour of the latter. The measurements of several from different parts of India, which I have examined in the British Museum, are as follows:—(1) wing 2·95 inches, bill to gape 1·72; (2) wing 2·9, bill to gape 1·82; (3) wing 2·8, bill to gape 1·85 (Assam); (4) wing 2·85 (Kamptee). The dimensions of four specimens from the Irrawaddy delta, recorded in 'Stray Feathers,' are:—wing 2·75 to 2·8 inches, bill to gape 1·8 to 2·0, the latter measurement exceeding any that I have note of from Ceylon. Mr. Sharpe, in his exhaustive article in the 'Monograph of the Alcedinidæ,' gives the wing of Central-Asian and Philippine birds as 2·9 inches; and one I have examined from Celebes measures 2·7, bill to gape 1·97, and very stout. Compared with the above dimensions, Mr. Sharpe notes the average size of the wing in *A. ispida* as from 2·95 to 3·1. An example from Belgium, examined by myself in the national collection, has the wing 2·95, and the bill to gape 1·6; another from England, wing 3·05, and bill to gape 1·95. A Cairo specimen of *A. bengalensis* has the wing 2·8, bill to gape 2·0, and is referred to this species by Mr. Sharpe purely on account of its length of bill. In fact the two species grade into one another at the north-west confines of India and throughout the west of Asia to the borders of Europe in such a manner that it would be difficult, from a mere perusal of dimensions, to arrive at a proper identification; typical specimens of the Indian form are found far to the west and out of its usual habitat, but no typical examples of the European form are found further within the habitat of *A. bengalensis* than Sindh. In this latter region Mr. Hume considers the race to be an intermediate one, which averages as large as *A. ispida*, while the bills are, as a rule, shorter than in either species. He also notes that the birds from the Andamans and Pegu have very short bills.

Distribution.—The present species inhabits the whole island of Ceylon, from the sea-coast to the level of the Nuwara-Elliya plain. Wherever there is water, be it the tiny pond resorted to by buffaloes and wild animals in the midst of a parched-up district, or the flooded paddy-field, the lonely tank or forest river, the brackish lagoon, or even the rocky sea-shore, the Little Kingfisher is sure to be found. In the wet districts of the west and south its numbers are greater than in the north and east, but nevertheless in these it congregates in great numbers in those few spots where water is to be found.

Every forest-lined river has its pair of Kingfishers at every quarter of a mile, which dwell in the outspreading branches of the Koombook and Mee-trees, and ever and anon plunge into the trickling stream beneath them. It is common enough in the Central-Province valleys drained by the Mahawelliganga and its affluents, but above 3500 feet becomes tolerably scarce. It finds its way to the Nuwara-Elliya lake up the streams from the Fort-Macdonald patnas; but I have not seen it on the streams between there and the Horton Plains, nor on the source of the Maha Elliya in the plain itself, the rise through forest from Galagama of the latter stream to the level of the plain (about 5600 feet) being too great for the explorations of the Little "Fisher."

This bird is found all over India, being in nearly all parts the most numerous of its family in the peninsula. It is not frequent in some of the hill-districts of the south, for I observe that neither Mr. Bourdillon nor Mr. Fairbank met with it on the Travancore and Palani hills. It is, however, not uncommon in the Nilghiris, and has been found nesting as high as Ootacamund. It is noted as being very common in the Kandhala district and also in Chota Nagpur. Turning to the north-west we find it rare at the Sambhur Lake, common at Mount Aboo and in the Guzerat plains, and very rare again in Sindh, where it is replaced by a larger race as above noticed. It extends north of India into Central Asia and the Amoorland, where Schrenk procured it; and to the westward Mr. Sharpe notes it from Cairo, the Sinaitic peninsula, and Nubia. Canon Tristram, however, only met with *A. ispida* in Palestine. To the east and south-east of India it has an extensive range, being found in Burmah, Tenasserim, Malacca, the Andamans and Nicobars, Java, Sumatra, Labuan, Borneo, and Celebes, extending northwards again to Formosa, the Loochoo Islands, Eastern China, and Japan. Swinhoe received it from Hakodadi, Northern Japan, which is its most northerly observed limit on the eastern bounds of Asia. The only locality in Sumatra from where I can find it recorded is Lampong, on the south-east coast; but when this vast island has been more explored it will doubtless be found in its western portions.

Habits.—This tame and watchful little bird passes the entire day in the constant search for its prey; no bird in Ceylon is more diligent in seeking for the means of existence than this pretty little Kingfisher, which takes up its post on any object over water, and while calling to its mate, who is generally close at hand, executes its curious little gesture of frequently jerking up its head with a combined similar movement of its

tail, and darts with an unerring aim on the tiny inhabitants of the pool. It is bold and regardless of man to a degree, not hesitating to seize a fish close to a bystander; and, indeed, I have more than once seen it take up its quarters over my head while camped on the sandy bed of a forest river, and dash over and over again into the water at my feet. It is possessed of the keenest sight, pouncing often on its prey from a very considerable height above the water. It usually lives in pairs, which dwell together on terms of the greatest sociability; on one joining its companion the two become quite garrulous for some minutes, uttering in consort their clear piercing little whistle, accompanied by a vigorous bobbing up and down of heads and sundry spasmodic up-jerkings of their tails. The flight of this species is very swift; it flashes past like an arrow, its blue plumage gleaming against the sombre green of the forest, and its clear note often rousing the tired sportsman from his reverie. I have more than once observed it hovering for an instant close to the water, it having suddenly checked itself in its flight, perhaps to observe some fish too deep at the moment to pounce upon. Swinhoe notes the same habit, remarking that it is done close to the surface of the water and not high up after the manner of the last species. Concerning this little bird's temerity in seizing fish, there is an interesting note in 'Stray Feathers,' 1873, by Mr. H. J. Rainey, which shows likewise the occasional rapacity of the Brahminy Kite. This gentleman writes:—"I observed a Brahminy Kite make a rather leisurely swoop at a fish swimming on the surface of the stream; but when almost within its grasp a Kingfisher (*A. bengalensis*), which had darted down swiftly, carried off the prey. This appears to have infuriated the Kite, and it immediately followed in hot pursuit of the Kingfisher, and after a long and 'stern' chase, it eventually succeeded in seizing its unresisting quarry; holding the screeching bird securely in its talons it bore it to the shore, and after complacently plucking the feathers of its (then still living) victim it set about devouring its flesh with evident satisfaction. On my approaching the spot, soon after the Kite had commenced its savage repast, it flew away, leaving little else than a few bare bones of the Kingfisher" (and, as I should have added, me vowing vengeance against the whole race of Brahminies). Layard speaks of this little Kingfisher being caught in Ceylon by Moormen, who export the skins to China, where they are used for embellishing fans. This trade does not seem to be carried on now.

Nidification.—In South, West, and Central Ceylon the breeding-season of this species is from February until June; but in the north I have known it to nest in November. It excavates a hole about 2 feet 6 inches or 3 feet deep in the soft or upper earth of a stream or river-bank, or, in fact, in any situation where such soil exists, for I have found its nest in the sides of the cavities excavated by coolies in making roads and far away from any water. At the end of the hole the little miners scoop a cavity about 6 inches in diameter and deposit frequently a layer of small fish-bones on the earth, on which the eggs are laid. In this its habits are one with those of its European representative. The eggs are said in India to be usually five to seven in number; three are, however, sometimes laid, as Dr. Holden writes me of finding a nest with three young in Hewahette. They are very round and glossy, and pinky white when unblown, averaging 0.8 by 0.68 inch. One specimen brought to me as the egg of this species, from Baddegama, measured 0.81 by 0.76 inch.

P I C A R I Æ.

ALCEDINIDÆ.

Subfam. HALCYONINÆ.

Bill shorter, much broader at the base, and less compressed than in the last subfamily; lower mandible very deep at the gonys-angle, with the gonys ascending in a curve to the tip. Wings more rounded, the 1st quill shorter, and the tips of the primaries not reaching, when closed, to half the length of the tail.

Mostly of large size, and, to a great extent, reptile feeders.

Genus PELARGOPSIS.

Bill very large, stout, the culmen flat and perfectly straight to the tip; groove pronounced and parallel to the ridge. Nostrils slightly advanced, gape angulated; gonys deep and ascending in a curve to the tip. Wings with the 3rd quill the longest, and the 1st much shorter than the 5th. Tail rather long and even; tibia bare in front above the knee; tarsus stout; toes scutellate, the outer and middle subequal, but the middle claw much longer than the outer; claws deep and expanded at the sides.

Of large size.

PELARGOPSIS GURIAL.

(THE INDIAN STORK-BILLED KINGFISHER.)

Halcyon gural, Pearson, J. A. S. B. 1841, x. p. 633; Blyth, Cat. B. Mus. A. S. B. p. 47. no. 200 (1849), et Ibis, 1865, p. 30.

Halcyon capensis, Jerd. Madr. Journ. 1840, Cat. no. 245, p. 231; Kelaart, Prodromus, Cat. p. 118 (1851); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 177; Legge, Ibis, 1874, p. 14.

Halcyon brunniceps, Jerdon, 2nd Suppl. Cat. Madr. Journ. 1844, p. 143.

Halcyon leucocephalus, Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 123 (1854); Jerdon, Birds of Ind. i. p. 222.

Pelargopsis gural, Cab. & Heine, Mus. Hein. ii. p. 156 (1860); Sharpe, P. Z. S. 1870, p. 66; id. Mon. Alced. pl. 34 (1868-71); Holdsworth, P. Z. S. 1872, p. 423; Legge, Ibis, 1875, p. 275; Hume, Nests and Eggs, p. 105 (1873); Ball, Str. Feath. 1874, p. 386.

The Gural Kingfisher, Latham, Hist. iv. p. 12; *The Cape Kingfisher*, Kelaart; *Brown-headed Kingfisher*, Jerdon; *Gural*, Beng.; *Alcyone*, Portuguese in Ceylon.

Maha pelihuduwa, lit. "Great Kingfisher," also *Waturanuwa*, Sinhalese.

Adult male. Length 14.75 to 15.3 inches; wing 5.75 to 5.9; tail 3.75 to 4.0; tarsus 0.7; middle toe 1.0, its claw (straight) 0.42; outer toe 1.0, its claw (straight) 0.3; bill to gape 3.6 to 3.75, depth at gonys-angle 0.8.

Female. Length 15.0 to 15.3 inches; wing 6.0 to 6.3; tail 4.0 to 4.4; tarsus 0.8; bill to gape 3.8.

Iris brown, chestnut-brown in some; eyelid dull red; bill arterial blood-red, dusky at tips of both mandibles; inside of mouth coral-red; legs and feet coral-red, claws dusky.

Head and hind neck, including the face and ear-coverts, dull brown, tinged with greenish on the crown and hind neck, which is most perceptible when the feathers are new; forehead and lores slightly paler; interscapular region and scapulars dingy bluish green; lesser secondary wing-coverts almost concolorous with the scapulars, while the greater wing-coverts, outer webs and tips of secondaries, and tertials are dull greenish blue; primaries and inner webs of secondaries dark glossy brown, the basal portions of the outer webs of the primaries concolorous with the blue of the secondaries, and the terminal portions faintly tinged with blue; back and rump brilliant pale azure-blue, with a silky lustre; upper tail-coverts bluish green; tail greenish blue, with the inner webs changing into French blue; shafts deep black.

Entire under surface, sides of neck, and a broad nuchal collar just below the lower cap orange-buff, paling to albescent buff on the gorge and chin, and deepest on the flanks and under wing-coverts; under surface, quills, and tail pale brown.

Females have the head scarcely tinged with greenish, and the brown in old feathers paler than in new.

Young. Bill darker at the tips than in the adult; eyelid yellowish red; legs dusky red. *Birds of the year* have the chin almost quite white, the buff of the under surface overcast with a brownish hue, particularly on the chest, and the feathers of the fore neck, chest, nuchal collar, breast, and flanks with crescentic margins of brown, coalescing on the sides of the chest, just beneath the point of the wing when closed, into a narrow band, which joins the green of the interscapular region; lores and forehead darker than in the adult; least wing-coverts faintly edged with fulvous; ground-colour of the scapulars darker than in the adult.

With age the dark pencillings on the under surface disappear from the chest and remain only on the sides of the breast, from which they do not vanish until the bird is fully aged.

Obs. The Ceylon race of this Kingfisher appears to be, as a rule, more tinged with green on the "cap" than Indian birds, and resembles, in this respect, *Pelargopsis malaccensis*, Sharpe, differing from this, in the adult stage, in the less dark mantle, although I must say young birds are very like the latter species: this is, however, a smaller bird, the wings of two specimens measuring 5.55 and 5.65 inches. Indian examples of *P. gural* from Madras measure 5.7 to 5.95 inches in the wing, and 3.7 to 3.9 in the bill from the gape. Mr. Ball gives the following dimensions, *loc. cit.*:—(Rahmehal) wing 6.15 inches, bill from gape 3.6; (Calcutta) wing 5.95, bill from gape 3.7; (Satpuras), ♂, wing 6.1, bill from gape 3.55. The Indian and Ceylonese bird comes very near to *P. fraseri* from Java and *P. burmanica* from Burmah, two other closely allied species; the former has the back and wings of that peculiar blue tint considered to be characteristic of *P. malaccensis*, and the brown cap is sometimes absent. The wing of an example which I have examined is 6.1, bill to gape 3.5; the latter has the cap very pale and the back greyer than in *P. gural*, being simply a pale form of this bird. All these species are so nearly allied that they appear to me to be merely races of *P. gural*; and I observe Mr. Hume remarks to the same effect, 'Stray Feathers,' 1877, p. 19. Mr. Holdsworth was the first to rectify the synonymy of this species as a Ceylonese bird, Kelaart and Layard having followed Jerdon's name of *capensis*, bestowed on it in the Madras Journal, 1840.

Distribution.—This large and noisy Kingfisher is found more or less on all the rivers and wild streams throughout the island, frequenting likewise the brackish lagoons and backwaters round the eastern and northern coasts, and the large sea-board lakes of the Western Province; in the latter district it is found in large jungle-begirt paddy-fields, and on the Gindurah, Kaluganga, Kelaniganga, and Maha-oya rivers. It is also an inhabitant of the Ikkade-Barawe forest and other large jungles not far from Colombo which are traversed by streams. It is pretty generally diffused through the hill-country near Galle, in which there are numerous isolated paddy-fields lying between hills, and generally drained by a stream fairly stocked with fish. The lonely tanks, particularly the smaller sheets of water surrounded by large trees which are scattered throughout the northern half of the island, and the romantic rivers which flow both east and west through that region from the hill-zone, are its favourite abode; along the whole course of the Mahawelliganga from Kottiar to the base of the hills it is common, and, I believe, ascends this river into Dumbara, though it is not of very frequent occurrence in that valley.

Jerdon remarks of this Kingfisher that it is found over all India, from the extreme south to Bengal, chiefly where there is much jungle or forest or where the banks of rivers are well wooded—precisely the same conditions which regulate its habitat in Ceylon. Mr. Fairbank saw it at the base of the Palani hills,

and once near Mahabaleshwar, and Jerdon remarks that it is rarely seen in the Carnatic or the tableland. It is common in Bengal, but has been met but rarely in the north-west. At the Sambhur Lake and in Sindh it does not appear to be found. In the contrary direction, in Chota Nagpur, Mr. Ball says it is met with occasionally, as also on the Rajmehal and Satpura hills. It is not uncommon about Calcutta, and Dr. Hamilton observed that it bred in mud walls in that neighbourhood; it extends to the lower Himalayas. In Burmah it is replaced by the paler race *P. burmanica*, and even in Cachar Mr. Hume says the Stork-billed Kingfisher belongs more to the latter than to the present species.

Habits.—The Stork-billed Kingfisher always frequents the vicinity of water, and, as far as my experience goes, feeds entirely on fish and frogs. It is solitary in habit and rather sluggish, taking up its post on the branches of forest-trees overhanging water, or in the mangroves lining brackish lagoons, and at long intervals plunges headlong down on its prey, splashing up the water in its descent. Every now and then it gives out its loud discordant cries, and generally moves on to some other likely spot with a straight-on-end and powerful flight. It is very early astir in the morning, awakening with its far-sounding laugh the traveller who has halted for the night on the borders of the forest-lined river, or welcoming the sportsman on the termination of his long and early morning drive to some lonely Snipe-ground. I have seen it, when disturbed by gun-shots, take long flights across extensive paddy-fields, and after reaching a place of safety shout vociferously for a quarter of an hour. When wounded it is capable of inflicting a severe blow with its huge bill; and a Mr. Smith, in his MS. notes quoted by Dr. Horsfield, mentions an instance in which he “once observed a contest between one of these birds and a Hawk of considerable size, in which the Hawk was worsted and obliged to leave his hold, from the effects of a severe blow which the other administered to him on the breast.” Mr. Ball remarks that he has only once seen it plunge into water for the purpose of capturing a fish. I have been more fortunate than this; for I have seen it several times in the act of seizing its prey; but it certainly is a far less active fisher than other members of its family that have come under my notice. Layard found this bird feeding on crabs and small Mollusca, as well as on fish.

Nidification.—Breeds in secluded spots, excavating a deep hole in the side of a river-bank or in the bund of a tank beneath shady trees. The nesting-time in Ceylon is during the first three or four months in the year. Mr. Edward Creasey, Ceylon Survey Dept., found a nest in the Jaffna district which was situated 7 feet from the entrance to the hole; it contained two eggs, which were spherical in shape, pure white, and measured 1.45 by 1.23 inch. Mr. Thompson found it breeding in May on the streams debouching from the Himalayas, and speaks of a nest containing five young ones, near which there were some deserted habitations, each having the appearance of having served its turn as a breeding-place in former years. Another writer, Mr. Theobald, notes its laying in the fourth week in June.

Genus HALCYON.

Bill differing from the last in having the culmen sharply keeled and curved slightly near the tip, and the upper mandible suddenly compressed. Nostrils more oblique, less advanced; gape less angulated. Wings with the 2nd quill subequal to the 3rd. Tibia feathered in front to the knee. Of smaller size than *Pelargopsis*.

HALCYON SMYRNENSIS.
(THE WHITE-BREASTED KINGFISHER.)

Alcedo smyrnensis, Linn. Syst. Nat. i. p. 181 (1766).

Halcyon smyrnensis, Steph. Gen. Zool. xiii. p. 99 (1826); Sykes, P. Z. S. 1852, p. 84; Blyth, Cat. B. Mus. A. S. B. p. 47 (1849); Kelaart, Prodrum, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 172; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 125 (1854); Tristram, Ibis, 1866, p. 86; Sharpe, Mon. Alced. pl. 59 (1868-71); Holdsworth, P. Z. S. 1872, p. 424; Hume, Nests and Eggs, p. 105 (1873); Adam, Str. Feath. 1873, p. 372; Hume, ibid. 1874, p. 167; Legge, Ibis, 1874, p. 14.

Alcedo fusca, Bodd. Tab. Pl. Enl. 54 (1783).

Halcyon fuscus (Bodd.), Jerdon, B. of Ind. i. p. 224; G. R. Gray, Gen. of Birds, i. p. 79 (1849).

The Smyrna Kingfisher, Latham; *The Indian Kingfisher*, Horsfield; *Blue Kingfisher*, Europeans in Ceylon.

Kikila, Hind.; *Sade-buk match ranga*, Beng.; *Lak muka*, Tel.; *Vichuli*, Tam. (Jerdon); *Matsya-ranga*, Sanscrit; *Fei-tsuy*, China (Swinh.).

Pelihuduwa, Sinhalese; *Kalavi kuruvi*, lit. "Wide-mouthed Bird," Ceylon Tamils (Layard).

Adult male and female. Length 10·8 to 11·1 inches; wing 4·4 to 4·6; tail 3·2 to 3·4; tarsus 0·5; middle toe 0·7 to 0·75, claw (straight) 0·37; bill to gape 2·5 to 2·7; depth at gonys-angle 4·9 to 5·7.

Iris sepia-brown; bill deep arterial red; inside of mouth vermilion; anterior portion of legs and feet dark brownish red; posterior portion and soles of feet orange-red; claws blackish.

Head, cheeks, back, and sides of neck, sides of chest, and all the lower parts from the breast downwards with the under wing-coverts deep chestnut-brown or reddish chocolate-colour, darkest on the head, hind neck, and sides of chest; back, scapulars, rump, upper tail-coverts, tail, secondaries, and basal portion of outer webs of all but the first primary, when viewed against the light, turquoise-blue, brightest on the back, rump, and secondaries, and when viewed with the light malachite-green; tertials and margins of the tail-feathers with a decided greenish hue; first primary, terminal portion of the rest, tips of secondaries, and inner half of the inner webs blackish brown; least wing-coverts lighter chestnut than the head, the median secondary coverts coal-black; shafts of tail-feathers black; a fine line just beneath the lower eyelid, chin, fore neck, centre of the chest, edge of the wing, and basal portion of the inner webs of the primaries white, increasing on the latter towards the inner feather, on which it approaches close to the tip.

Some examples have a brownish wash on the forehead and crown, and, in fact, the chestnut portions of the plumage are, as a rule, variable, some birds being darker in this respect than others. It is worthy of remark that if this Kingfisher be held away from the light, the *white chest assumes a greenish hue*.

Young. The nestling has the bill red at the base, paling to yellowish towards the tip, which is black.

The feathers of the head and hind neck are pale-tipped, mostly so on the forehead; the least wing-coverts are tinged with black.

Obs. Although the chestnut colour in this species is variable, I doubt not that, if a large series of Ceylonese examples were compared with a good many from most parts of India, they would be found to be, as a rule, darker than the latter; and I do not think they attain the same size as some Indian specimens. Mr. Hume gives the largest of forty birds as 4.85 in the wing, and remarks that his extreme southern specimens from Anjango are the darkest and smallest, and therefore correspond best with ours. The least wing-dimension in Anjango birds is 4.4. I have, however, a specimen from Ramisserum Island with the wing 4.5 inches, but with a very small bill, measuring 2.35 to gape and 0.48 in depth at gonys-angle. It likewise has the chest very strongly tinged with green. As regards the head and hind-neck hues, Ceylonese birds resemble those from the Andamans; but these latter, in addition to being darker than those from *any other part of Asia*, are larger, and have therefore been separated as *H. saturation* by Mr. Hume. The greenish-blue tint on the white chest is observable in Nepal, Kamptee, and Beloochistan specimens, also in one from Jericho; but they must be held *from* the light, with the bill pointed towards the eye, in order to produce this colour to the greatest extent. The Jericho specimen is somewhat paler on the head than one from Colombo; but the under parts and sides of the chest are darker if any thing: it has the wing 5.1 inches; bill to gape 2.7. Another from Beloochistan is slightly greener in all lights than Ceylonese individuals, and has a white stripe above the lores; wing 4.95, bill to gape 2.7. An example from Bagdad is pale on the head and has a white superciliary line. For purposes of comparison, I will add that an Andaman example of *H. saturation* measures 5.1 inches in the wing, but the bill to gape is only 2.75.

Distribution.—This handsome Kingfisher is extremely common in Ceylon, and is spread over the whole island, inhabiting the Kandyan Province up to the altitude of Nuwara ELLIYA, at which place it has made its appearance since the lake was found. It is more plentiful in the Western and Southern Provinces and in the cultivated portions of the northern district than in the jungle-covered country of the interior, for though it occurs on the forest-rivers it is not so abundant as the Stork-billed or little Blue Kingfishers. It is fairly numerous in the islands of the Jaffna district and in Manaar, and Mr. Holdsworth says it is not uncommon at Aripu. In the northern forests it is more often found near village tanks and on new clearings than elsewhere. In the Kandyan Province it is chiefly an inhabitant of the terraced paddy-fields, and is tolerably numerous in the well-cultivated valleys.

Out of Ceylon it has a very wide range, being found all over India, extending eastward to China and westward to Palestine and Asia Minor. As regards India it has been recorded as a common bird from all parts of the low-lying districts which have been worked out; but though Mr. Bourdillon found it plentiful at the foot of the Travancore hills, it did not ascend there to any height. Mr. Fairbank likewise only observed it in the lower Palanis.

From the low districts of Bengal, where it is very common, it extends to the base of the Himalayas, and westward through Sindh into Persia and Palestine, where Canon Tristram found it in the Jordan valley up to the sources of the river; beyond this Russel recorded it, in the last century, in his 'Natural History of Aleppo,' to be an inhabitant of Asia Minor. Captain Graves met with it in the same locality after the lapse of a century, during which time it had escaped the observation of naturalists. Canon Tristram and Mr. Sharpe note it as a doubtful straggler to Europe. From Burmah it extends into Tenasserim and the Malay peninsula. In many parts of China it is common, and resident, according to Mr. Swinhoe, from Canton to the river Yangtze; he likewise procured it in Formosa.

Habits.—Although this Kingfisher frequents paddy-fields, streams, rivers, swamps, and fresh water in all situations, it is almost as often found affecting clearings in the jungle, dried-up fields, cultivated gardens, and the edges of open wastes, and in such places subsists on lizards, grasshoppers, crickets, locusts, and even small snakes. It invariably resorts to new clearings in the forest after they have been burnt off, and takes up its position on stumps or branches of charred trees, and therefrom flies down on the lizards and insects which it espies on the blackened soil. Mr. Inglis, in his 'List of Birds of Cachar,' mentions seeing one so occupied for half an hour, and on shooting it found its stomach crammed with crickets. Mr. Ball has seen it dive for fish on one occasion; but this must be an occurrence of extreme rarity; he writes that in Chota Nagpur it is snared, and the flattened-out skins disposed of to merchants, who sell them to Burmese traders for ornamenting court-dresses. In Ceylon it is best known to those who do not penetrate into the wilds as an inhabitant of the paddy-fields, of which it is one of the chief ornaments in the way of bird-life, and is the first bird which attracts the attention of the new arrival in the island as he trudges through his first hot December-day's Snipe-shooting.

It is, perhaps, the first bird astir at daybreak, and when there is scarcely enough light to discern it, flies up to the top of the highest tree near at hand and pipes out its plaintive trilling note for a considerable time, and then makes off to some favourite outlook, uttering its loud harsh call, very different from that which it has just indulged in. This latter is always uttered when the bird is on the wing, while the former is only heard when it is perched. When a lizard, which is a favourite meal, is captured, it is hammered against a stone or branch of a tree until dead, and then devoured whole, and crabs and mollusks are treated in the same way when the bird has taken up its quarters by a stream. I have observed one launch out from a high tree, in the manner described by Layard, on a butterfly; but this writer records an evil deed against the lovely bird, which is worthy only of such a cannibal as the *Kotoruwa* (*Megalama zeylanica*). He relates that one which was "unluckily introduced into an aviary, destroyed most of the lesser captives ere he was detected as the culprit; he was at last caught in the act of seizing a small bird in his powerful bill; he beat it for a moment against his perch, and then swallowed it whole!" The habits of this species as observed in Palestine by Canon Tristram are somewhat different to those which obtain with it in India and Ceylon. He writes:—"It loves to sit moodily for hours on a slender bough overhanging a swamp or pool, where the foliage helps to conceal its brilliant plumage, and where, with cast-down eyes and bill leaning on its breast, it seems benumbed or sleepy, until the motions of some lizard or frog in the marsh beneath rouse it to a temporary activity. When disturbed, it rather slinks away under the cover of the overhanging oleanders than trusts for safety to direct flight." In one example he found a snake 18 inches long, entire. In the Holy Land it is solitary in habit as in Ceylon, where two birds are scarcely ever seen together.

Nidification.—In the west and south of Ceylon this species breeds from January till April, and in the north I have found its nest as late as July. It nests in a bank generally near water or in the bund of a tank, penetrating from 2 to 4 feet, and then excavating a large vault, sometimes 9 inches in width, in which it lays its eggs, which are usually four in number, though sometimes six. In a nest which I took in the breach in the great "bund" of Hurullé tank there were no bones, nor any thing used for a lining to the nest; the passage and egg-chamber, however, frequently contain remains of frogs, lizards, &c., which have been taken in by the old birds for feeding their young. The eggs are pure white, round in shape, and those that I have seen from Ceylon vary from 1·14 to 1·2 inch in length by 1·0 to 1·04 inch in breadth. In India this bird often nests in mud walls and sometimes in open wells, Mr. Hume recording an instance of one building in a hole in the side of a well 100 feet below the surface of the ground. The eggs, when first laid, have, it is said, a beautiful gloss; but they rapidly lose this, as those I have taken were rather dull than otherwise. Some attain a size of 1·27 by 1·12 inch, or as large (as Mr. Hume remarks) as a Roller's egg.

HALCYON PILEATA.

(THE BLACK-CAPPED PURPLE KINGFISHER.)

Alcedo pileata, Bodd. Tabl. Pl. Enl. 41 (1783).

Halcyon pileata, Gray & Mitchell, Gen. of Birds, i. p. 79 (1844); Sharpe, Mon. Alced. p. 169, pl. 62 (1868-70); Holdsworth, P. Z. S. 1872, p. 424; Hume, Str. Feath. 1875, p. 51; Armstrong, ibid. 1876, p. 306; Sharpe, Ibis, 1876, p. 33.

Alcedo atricapilla, Gm. Syst. Nat. i. p. 453 (1788).

Dacelo pileata, Schl. Mus. P.-B. *Alced.* p. 27 (1863); id. Vog. Ned. Ind. *Alced.* pp. 22, 54, pl. 9 (1864).

Halcyon atricapillus, Blyth, Cat. B. Mus. A. S. B. no. 204, p. 47 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 171; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 124 (1854); Gould, B. of Asia, pt. xii. (1860); Jerdon, B. of Ind. i. p. 226 (1862); Hume, Str. Feath. 1874, p. 168.

Entomobia pileata, Salvad. Ucc. di Borneo, p. 102 (1874).

Martin Pêcheur de la Chine, Buff. Pl. Enl. 673 (1770); *The Black-capped Kingfisher*; *Black-winged Kingfisher*.

Udang, Malay; *Burong udang*, Sumatra (Raffles).

Adult male and female (Burmah). "Length 11·7 to 12·5 inches; wing 4·9 to 5·3, expanse 18·0 to 18·75; tail from vent 3·3 to 3·75; tarsus 0·6 to 0·7; bill to gape 2·9 to 3·15" (*Armstrong*).

Layard's Ceylonese specimen measures 5·4, a male shot by Mr. Oates 5·3, and two examples in my own collection 4·8 and 5·1 inches (the former is an immature bird).

Iris reddish brown, dark brown, or olive-brown; bill deep coral-red; legs and feet dull red, brownish on the front of tarsus; claws "horny brown."

Head, face, ear-coverts, nape, and wing-coverts coal-black; back, scapulars, upper surface of tail, primary-coverts, and the outer webs of the secondaries and tertials ultramarine-blue, very brilliant on the interscapular region, and changing into a lustrous smalt-blue on the upper tail-coverts; a broad band of white across the hind neck, immediately beneath which the blue of the back is shaded with black; terminal half of primaries and tips and inner webs of secondaries dull black, the basal half of the former delicate bluish, or bluish white on the outer webs and pure white on the inner.

Chin, fore neck, centre of chest, and upper breast white; sides of chest and fore neck, flanks, lower breast, abdomen, under tail, and under wing-coverts fine tawny rufous, blending into the white of the fore neck, and often tinging the hind-neck collar; under surface of tail blackish.

Young. Birds of the year have the black of the upper parts and the blue of the back and rump less pure, and the sides of the chest and breast, as also the feathers of the hind-neck collar, marked with crescentic tipplings of blackish brown; but in some examples the latter part is striated with brown instead of barred. These crescentic markings appear to remain until the bird is fully aged, as they are present in many specimens which have the upper surface in beautiful adult feather.

Distribution.—This lovely Kingfisher has been only once recorded from Ceylon. Layard speaks of one specimen having been shot in the island of Valenny, near Jaffna. This bird, which must have been a straggler driven to the coasts of Ceylon by the northerly winds of December, is now in the Poole collection and is in a fair state of preservation. Its occurrence in Ceylon is very interesting, as it is a rare bird in India, and particularly so in the south. Jerdon shot a specimen at Tellichery, on the Malabar coast, and saw others from the same locality; he speaks of it having been procured as high up the Ganges as Monghyr, although it is rare in Bengal. It affects wooded country near the sea, and consequently is more common in

the Sunderbunds than elsewhere in India. It has not, I believe, been found anywhere to the west of Lower Bengal. In Burmah it is common near the sea, though rare up at Thayetmyo. Mr. Armstrong writes:—"This beautiful Kingfisher formed a marked characteristic of the avifauna belonging to the Irrawaddy delta. It was to be seen everywhere. It was abundant among the mangroves on each side of every creek and nullah; the shore-jungle along the coast from Elephant Point to China-Ba-keer resounded with its discordant cry." It is found in Tenasserim and throughout the Malay peninsula, where it is far from uncommon, inhabiting likewise the islands in the Bay. In these, however, it is rare, both as regards the Nicobars and the Andamans. Mr. Davison saw it at Trinkut and Kondul in the former, and Mr. Hume has received it from Port Blair, Andamans. It is known from both Java and Sumatra, and Count Salvadori includes it in his 'Birds of Borneo,' where also Mr. Alfred Everett has of late years procured it. Further north it is an inhabitant of China, in which country, Mr. Swinhoe remarks, it is found from Canton to the Yangtze, and is rare in the neighbourhood of Amoy. Dr. Zelebor, who accompanied the 'Novara' Expedition, found it at Hong Kong.

Habits.—This species loves thickly wooded estuaries and brackish creeks such as are found in the great Sunderbunds near Calcutta, in the delta of the Irrawaddy, and other similar localities, in the impenetrable jungle of which it passes a generally unmolested existence, feeding on the crabs which abound in the muddy creeks and nullahs. These crustaceans form its favourite food. Mr. Armstrong says that in the Irrawaddy delta "under every little projecting twig along the sea-shore a quantity of white excreta and the remains of the legs and bodies of small crabs showed where one of these birds had been making its dinner and indulging in its siesta. Each bird appears to have its own favourite watch-tower, and when disturbed flies away with a shrill cry, taking a semicircular stoop to some dry twig on ahead, and as soon as it thinks that the danger is passed by returns again to the post from which it has been dislodged." Captain Wimberley, who shot this bird at Port Blair, says it is excessively shy and wary, and that he had to go out day after day before he could procure it. It has a harsh crowing call according to Jerdon, and which is described by other writers as discordant. Dr. Zelebor likens it to the cry of the European Great Spotted Woodpecker.

The Chinese, with their usual admiration for the feathers of Kingfishers, put those of this species also to ornamental purposes, using them for the manufacture of their fans.

I am unable to give any information concerning the nesting of this species.

Genus CEYX.

Bill much as in *Halcyon*, the culmen less keeled. Wings with the 1st quill as long as in *Alcedo*, and the 4th not much shorter than the 3rd. Tail short and broad at the base, rounded at the tip. Tarsus much shorter than the anterior toes; *inner toe wanting*; claw of outer toe very short.

CEYX TRIDACTYLA.

(THE INDIAN THREE-TOED KINGFISHER.)

Alcedo tridactyla, Pall. Spic. Zool. vii. p. 10, pl. 11. fig. 1 (1769).

Ceyx tridactyla, Sykes, P. Z. S. 1832, p. 84; Jerdon, Ill. Ind. Orn. pl. 25 (1847); Kelaart, Prodromus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xiii. p. 172; Jerdon, B. of Ind. i. p. 229 (1862); Sharpe, P. Z. S. 1868, p. 270; id. Mon. Alced. pl. 40, p. 119 (1868-71); Holdsworth, P. Z. S. 1872, p. 424; Hume, Str. Feath. 1874, p. 173, et 1875, p. 51, et 1876, p. 287; Inglis, ibid. 1877, p. 19.

Alcedo erythaca, Gm. Syst. Nat. i. p. 449 (1788).

Ceyx erythaca, Blyth, Cat. B. Mus. A. S. B. no. 220, p. 50 (1849).

Ceyx microsoma, Jerd. Cat. B. S. India, Madr. Journ. 1840, xi. p. 231.

Martin Pêcheur de Pondicherry, Buff. Pl. Enl. 778. fig. 2.

The Three-toed Kingfisher, Europeans in Ceylon; *The Pinang Kingfisher*, Sharpe, Mon. Alced.

Dein-nygeen, Arracan; *Raja whodan*, Malay (Blyth).

Punchi Mal-pelihuduwa, Sinhalese.

Adult male and female. Length 5.25 to 5.4 inches; wing 2.1 to 2.3; tail 0.9; tarsus 0.35; innermost toe and claw 0.65; hind toe and claw 0.3; bill to gape 1.44 to 1.6, at front 1.3. Expanse 8.3.

Iris brown; bill coral-red; legs and feet coral-red, slightly paler than bill; claws yellowish.

Head, hind neck, face, lower back, rump, and tail with the least wing-coverts and under wing rufous, overlaid on the back, upper tail-coverts, and behind the eye with delicate shining lilac, and tinged with the same on the head: upper back black, overlaid with a patch of brilliant cobalt-blue; wings blackish brown; a spot at the side of the nape, a wash over the back and tertials, and edges of wing-coverts fine deep violet-blue; beneath the nuchal spot a white streak; forehead edged with deep blue at the bill; eyelid and a spot in front of eye black; outer web of 1st primary and edge of winglet, inner margins of quills, and base of secondaries pale cinnamon; chin, throat, and centre of abdomen flavescent whitish; rest of under surface saffron-yellow, shaded with rufous on the flanks. In some specimens the centre of the head wants the violet tinge, this part being plain rufous; others, probably not adult, have the tail tipped dark.

Obs. Ceylonese examples are identical in character with Indian and Malaccan. A Pegu specimen, recorded in 'Stray Feathers,' measures 2.2 in the wing and 1.55 in the bill from gape; another I have seen from Malacca, 2.3 in the wing and 1.6 in the bill from gape. A male example, with a similarly large bill, I procured at Kanthelai; but the average size of the bill in Ceylon specimens is about 1.45. Mr. Sharpe figures an example in his plate ('Monog. Alced.') with a brown tail, and remarks that it may be sexual or a sign of immaturity; it certainly is not the former, as I have sexed males and females without any trace of dark colour in the tail; and as to the latter the nearest approach to a dark tail in what appeared to be a young bird, from the state of the organs, was a dark tip of about $\frac{1}{10}$ inch in depth to the centre tail-feathers. It seems not unreasonable to infer that the coloration in the specimen figured by Mr. Sharpe was abnormal, and at the same time very remarkable.

To many of my readers who are not well acquainted with this beautiful genus of Kingfishers, it may not be uninteresting to peruse a short *résumé* of its members, taken from Mr. Sharpe's magnificent 'Monograph of the Kingfishers,' which I here give. Commencing with the species which ranges next to ours in its habitat, we have:—

Ceyx rufidorsa, Strickland, P. Z. S. 1846, p. 99; Sharpe, Mon. Alced. pl. 41. Indo-Malayan region.

Differs chiefly from *C. tridactyla* in having the back and wing-coverts of the same hue as the head, rump, and tail, which are lilac-rufous. Wing 2.2.

Ceyx dillwynni, Sharpe, P. Z. S. 1868, p. 591; id. Mon. Alced. pl. 43. Labuan.

Larger than the above; head, back, rump, and tail lilac-rufous; scapulars black, washed with blue. Wing 2.45.

Ceyx sharpii, Salvad. Atti R. Accad. Tor. 1869, p. 463; Sharpe, Mon. Alced. pl. 42. Borneo.

Nearly all the upper surface brilliant lilac-rufous, with a portion of the scapulars black, and the wing-coverts tipped with blue. Wing 2.3.

Ceyx solitaria, Temm. Pl. Col. 595; Sharpe, Mon. Alced. pl. 38. New Guinea and adjacent isles.

Back rich ultramarine; the head, tail, and wings chiefly black; bill black. Wing 2.1.

Ceyx cajeli, Wall. P. Z. S. 1863, p. 25, pl. v.; Sharpe, Mon. Alced. pl. 44. Bouru Island.

Chiefly black above, with the back and rump silvery blue; head and wing-coverts spotted with silvery blue. Wing 2.5.

Ceyx wallacii, Sharpe, P. Z. S. 1868, p. 270; id. Mon. Alced. pl. 45. Sula Islands.

A large species, chiefly black above, with the back very rich shining cobalt: distinguished by its black scapulars from the next. Wing 2.5.

Ceyx lepida, Temm. Pl. Col. 595; Sharpe, Mon. Alced. pl. 46. Ceram, Amboina, south-west coast of New Guinea.

Likewise a large species. Chief characteristics of upper plumage black, spotted with rich ultramarine on the head and hind neck; back "rich ultramarine." Wing 2.5.

Ceyx uropygialis, Gray, P. Z. S. 1860, p. 348; Sharpe, Mon. Alced. pl. 47.

Smaller than the above. Upper surface chiefly black, spotted minutely and striped with ultramarine on the head; back ultramarine; rump silvery blue. Wing 2.4.

Ceyx melanura, Kaup; Sharpe, Mon. Alced. pl. 39. Philippine Islands.

Above chiefly lilac-rufous, with a patch of feathers on each side of the neck blue, under which is another white patch; head spotted with lilac-blue. Wing 2.1.

Ceyx philippinensis, Gould, P. Z. S. 1868, p. 404; Sharpe, Mon. Alced. pl. 37. Philippine Islands.

Chiefly indigo-blue above, banded with light cobalt on the head and face; under surface deep rufous. Resembles the Indian Kingfisher somewhat in general appearance. Wing 2.3.

Distribution.—This diminutive and beautiful little Kingfisher is the rarest of the indigenous species of the family in Ceylon, occurring here and there in localities few and far between throughout the low country, and inhabiting the upland valley of the Mahawelliganga and its affluents to an elevation of about 2000 feet. I have procured it in forest on the Trincomalie and Anaradjapura road, near Kanthelai tank, and at Devilane in the Friars-Hood district. In 1875, while residing at Hurellé tank, Mr. Cotteril, C.E., met with a little flock of four, and it has been seen in the Mullaitivu district. Layard speaks of meeting with it at Galle, Trincomalie, Anaradjapura, Matale, Puttalam, and Ratnapura. I closely scrutinized the rocky streams and rivers during two years' wanderings in the jungles of the south-west, but never saw it, nor did I ever encounter it in any of the humid districts of the island, and am therefore convinced that it is chiefly to be found in the dry portions only. It is not uncommon in Dumbura; but is chiefly located, I imagine, down the valley, from Kandy towards the bend of the Mahawelliganga. Mr. Holdsworth "at various times obtained three specimens, which were killed in the central district;" and it has been described to me (whether correctly identified or not I cannot say) as inhabiting the tributaries of the Kelani in Lower Dickoya.

It is scattered all over India, but nowhere, says Jerdon, common. He procured it in the south of India, and remarks that it seems to be a coast-bird for the most part. Col. Sykes got it in the Deccan; but Mr. Fairbank does not appear to have met with it in that part. In the north-west of India it has not, that I am aware of, ever been found, its distribution being decidedly eastern. Mr. Ball does not even record it from Chota Nagpur or the Satpura jungles, and we next find it in the Sikhim Terai, and thence eastward in Cachar and Burmah. In Pegu Mr. Oates only found it on the eastern slope of the Pegu-Yama hills, where the country is covered with evergreen forest, in the deep-wooded nullahs of which it was not uncommon. In Northern Tenasserim Mr. Davison found it between Tavoy and Meeta Myo, at Karope, and near Ye. In the peninsula and the island of Pinang it is well known, and it has been procured at Ross Island, Andamans, and at Kondul, a small islet adjoining the Great Nicobar Island. It has been found in Java and Sumatra and some of the Indo-Malayan Islands, and Mr. Sharpe instances it as having been procured in the Philippines; but the last-named locality requires confirmation.

Habits.—The Three-toed Kingfisher, which is the loveliest of all Ceylon birds, is a shy and usually solitary species, delighting in the gloom of the forest, where it frequents the edges of tiny brooks and damp or swampy spots containing small water-holes, subsisting on diminutive fish and small aqueous insects. It is so small that it is next to impossible for the collector, however keen-eyed he be, to detect it on its little perch before it is alarmed and takes wing with a shrill piping note, glancing instantaneously round the nearest tree to a place of safety. It is consequently very difficult to procure; but in the evening, just as darkness is setting in and the jungle becomes gradually enshrouded in gloom, it becomes restless and noisy, continuing to whistle

and fly from place to place round its diurnal position until dark, and may then be watched and easily shot. Unless when breeding it is always found alone; and though it frequents the banks of streams and rivers in the jungle, it evidently prefers the interior of the forest to the vicinity of exposed water. We find Mr. Inglis noting it, in Cachar, as affecting thick jungle with small streams running through it; and at Devilane I procured one of my specimens frequenting the jungle through which the sluice-stream ran, and rejecting completely the open water of the tank which abounded with fish. Mr. Inglis observes that they sit very close, and that he has more than once attempted to catch them with his hand. This is an illustration of the many instances in which the habits of different species vary entirely according to the district or country which they inhabit, for, as I have just remarked, this is a very shy bird in Ceylon. I have been told that the Singhalese occasionally catch it on the Mahawelliganga, but in what manner I do not know.

No information appears as yet to have been acquired concerning the nidification of this little Kingfisher.

PICARIÆ.

Fam. MEROPIDÆ.

Of small size. Bill long, slender, curved, both mandibles much pointed. Wings long and pointed. Tail with the central feathers often elongated. Legs and feet feeble.

Sternum with two emarginations on the posterior edge.

Genus MEROPS.

Bill much lengthened, slender, acute, compressed from the nostrils to the tip; both mandibles curved gently throughout. Nostrils oval, basal, placed midway between the margin and the culmen, partially protected by short bristles; rictal bristles short and stiff. Wings long and pointed; 1st quill minute, 2nd the longest. Tail of 12 feathers, even at the tip, or with the two central rectrices prolonged beyond the rest and much attenuated. Tarsus short, covered in front with transverse scales. Feet with the lateral toes joined to the middle, the outer beyond, and the inner as far as, the last joint; claws curved and hollowed beneath.

MEROPS PHILIPPINUS.

(THE BLUE-TAILED BEE-EATER.)

Merops philippinus, Linn. Syst. Nat. ed. xiii. tom. i. p. 183 (1767); Lath. Ind. Orn. tom. i. p. 271 (1790); Blyth, Cat. B. Mus. A. S. B. p. 52 (1849); Kelaart, Prodromus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 173; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 87 (1854); Gould, B. of Asia, pt. vii. (1855); Holdsworth, P. Z. S. 1872, p. 422; Legge, Ibis, 1875, p. 281; Hume, Nests and Eggs, i. p. 101; id. Str. Feath. 1876, p. 287.

Merops javanicus, Horsf. Trans. Linn. Soc. xiii. p. 294 (1820).

Merops daudinii, Cuv. Règn. An. 1829, t. i. p. 442.

Merops philippensis, Jerd. B. of Ind. i. p. 207; Blyth, Comm. Jerd. B. of Ind., Ibis, 1866, p. 344; Legge, Ibis, 1874, p. 13.

Grand Guépier des Philippines (juv.), Buffon, Pl. Enl. 57; *Le Guépier Daudin* (juv.), Levaill. pl. 14, p. 49; “*Flycatcher*” of Europeans in India and Ceylon.

Boro-putringa, Beng.; *Burra-putringa*, Hind.; *Komu passeriki*, Tel. (Jerdon); *Kachangan*, Java (Horsf.); *Berray Berray*, Malay; *Shale*, Nicobarese (Davison).

Kurumenne kurulla, lit. “Beetle-bird,” Sinhalese; *Kattalan kuruvi*, lit. “Aloe-bird” *, Tam.; *Pappugai de Champ*, Portug., lit. “Ground-Parrot” (*apud* Layard).

Adult male and female. Length 12·0 inches; wing 5·0 to 5·4; tail 5·9, central feathers 2·3 longer than the rest; tarsus 0·45 to 0·5; mid toe and claw 0·85; bill to gape (straight) 2·0 to 2·1. Expanse 16·75.

Iris scarlet; bill black; legs and feet blackish, hinder part of tarsus paler.

Head, back, and sides of neck, back, scapulars, and wing-coverts shining brownish green, brownest on the head and hind neck, and passing into the bright green-blue of the rump and upper tail-coverts; external edges of the primaries and secondaries greenish blue, the remaining portion of the feathers pervaded with brown, which changes at the basal part of the inner webs into cinnamon-rufous; tips of the shorter primaries and of all the secondaries blackish brown; terminal portion of the tertials and the tail (with the exception of the blackish elongated tips of the central feathers) bright greenish blue, the rectrices brownish internally.

A broad black streak from the gape over the eye and ear-coverts, above it a faint line from the forehead to the posterior corner of the eye, and beneath it a broader stripe of bright greenish blue, the latter very pale at the termination; chin and upper part of throat yellowish; fore neck chestnut-colour, gradually changing into the faded greenish of the breast, which brightens into cerulean blue on the under tail-coverts; the basal portions of the under-surface feathers light brownish, showing more or less throughout; under wing concolorous with the cinnamon bases of the quills; shafts of the quills and rectrices white beneath.

Young. Iris dull red or brownish red, changing into the hue of the adult during the first year.

Above greener than the adult; the bases of the feathers brownish green; rump and upper tail-coverts not so bright as in the adult; central rectrices not elongated, but slightly exceeding the rest and more pointed at the tips. The blue loreal and cheek-stripes less conspicuous, and the chin not so yellow as in the adult; under tail-coverts paling at their lateral margins.

The above is the plumage of the young birds arriving in Ceylon in September; they quickly acquire the adult tail, and meanwhile the normal yellowish feathers of the chin and the chestnut ones of the throat make their appearance, the latter part in the quite young bird being much paler than in the adult.

Obs. I have examined some examples from Sumatra, and one or two from India, in the British Museum, which have

* According to Layard from a fancied resemblance in the tail of this bird to the aloe-plant.

the blue cheek-stripe broader than in any I have procured in Ceylon. Philippine specimens are identical with Ceylonese in plumage, but they are a smaller race; the wing of a Negros example is 4·9 inches, another 5·0. A Sumatran example measures 5·2 inches; two from Japan 5·15 and 5·25 respectively.

Distribution.—This fine Bee-eater, migratory to Ceylon, arrives in the north of the island about the beginning of September, and rapidly spreads more or less through all parts of it before the end of the month. It seems to find its way to the south-west corner, or Galle district, almost as soon as to any part of the island, and collects there in greater numbers than elsewhere on the western side. I have met with it in the interior of the country, between Galle and Akurresse, as early as the 8th of September. It locates itself in great numbers in the Jaffna peninsula, and on the north-west coast as far south as Puttalam, and spreads in tolerable numbers into the interior, passing over the forest-clad portions, however, to a great extent, and ascending to the patnas and open hills of the Kandyan Province. In Uva and Pusselawa and on the Agra, Lindula, and Bopatalawa patnas, at an elevation of 5000 feet, it is common; but I have never seen it on the “plains” of the Nuwara-Elliya plateau. In the Eastern Province it confines itself mostly to the sea-board, being less numerous in the Park country and the south-eastern “jungle-plain” than the next resident species. Its departure from the island is as sudden as it is regular, in proof of which I may state that at Galle, in two successive seasons, I observed it collect in large flocks between the 29th and 31st March, and disappear entirely on the 1st April. Mr. Holdsworth, who writes that at Aripu it was so abundant that the common resident species (*M. viridis*) was scarce in comparison with it, states that it left about the beginning of April; and by the end of that month I believe it has quitted the island entirely. In the neighbourhood of Colombo it is chiefly located in large tracts of paddy-ground and about the great swamp between there and Negombo. It is now and then met with in the cinnamon-gardens.

The Blue-tailed Bee-eater is found throughout most of the empire of India, being very generally distributed throughout the central and eastern portions of the peninsula during the cool season, while in the breeding-time it locates itself in those parts which furnish it with localities suitable to its nesting-habits. In some places it is rare: Mr. Fairbank met with it but once in the Khandala district; and it is mostly replaced by the Egyptian Bee-eater in the north-west, for though it “often occurs,” according to Mr. Hume, in the Mount-Aboo district, it is neither found in Northern Guzerat nor in Sindh. In Chota Nagpûr it appears to be local; but Mr. Ball writes, in ‘Stray Feathers,’ 1875, that he met with large numbers in the vicinity of a river in that region in April, and that he infers that they were breeding there. To the eastward of India this species is found in Tenasserim and Burmah, and likewise in the Malay peninsula, taking into its range the Nicobars and South Andamans. Further south still it is found in Java, Sumatra, Flores and Timor, and the Philippine Islands, and has been met with in China and Formosa by Mr. Swinhoe.

Habits.—In Ceylon this species prefers to frequent open lands, plains studded with bushes near the sea-shore, esplanades, paddy-fields, swamps, and the patnas of the hill-region. It passes a great part of its existence on the wing in pursuit of insects, after which it dashes with a very rapid flight, constantly uttering meanwhile its loud notes. When reposing from its labours, it rests on low objects, such as stumps of trees, fences, low projecting branches, little eminences on the ground, and often on the level earth itself. It is tame in its nature, allowing a near approach before it takes wing. On rainy evenings in November and December, when the air is swarming with insects, and particularly with winged termites, which issue forth from their nests on such occasions, the Blue-tailed Bee-eater congregates in large flocks on the wing, dashes to and fro for hours together, ascending to a great height in pursuit of its prey, and keeping up its not unpleasant notes without intermission. When exhausted with these exertions, they settle on walls, trees, or the ground in little parties, and when rested resume their flight. I have seen such flocks as these night after night on the Galle esplanade, and often observed them flying round and round high above the fort before finally moving off for the night to some distant and common roosting-place. When its prey consists of beetles, dragonflies, or other large insects, which it spies from its perch, it is captured after a sometimes prolonged flight, brought back, and killed before being swallowed by being repeatedly struck against whatever object the bird is seated on. This may often be witnessed when the bird is perched on telegraph-wires, which are a very favourite look-out with it. I have seen it dash on to the surface of ponds and rivers, and seize insects which were passing over the

water. Mr. Holdsworth has observed it hunting close to the surface of the sea, at a distance of a quarter of a mile from the shore. Jerdon notices its habit of congregating together, and writes that on one occasion he saw an "immense flock of them, probably many thousands, at Caroor, on the road from Trinchinopoly to the Nilghiris." They were sallying out from the trees lining the road for half an hour or so, capturing insects, and then returning to them again. As a rule they do not consort in close company, but live in scattered flocks of about half a dozen, and often one or two birds constantly frequent the same locality. The note is difficult to describe. Jerdon not inaptly speaks of it as "a full mellow rolling whistle." This Bee-eater retires late to roost, collecting to one spot from many miles round, and forming a large colony which pass the night in thickly foliated trees or bushes. On Karativoe Island I discovered one of these roosting-places; the birds were flying over from the mainland some miles distant, and continued to arrive from various points on the opposite coast until it was too dark to distinguish them on the wing. They resorted to the borders of a small back-water beneath the high sand hills of the island, which was lined with mangrove-trees, the thick branches of which afforded them a safe refuge.

Nidification.—Mr. Hume writes, in 'Nests and Eggs' (Rough Draft), that "the Blue-tailed Bee-eater breeds from March until June pretty well all over continental India, in well-cultivated and open country. Like all the rest of the family it breeds in holes in banks, and lays usually four or five eggs. The holes are rarely less than four feet deep, and I have known them to extend to seven feet. At the far extremity a rounded chamber, as a rule not less than six inches in diameter, is hollowed out for the eggs, and at times this chamber has a thin lining of grass and feathers, which I have never yet met with in the nests of the other species." The banks of the Nerbudda, Mahanuddee, Ganges, a stream near Baraich, and localities at Lahore, Nujgeebahad, and Mirzapore are cited as breeding-places of the species; and Mr. Hume himself found a colony established in a railway-cutting at Agra, where the engines "passed twenty times a day within two feet of the mouths of the holes." The eggs are white, highly glossed, and very spherical ovals, averaging 0.88 by 0.76 inch.

MEROPS VIRIDIS.

(THE GREEN BEE-EATER.)

Merops viridis, Linn. Syst. Nat. i. p. 182 (1766); Bonn. Enc. Méth. Orn. pt. i. p. 273, pl. 105. fig. 3 (1790); Sykes, Cat. no. 23, J. A. S. B. iii. (1834); Blyth, Cat. B. Mus. A. S. B. no. 236, p. 53 (1849); Kelaart, Prodromus, Cat. p. 119 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 173; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 84 (1854); Gould, B. of Asia, pt. vii. (1855); Jerdon, B. of Ind. i. p. 205 (1862); Holdsworth, P. Z. S. 1872, p. 422; Hume, Nests and Eggs, p. 99 (1873); Adam, Str. Feath. 1873, p. 371; Hume, ibid. 1875, p. 49; Legge, Ibis, 1875, p. 281; Oates, Str. Feath. 1876, p. 304; Dresser, B. of Europe, pt. 51 (1876).

Merops orientalis, Lath. Ind. Orn. Suppl. p. 33 (1801).

Merops indicus, Jerd. Madr. Journ. xi. p. 227 (1840).

Merops torquatus, Hodgs. Gray's Zool. Misc. 1844, p. 82.

The Indian Bee-eater, Edwards, pl. 183.

Le Guépier à gorge bleue, Levaill. pl. 10. p. 39.

The Common Indian Bee-eater (Jerdon); *Flycatcher*, Europeans in India and Ceylon; *Hurrial*, *Patringa*, Hind.; *Bansputtee*, lit. "Bamboo-leaf," Bengal; *Chinna passeriki*, Tel., lit. "Small green bird" (Jerd.); *Mo-na-gyee*, Arracan (Blyth).

Kurumenne kurulla, Sinhalese; *Kattalan kuruvi*, Tamils in Ceylon.

Adult male and female. Length 9·5 to 10·5 inches, according to length of tail; wing 3·6 to 3·8; tail 5·1, central feathers 2·0 to 2·3 longer than rest; tarsus 0·4; middle toe and claw 0·6; bill to gape 1·4 to 1·55.

Iris scarlet; bill black; legs and feet brown, the edges of scales whitish.

Above leaf-green with a bronze lustre, paling to bluish green on the tertials, rump, and upper tail-coverts; basal or concealed portion of the head- and nape-feathers golden fulvous, showing on the surface at the occiput and nape; quills deeply tipped with blackish; inner webs of secondaries and borders of those of primaries pale cinnamon, which is likewise the colour of the under wing; tail green, with the tips of the shorter and elongated portion of the central feathers blackish.

A broad black stripe from nostril and gape over the eye and ear-coverts; above it a narrow yellowish-green supercilium; chin and throat greenish turquoise-blue, deepening into brownish green on the upper breast, and paling into bluish green on the lower parts and under tail-coverts; across the throat a conspicuous black band, edged above and beneath with bright yellow-green; vent whitish.

Birds in old plumage have the nape and occiput much yellower than those in good feather, the paler colour being the result of abrasion; this must not, however, be confounded with the fine aureous lustre observable in some specimens, particularly those from N.E. India and Burmah.

Young. Iris light red or yellowish red; bill generally pale at the base beneath; legs and feet blackish slate. Central tail-feathers not lengthened.

Above green, the feathers edged with bluish; aural stripe blackish brown; throat, neck, and chest greenish blue, palest on the chin; lower breast and belly albescent; under tail-coverts bluish green. Some nestlings have the throat tinted with yellowish. The black throat-bar is acquired at a very early age, but is narrow and ill-defined, and in some edged with blue; the long central tail-feathers are likewise acquired, about the same time, by a "nestling" moult, although tolerably old yearlings may now and then be seen without them.

Obs. Ceylonese specimens of this Bee-eater vary, as above mentioned, in the golden hue of the nape and hind neck, but do not exhibit the brilliant hue of birds from Cachar and Burmah, to which Hodgson gave his name of

ferrugineiceps: they are typical *M. viridis*, like birds from Central and Southern India; but it must be remarked that occasionally very rufous-headed specimens are procured in Madras. That the species is variable in this character throughout its entire habitat may be gathered from the fact, demonstrated by Mr. Hume, of the Sindh race almost wanting the rusty golden tinge. In Ceylon I have observed that nestling birds vary in the extent of the brighter colours of their plumage when these are first put on, the development of such tints depending perhaps on the physical vigour of the individual. I once shot a pair of young green Bee-eaters together, which were, of course, out of the same nest—one with the normal plain green throat and short tail of the nestling, the other with the blue throat-band appearing and the central tail-feathers half-grown. Perhaps the latter would always have been a more brilliantly plumaged bird than the former; for the difference in age, at most 24 hours, could scarcely have accounted for the backwardness of the plainer specimen in acquiring its adult character. As regards the relative size of Indian and Ceylonese birds, I find that the wings in 8 specimens from Pegu (as given in 'Stray Feathers') vary from 3.6 to 3.8 inches, precisely the measurements given above for Ceylonese birds. Some Indian examples have the central tail-feathers longer than any I have seen in Ceylon; one specimen from Kamptee in the British Museum has them 2.6 inches beyond the adjacent pair, 2.3 being my limit. The dimensions given by Mr. Armstrong of the wings of several Burmese specimens, viz. 4.6 to 5.2 inches, are most probably those of some other species entered by a printer's error in his note on *M. viridis*.

Concerning the species in North Africa, Mr. Dresser writes that examples from Egypt, India, and Abyssinia all have the throat markedly green and the head but slightly tinged with rufous. This is, of course, to be expected, in continuation of the characters displayed by the westernmost of Indian birds, viz. those from Sindh. He further remarks that, according to his experience, Indian specimens have, as a rule, the throat tinged with verditer-blue, and that those from Ceylon exhibit this character to a still greater extent; this, however, is with us somewhat variable, as I have demonstrated above.

Distribution.—The Green Bee-eater is a resident species and very numerous in all the dry parts of the low country. It is most abundant about open scrubby land near the sea-coast round the north of the island and along the south-east and eastern sea-boards. Its habitat seems to be restricted to a nicety by the influence of climate. It is common in the interior of the northern half of the island, as well as in the maritime regions, and can be traced along the foot of the western slopes of the Matale ranges from Dambulla to Kurunegala, and thence across the dry country on the north of the Polgahawella and Ambepussa hills to Chilaw and Madampe, near which it stops, not being found south of Nattande. So much does it avoid a moist atmosphere that it extends for a few miles south of Kurunegala, on the high road to Polgahawella, and suddenly vanishes on the road entering the hills. South of these limits it is unknown throughout the Western Province and the south-west hill-region, reappearing again just to the eastward of Tangalla, where the climate again becomes dry; beyond this all round the coast it is common, being particularly numerous in the Hambantota and Yāla districts. I have traced it through the interior to the foot of the Haputale hills, but it is much scarcer there than at the sea-coast. In the Eastern Province it inhabits the high cheenas in the neighbourhood of Bibile, which attain an altitude of 1000 feet, and which is the highest point I have found it to attain in Ceylon. Mr. Holdsworth remarks, *loc. cit.*, that it occurs about Colombo. I conclude that the evidence on which this place is included in its range must be that of a stray bird; for I have never observed it anywhere nearer to it than the above limits, neither has Mr. MacVicar nor the taxidermist of the Colombo Museum, both of whom have collected for many years in that part.

This species is spread all over India, extending into Burmah, Tenasserim, Arrakan, and the Indo-Chinese countries. It is common in the south of the Peninsula and ascends the hills. Mr. Fairbank procured it at the base of the Palanis, and Mr. Davison has shot it at an elevation of 6000 feet above the sea in the Nilghiris and found it breeding at about 5000 feet. In the Deccan and Khandala district it is common according to Mr. Fairbank, and the same is true as regards the north-west of India; for Mr. Adam records it as very plentiful about the Sambhur Lake, and Mr. Hume found it pretty common all the year round in Upper Sindh, though comparatively rare in Lower Sindh. It is found along the base of the Himalayas, but does not extend to any elevation. In Chota Nagpur it is one of the "most abundant of birds." In Cachar Mr. Inglis says it is common between August and April, in which latter month a large number migrate. In Pegu it is extremely numerous in the low country, but not in the hills. In Tenasserim it is generally distributed; but it is absent from the islands of the Bay of Bengal, where our other two species are found. It appears to be a seasonal visitant to the neighbourhood of Calcutta, for Capt. Beavan records

that it arrives at Barrackpore in October. Westward of India it extends through Beluchistan and Persia to Northern Africa, and there is not uncommonly found in Egypt, Nubia, and Abyssinia.

Habits.—This is one of the most charmingly fearless little birds in Ceylon; unlike the last it is very terrestrial in its habits, perching all day on some little bush or low stick near the ground, and sallying out like a Flycatcher after its food, when it at once returns to its perch or sweeps off to another close by. It is generally found in pairs, or three or four in scattered company, which frequent roadsides and dry open ground of all description where they can find objects to take up their watch upon. About Trincomalie, and, in fact, anywhere on the sea-coast of the eastern side of the island, it is very fond of the sandy scrubby wastes lining the sea-beach, and is so tame that it may be almost knocked down with a stick, so near an approach will it allow before taking wing. In the interior a favourite locality with it is the dried-up paddy-fields in the neighbourhood of the village tanks. It roosts in little colonies, retiring early to rest and congregating in close company; it resorts usually to the same tree, round which much noisy preparation goes on—flying up and wheeling round, alighting on a neighbouring tree-top and then returning, after which the little flock will start out again from the branches and make another little detour, keeping up all the while a continuous clamour. Its note is a sweet little chirrup, unlike the loud voice of the last species. It is either uttered when the bird is perched or when it is sailing along in pursuit of an insect, which it seizes with an audible snap of its bill. It usually preys on small flies or minute Coleoptera, avoiding large dragonflies and other giants of the insect kingdom, upon which the last species feasts and beats to death in the manner aforementioned. Jerdon says that he has seen one occasionally pick an insect off a branch or a stalk of grain or grass; and Blyth has seen them assembled round a small tank seizing objects from the surface of the water, after the manner of a Kingfisher. I have also observed them about rushy jheels and small tanks, but they are not particularly partial to the vicinity of water.

Nidification.—This Bee-eater breeds in the sand hills at Hambantota and other similar localities in Ceylon. I found the young fledged, on the south-east coast, in June, but did not succeed in finding any nests. The nesting-time is in April and May. Mr. Hume says that it prefers to breed in sandy banks or cliffs, but that he has found the nest in a mud wall, and once in a perfectly level barren plain. It cuts the hole, after the manner of the last species, with its bill, scraping away the loose earth with its little feet, and sometimes excavates to a depth of 5 feet, the passage increasing in width and often, according to Mr. Adam, declining at an angle of 30° from the entrance to the egg-cavity, which is about 3½ inches in width. No nesting-materials are used, the eggs, which vary from three or four (the usual number) to seven, being laid on the bare ground. The eggs are nearly spherical in shape, milky white, and “brilliantly glossy.” The average size of a large series is 0.78 by 0.7 inch.

MEROPS SWINHOLL.

(THE CHESTNUT-HEADED BEE-EATER.)

Merops quinticolor, Vieillot, N. Dict. xiv. p. 81 (1817); Kelaart, Prodromus, Cat. p. 119 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 174; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 88 (1854); Jerdon, B. of Ind. i. p. 208; Holdsworth, P. Z. S. 1872, p. 423; Walden, Ibis, 1873, p. 301; Legge, Ibis, 1874, p. 13.

Merops erythrocephalus, Brisson, Av. iv. p. 563; Blyth, Cat. B. Mus. A. S. B. p. 53 (1849); Swinhoe, P. Z. S. 1871, p. 348.

Merops swinhoei, Hume, Nests and Eggs (Rough Draft), p. 102; id. Str. Feath. 1874, p. 163; Ball, ibid. p. 386; Armstrong, ibid. 1876, p. 305.

Le Guépier quinticolor, Levaillant, Hist. Nat. Guépriers, p. 51, pl. 15 (ex Ceylon).

The Fire-coloured Bee-eater, Kelaart, Prodromus; "*Flycatcher*" of Europeans in India and Ceylon.

Kurumenne kurulla, Sinhalese, Southern Province; *Pook-kira*, Sinh., N.W. Province.

Adult male and female. Length 8·4 to 8·6 inches; wing 4·2 to 4·3; tail 3·3; tarsus 0·45, middle toe and claw 0·65; bill to gape 1·6 to 1·8.

(In this species the tail-feathers are not elongated, but the tail is somewhat sinuated, the central pair being rounded at the tips and longer than those adjacent, though shorter than the laterals.)

Iris scarlet; bill black; legs and feet dark vinous brown or purplish brown.

Head, hind neck, sides of the same, interscapular region, and upper edge of black throat-band bright chestnut; wings and tail dull green, edges of wing-coverts, terminal portion of tertials, and edges of rectrices bluish; rump and upper coverts pale cerulean blue, tips of the longer-coverts darker; tips of quills and rectrices, with the exception of the centrals, brownish black; inner webs of secondaries, borders of those of primaries, and under wing cinnamon-red as in the other species.

A black facial stripe, narrower than in the last, passing from the gape beneath the eye; chin and throat rich saffron-yellow; black throat-band bordered beneath with golden yellow; beneath this the underparts are green, passing into pale greenish blue on the lower breast, abdomen, and under tail-coverts.

Young. Birds of the year have the chestnut of the upper surface paler, the throat whitish, the black band ill-defined and slightly edged with yellow beneath, the wing-coverts and secondaries margined with blue, and the chest greenish blue like the lower parts. The nestlings, which are blind for the first few days, quickly acquire the feathers of their first plumage as here described.

Obs. This species was first made known from Ceylon—that is to say, specimens were sent to Levaillant from there, and the bird was named by him, in his work on the 'Guépriers,' the *Guépier quinticolor*; but by some oversight he gave a plate of the species inhabiting Java, and accompanied it by a description, in which he stated the colour of the throat to be "d'un jaune jonquille, lequel jaune est terminé au bas par un collier noir," making no mention of the triangular chestnut throat-patch above the black mark, which character is wanting in the Javan bird, as it likewise is in his plate. His plate and description did not therefore apply to the Ceylon bird, nor can Vieillot's name, which was founded on the plate. *Merops quinticolor* accordingly is the Javan bird, and not the Indian. The matter has been referred to by the late Mr. Swinhoe and Lord Tweeddale in the references above given, and Mr. Hume gave the Indian bird its present title in his notice of it in 'Nests and Eggs,' as it was without a name. Ceylonese examples correspond with Indian and Burmese in size and likewise in coloration of the throat, though individuals from any district will differ *inter se* in this latter respect. One specimen I have examined in the British Museum from Madras has a wider black throat-band than any I have seen from Ceylon. Pinang specimens correspond with Ceylonese.

Distribution.—This handsome Bee-eater is sparingly dispersed over the island, inhabiting some localities

in considerable numbers, while in other districts mere stragglers are met with. In the south it is common on the Gindurah river, commencing above Baddegama and extending up into the hills of the Hinedun Pattu; it likewise frequents the banks of the Kaluganga, Kelaniganga, and Maha-oya in the Western Province, and is found here and there through Saffragam. To the north of these localities it is located about Kurunegala, on the Deduru-oya, in the Puttalam district, and in isolated spots in the neighbourhood of Dambulla. Mr. Parker has met with it in the Anaradjapura district, and it occurs sparingly throughout the northern forests. I have seen it between Trincomalie and Mullaitivu, but I do not think it is to be found much to the north of the latter place. In the Kandyan Province it is much more common than in most parts of the low country, inhabiting the vale of Dumbura, Deltota, Nilambe, Maturatta, and Uva generally. It does not ascend to the Nuwara-Elliya plateau.

This species is found in most of the forest-districts of India, Burmah, and Tenasserim, inhabiting the Andamans and extending to Pinang. Jerdon writes that it occurs in the Malabar forests and adjoining mountains, and is not uncommon in the Wynaad and other elevated wooded districts. I notice that Mr. Bourdillon did not procure it in the Travancore hills, nor Mr. Fairbank in the Palanis. The latter gentleman found it on the sides and base of the Goa and Savant-Wade hills, and records it as an inhabitant of the entire west coast as far north as Guzerat, whence, however, I do not observe that it has been procured. Capt. Marshall writes, in 'The Ibis,' 1872, that it is found in the Doon and the Terai, and along the whole of the southern skirts of the Himalayas to the valley of the Brahmapootra. In Chota Nagpur it is rare, Mr. Ball recording the occurrence of a single pair only; in Cachar it is migratory, being common during April and May: in Southern Pegu it occurs very sparingly; Mr. Armstrong met with it there in the month of February: at Thayetmyo Captain Feilden says it is rare, and in the plains of Pegu Mr. Oates did not meet with it at all. Mr. Davison found it throughout Northern Tenasserim, and in the Andamans he procured many specimens, meeting with it in Port Blair, Great and Little Cocos Islands, &c., but in the Nicobars it was not found.

Habits.—The banks of rivers which flow through forest or the borders of jungle-begirt tanks are the favourite localities of this bird in the low country. In the Central Province I have seen it principally in the vicinity of rivers in the deep valleys leading to the Mahawelliganga, on roads leading through jungle, and in spots studded with high trees on the sides of steep ravines. It is usually in pairs, and is very arboreal in its habits, sitting on the topmost or most outstretching branches of high trees overhanging water, and darting thence on its prey, much after the manner of a Flycatcher. It takes short flights, and often returns to the same perch again. It is a very pretty object, with its bright green plumage and glistening rufous head, as it darts from the fine old trees lining the forest-rivers down to the edge of the sparkling stream, and glides over the sandy bed, quickly catching up some passing insect. A pair may sometimes be seen seated on a dead twig, touching one another, so very sociable is it in its disposition. It has a soft note, differing from that of either of the foregoing species, which it generally utters from its perch.

Nidification.—I found the nest of this bird on the banks of the Gindurah in the month of April. The hole was excavated in the soft mould near the top of the bank, went in about 2 feet, with an average diameter of 2 inches, and at the end widened into a cavity 4 or 5 inches in height and nearly double that in width. There were four young ones lying on the bare ground, which was swarming with living maggots, ants, and flies, brought in for their food by the old birds. The nestlings showed a marked difference in age; two were perhaps not three days old, and the others had the green scapular feathers already sprouting. Layard found the nest in the same month, and says the eggs are two in number.

Mr. Davison writes that the hole is sometimes 6 feet in depth when excavated in sand, and that some turn off at a right angle, while others take a circular direction. The eggs are stated to vary from four to six in number, and to be pure white, very glossy, and nearly spherical in shape; they average 0.87 by 0.76 inch. The old birds are said to sit very close, allowing themselves to be dug out.

PICARIÆ.

Fam. CYPSELIDÆ.

Bill very small, but with the gape enormous, unfurnished with rictal bristles; tip hooked. Wings very long and pointed, with ten primaries. Tail variable, short and even, or long and much forked, of ten feathers. Legs and feet small and feeble; hind toe either directed forward or more or less reversible to the front.

Sternum with the keel very deep. Humerus very short. Throat furnished with large salivary glands.

Genus CHÆTURA.

Bill very small, triangular, the gape receding far back and very wide; culmen curved, flattened at the base, the tip hooked. Nostrils exposed. Wings very long and pointed. The humerus and ulna very short; the 1st quill the longest; the inner very short, imparting a sickle-shape to the wing. Tail short, even or rounded at the tip; the shafts rigid, very acute, and projecting some distance from the web. Tarsus short, stout, feathered just below the knee, and the rest covered with a naked skin. The three front toes nearly equal, the hallux directed backward but reversible to the front; claws stout, deep, and much curved.

CHÆTURA GIGANTEA.

(THE BROWN-NECKED SPINE-TAIL.)

Cypselus giganteus (V. Hasselt), Temm. Pl. Col. 364 (1825).

Acanthylis caudacuta, Blyth, Cat. B. Mus. A. S. B. p. 84 (1849); Kelaart, Prodrumus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 170.

Acanthylis gigantea, Jerd. B. of Ind. i. p. 172 (1862); Holdsworth, P. Z. S. 1872, p. 419; Ball, Str. Feath. 1873, p. 55; Legge, Ibis, 1875, p. 280; Tweeddale, Blyth, B. Burmah, ext. no. 1875, p. 84. no. 183.

Chætura gigantea, Sclater, P. Z. S. 1865, p. 608.

Chætura indica, Hume, Str. Feath. 1873, p. 471, et 1876, p. 286.

Hirundinapus giganteus, Walden, Ibis, 1874, p. 131.

The Needle-tailed Swallow, Lath. Gen. Synopsis; *The Spiny-tailed Swift*, Kelaart.

Wahavaniya, Sinhalese.

Adult (from three Ceylonese specimens). Total length, estimated from skins, 9·5 inches; wing 7·8 to 7·95, reaching 1·5 beyond tail when closed; tail 2·7 to 2·9, bare shafts of central feathers 0·35 to 0·4; tarsus 0·65 to 0·7; middle toe 0·5, its claw (straight) 0·35; bill to gape 1·0.

Iris brown; bill blackish or dark brown; legs and feet livid brown or fleshy purple, claws blackish brown.

Head, back and sides of neck, upper part of back, anterior scapular feathers, wings, sides of rump, and upper tail-coverts shining green-black, glossed on the wing-coverts, secondaries, and sides of rump more or less with blue; back

whity brown, of variable paleness, blending into the surrounding green; inner margins of quills and tertials light mauve-brown, palest on the latter; shafts of tail-feathers blackish brown.

Lores intense black, between which and the nostril there is a whitish or whity-brown spot; throat a corresponding pale colour—that is, lightest in those birds which have the palest frontal spots; beneath umber-brown, glossed obscurely with green, and blending gradually on the throat into the pale hue of the chin; under tail-coverts and a broad streak leading from them above the flank to opposite the centre of the back white; shafts of under tail-coverts black; under wing-coverts pale mouse-brown.

Young. Immature birds have the frontal patches scarcely discernible, the head browner than the adult, the back darker, and the under surface less suffused with green.

Obs. This Swift is variable in the pale markings about the face and chin, in the light hue of the back, and in the extent of the blue gloss on the upper plumage. I have examined a series from Labuan, Malacca, Singapore, and South India, and I find that the dark-backed birds, which are evidently not fully aged, have the chin and loreal spots of a correspondingly dark hue. Mr. Hume has separated the Indian birds as *C. indica*, on account of their more pronounced white chin and frontal patches, as distinguished from what he considers to be true *C. gigantea* from Java, without the white chin. If the type from this island had not the whitish markings it must have been, in all probability, an immature bird. Temminck's plate shows no white nostril-patches; but in those days artists were not particular.

I am not conversant enough with Indian specimens to say whether they never show an absence of the white patches either as young birds or as individuals; but those from all other quarters, as I have just remarked, vary in this respect. Birds from each end of the geographical limit of the species, viz. from India and Celebes, have the white spots alike, which argues in favour of there being but one species. Two examples from Labuan measure 8.1 and 8.2 inches in the wing; one is a dark-backed bird, the other a light one, and the chin and forehead tally with the back in each: two from Malacca measure 8.1 and 7.9 inches in the wing; one has a dark back and no loreal spot, the other is slightly paler and has an indication of the light patches. One from Singapore measures 7.9 inches, has a very dark back, no frontal patches, and a dull brown under surface; it is evidently a young bird. Another from the Nilghiris is entirely a pale bird, with light chin- and nostril-spots. Lord Tweeddale finds that adolescent examples from the Andamans agree with Malaccan ones in his collection.

Distribution.—The Brown-necked Spine-tail is a resident in the Ceylon hills, wandering at uncertain times during its day's peregrinations over the whole island. In the upper ranges it is most often seen frequenting the Horton, Nuwara-Elliya, Kandapolla, and Elephant Plains, over which it dashes at one moment, while at the next it sweeps round the adjacent hills in its headlong course. It is frequently noticed in the coffee-estates in the surrounding districts. Mr. Elwes writes that it is often seen in Dimbulla; and Mr. Bligh, who observes it yearly in the Haputale gorges, tells me that it comes into that district to breed usually about the month of April. It inhabits the Morowak-Korale and Kukkul-Korale hills, in which I have seen it in various months, and I have no doubt it breeds there in sequestered places. I have seen it in large flocks on the sea-coast at Tangalla, and Capt. Wade has met with it at Yāla. On one occasion, too, I encountered it in the north of the island. It hawks, as I have seen *C. caudacuta* in Australia, at an enormous height, and when rained on by a monsoon shower descends to earth, and is thus seen for a few minutes in the low country, vanishing again on the return of sunshine. Layard knew it principally from Nuwara Elliya.

In India Jerdon observed it chiefly in the south of the peninsula, specifying the Nilghiris, Malabar, and the Wynaad as the localities where he met with it. Mr. Carter found it during the S.W. monsoon at Coimbatore, Salem, and on the Anamully hills at various elevations up to 6000 feet. The species does not seem to extend into the north of India, where its Australian and Chinese congener, *C. caudacuta*, singularly enough, is found in considerable numbers. Our bird inhabits Tenasserim, and Mr. Inglis obtained it in Cachar. It is common in the Andamans, but has not been procured in the Nicobars. It extends down the Malay peninsula (taking in Pinang) to Singapore, and thence to Java, Labuan, Borneo, and Celebes, to the south-east of which latter group it has not yet been observed.

Habits.—This magnificent Swift and its Australian ally are the swiftest creatures in existence, excelling all other living beings to such an extent in their powers of locomotion that they cannot fail, as the per-

fection of an all-wise Creator's handiwork, to excite wonder and admiration in the mind of the naturalist and true lover of nature. That any bird can sustain an aerial course of such rapidity for 12 or 14 hours at a time, without any cessation from its exertions, must of necessity excite the astonishment of the most careless thinker, while to the inquiring mind it amply demonstrates what a marvel of strength and perfection of structure are exhibited in this wonderful bird. A casual glance at one of these Swifts will show that it is entirely formed for speed. The pointed aspect of its face and bill, with the thick lores and stiff superciliary feathers to protect the eye from the rush of air, its broad body, gradually tapering from the rump to the acute tip of the tail, give it the form of a feathered *projectile* constructed to acquire immense velocity, which, in truth, its rigid sickle-shaped wings, with their specially lengthened metacarpal bones imparting so much power to the downward stroke, cannot fail to give it. It is this peculiar outward form which imparts to it a so much higher power of speed than exists in other Swifts, such as the next species, for the structure of the sternum is not so very much superior to that of the Alpine Swift. Dr. Schlater writes, in explanation of the drawing of the sternum of this Spine-tail which is contained in the P. Z. S. 1865, that it is broader in proportion and less elongated than in *Cypselus*, and that the anterior point or apex of the keel is not carried so far forward. Apparently these slight differences would not give the Spine-tail the superiority over the ordinary Swift which it possesses were it not for its admirable external shape and greater length of metacarpus.

This Spine-tail haunts the vicinity of rocky precipices and steep hill-sides, dividing its time between careering round them and up and down adjacent valleys and sweeping over the surrounding country, especially where there exist open tracts, in search of food. When hawking in a large flock its flight is not unlike that of the Alpine Swift; but it is varied by vast circles and detours made with astonishing swiftness, as if merely for exercise, returning in a moment to its place in the flock. It is not in this manner, however, that its great powers of flight are put forth; it is in returning at nights from its day's labours to its far-distant roosting-place that these are brought out, and then its flight is as swift as the momentary rush on its quarry of the Peregrine Falcon. I have experienced this on more than one occasion in the Ceylon hills, where a whiz just over my head, like that of a bullet, has brought my attention to the onward course of one of these birds, which the next moment had disappeared far away in the gloom of the tropical evening. Mr. Carter writes, concerning a flock that he fired at, "I should not like to say how many I missed; but some idea of their rate of speed may be formed when I say that in seeing one coming towards me and turning sharp round, by the time I sighted it it was too far . . . The two I got I killed passing over me, making great allowance and firing far in front. One, although quite dead when I came up to it, had managed to clutch a stone, which remained tight in its claws." Mr. Davison observed that they hawked very high in the air, betraying their almost invisible presence by a sharp clear whistle. At nights they were found, in company with other Swifts, about ponds or tanks. Concerning the roosting of this Swift, which is one of the most interesting points in its economy, very little seems to be known. Its spinous tail is evidently a provision of nature to afford it support against the rock to which it clings at night. It most probably, as suggested by Jerdon, has some fixed roosting-places, to which large flocks resort from immense distances, arriving no doubt at a late hour, and thus preventing the possibility of their haunt being discovered from observations of the birds on their way thither. He observed that they flew towards the coast, and on one occasion witnessed an enormous flock passing him on their way towards the sea some time after sunset, although there was no situation on the west coast where they could have roosted; consequently the idea suggests itself that they make for the sea-shore and then travel along it to their nightly rendezvous.

Layard was informed by the natives that this species nested in rhododendron-trees, which, it is scarcely necessary to remark, is an erroneous idea. It breeds, as its near ally the White-necked Spine-tail, in lofty cliffs. Mr. Bligh informs me that they yearly resort to some inaccessible precipices in the Haputale ranges for the purpose of breeding, but he has been unable to find their nests or procure their eggs.

Genus CYPSELUS.

Bill slightly stouter and more curved from the base than in *Chaetura*. Wings equally long, the metacarpus shorter in proportion; the 2nd quill equal to, or longer than, the first. Tail variable in length, emarginate or deeply forked. Tarsus very short, feathered; all four toes directed forward, but the two inner reversible, shorter than in the last.

CYPSELUS MELBA.

(THE ALPINE SWIFT.)

Hirundo melba, Linn. Syst. Nat. i. p. 345 (1766).

Hirundo alpina, Scop. Ann. i. Hist. Nat. p. 166 (1769).

Cypselus melba, Illig. Prod. Syst. Mamm. et Av. p. 230 (1811); Gould, B. of Europe, pl. 53 (1837); Blyth, Cat. B. Mus. A. S. B. no. 421. p. 85 (1849); Kelaart, Prodromus, Cat. p. 117 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 167; Jerdon, B. of Ind. i. p. 175 (1862); Tristram, P. Z. S. 1864, p. 431; Sclater, P. Z. S. 1865, p. 598; Holdsworth, P. Z. S. 1872, p. 419; Severtzoff, Faun. Turkestan, pp. 67, 145 (1873); Dresser, B. of Europe, pt. 31 (1874); Butler & Hume, Str. Feath. 1875, p. 453.

Le Grand Martinet à ventre blanc, Mont. Hist. Ois. vii. p. 316 (1783).

Le Martinet à gorge blanche, Levaillant, Ois. d'Afr. (1806).

Andorinhão gaivão, Portuguese; *Avion*, Spanish; *Alpensegler*, German.

The Common Large Swift, Kelaart, Prodromus.

Wæhæłaniya, Sinhalese.

Adult male and female. Length 8·5 inches; wing 8·0 to 8·25; tail 3·0 to 3·5 tarsus 0·55; middle toe 0·35, its claw (straight) 0·32 to 0·35; bill to gape 0·85 to 0·9.

The tail is slightly forked in this species.

Obs. These measurements are taken from three Ceylon examples, and are below those of birds from Europe and Africa, some of which, from Switzerland, range as high as 8·7 in the wing. Possibly these Ceylonese specimens were bred in the island, and would almost of necessity be smaller than those from cold countries.

Iris brown; bill blackish, darkest at the tip; feet livid brown, claws black.

Head, all the upper surface with the wings and tail glossy earth-brown, passing over the chest and down the flanks to the under tail-coverts; on the wings and tail a strong brownish-green lustre is often present; feathers of the back, rump, and upper tail-coverts with the shafts perceptibly darker than the web; quills and rectrices darker than the back; lores black, surmounted by a thin whitish line; chin, throat, breast, and abdomen white; the feathers above and below the brown pectoral band and those of the flanks more or less tipped with the same; thighs and tarsal feathers concolorous with the flanks; under wing-coverts dark brown, some of the feathers tipped with white; edge of the wing more or less narrowly margined with white.

Young. Birds of the year have the feathers of the head, sides of the neck, and all the upper surface with fine whitish terminal margins, external edge of wing-lining with conspicuous white edgings, the white throat-patch more extensive, reducing the extent of the brown pectoral band; under tail-coverts tipped with white.

Distribution.—The Alpine Swift takes up its quarters almost exclusively in the upper regions of the Kandyan Province; but, being a bird of such immense powers of flight, it wanders with ease, in the course of a day's hawking, over all parts of the island. Hence Layard observed it at Dambulla and Ratnapura, and I

have seen it at Topare tank. Mr. Holdsworth records it as frequenting Nuwara ELLIYA throughout the cool season, and Mr. Bligh has noticed it both there and in Haputale at various times of the year. In May I found it in great numbers congregated about the high cliffs of Ragalla, which rises above the Elephant Plains, where, as Mr. E. Watson informs me, it is often to be seen. It probably frequents the Gongalla range, in the southern coffee-district, in common with the last species.

Ceylon appears to be the most southerly point of this Swift's range in Asia. It is found all through India, more particularly in the Ghâts, Nilghiris, and Cashmere hills, from which it extends through Western Asia to Europe, which may be most properly styled its head-quarters, and where it is well known in the Alps, Pyrenees, and other groups of mountains. Through Africa it wanders as far as Cape Colony, whence it is recorded by Layard, Andersson, Ayres, Shelley, and others, but in the tropical region south of the Atlas it has not as yet been observed; in the northern parts of the continent it is common, wandering over Egypt and Algeria in the summer, and the same may be said of the northern sea-board of the Mediterranean. Mr. G. C. Taylor records it as plentiful in the Crimea and at Constantinople; Mr. Danford noticed it as a summer visitant to parts of Asia Minor, and Severtzoff found it breeding in scattered localities in Central Asia (Turkestan). To parts of India it is a cold-weather visitant; at Mount Aboo it arrives, according to Captain Butler, in large numbers about the beginning of September, and remains throughout the season. It has not been found to the eastward of the Bay of Bengal, being replaced in Burmah and Tenasserim by *C. pacificus*.

Habits.—This splendid Swift, which, next to the larger species of the foregoing genus, is the swiftest bird in existence, loves to haunt the vicinity of great mountain declivities, towering precipices, ravines, or great river-gorges, about which it dashes at tremendous speed, either in search of its insect-prey, or, as would appear to an eye-witness, from some normal habit of exercising its marvellous muscular power. It is most active, like other Swifts, before rain, when the atmosphere teems with life, or on still evenings, when it may be seen varying its headlong flight with extensive curves and vast swoops, from which it will rise with renewed swiftness and redoubled beatings of its long, sickle-shaped wings. It hawks late in the evening, and it is generally nearly dusk before it directs its course towards the far-off roosting-place which it left in the morning, and the reaching of which will perhaps add some hundreds of miles to the immense distance which it has traversed during the day. Dr. Jerdon, who, to judge by his writings, took much interest in this family, observed them in the south of India flying towards the sea-coast about sunset, and was of opinion that it was their habit to make for the seaside and then follow the coast-line, "picking up stragglers from other regions on their way to the cliffs of Gairsoppa," where he discovered that they roosted. Tickell, as quoted by the same author, noticed these Swifts assembled "of an evening near large ponds in the jungle, dashing into the water with loud screams," like the Common Swift of Europe. They assemble in very large flocks, and, as I noticed at Polanarua, suddenly appear in a locality, and, after hawking it well, as quickly disappear again. It has a shrill, tremulous cry, which has a curious sound as the bird rapidly approaches the spectator, and, instantly passing overhead, is again quickly out of hearing. It is said to roost against cliffs, clinging to the rock in an upright position, for which its powerful and much-curved claws are well adapted.

Nidification.—As regards Ceylon, little or nothing is known of this Swift's breeding. Mr. Bligh is of opinion that it nests in April and May near Nuwara ELLIYA and on the southern slopes of the Haputale range, and it is not impossible that some of the birds observed by me at Ragalla were breeding in the great precipice there. It does not confine itself to cliffs and rock-faces, but will nest in churches and other large buildings. Mr. Hume describes nests sent to him by Miss Cockburn from the Nilghiris as being made of "feathers firmly cemented together with saliva; but vegetable fibre of different kinds and dry grass formed part of the structure, which was a coarse felt-like mass of about 5 inches in diameter, with walls 1 inch thick; and several nests appear to have been grouped together. The eggs are four or five in number, pure white."

CYPSELUS AFFINIS.

(THE INDIAN SWIFT.)

Cypselus affinis, J. E. Gray, Ill. Ind. Zool. i. pl. 35. fig. 2 (1832); Sykes, P. Z. S. 1832, p. 83; Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 235. no. 255; Blyth, Cat. B. Mus. A. S. B. p. 86 (1849); Kelaart, Prodrum, Cat. p. 117 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 167; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 106 (1854); Jerdon, B. of Ind. i. p. 177 (1862); Selater, Ibis, 1865, p. 235; id. P. Z. S. 1865, p. 603; Blyth, Ibis, 1866, p. 339; Holdsworth, P. Z. S. 1872, p. 419; Hume, Str. Feath. 1873, p. 166; Ball, Str. Feath. 1873, p. 370; Hume, Nests and Eggs, i. p. 85 (1873); Dresser, B. of Eur. pt. 33 (1874); Aitken, Str. Feath. 1875, p. 214.

Cypselus nipalensis, Hodgs. J. A. S. B. v. p. 780 (1836).

C. galilejensis, Antinori, Cat. Collez. di Uccelli, p. 24 (1864).

C. galilæensis, Tristram, Ibis, 1865, p. 76.

C. abyssinicus, Streubel, Isis, 1848, p. 354.

The Allied Swift, Gray; *White-rumped Swift*, Jerdon.

Ababil or *Babila*, Hind.; *Huwa bil-bil*, Natives at Saharunpore (Jerdon).

Wæhælaniya, *Læniya*, Sinhalese.

Adult male and female. Length 5·1 to 5·5 inches; wing 5·1 to 5·3; tail 1·8; tarsus 0·4; mid toe and claw 0·5; bill to gape 0·65 to 0·7.

In this species the tail is short, slightly forked, but the feathers not pointed.

Iris deep brown; bill black; feet vinous-brown, claws black.

Head, hind neck, wings, and tail blackish brown, with a slight greenish lustre, and the forehead paler than the crown; back and scapulars glossy green-black, blending into the hue of the hind neck; primaries pale on the inner webs, the tertials and the feathers along the metacarpal joint with fine light edges; rump and its sides, with the chin and centre of the throat, white, some of the feathers of the former region generally with dark shafts; under surface glossy black, paler on the under tail-coverts; under wing brownish black.

Young. Immature birds have the feathers of the under wing-coverts margined with whitish, and the rump more lineated than in the adult; the breast and lower parts are likewise more or less finely edged with whitish.

Obs. This Swift varies considerably in size in different portions of its habitat. In India Mr. Hume has found it varying in the wing from 4·8 to 5·5 inches; and Dr. Finsch gives the wing of specimens from the Blue Nile as high as 5·6 inches; he likewise remarks that a more or less visible superciliary stripe is occasionally visible. I have found the amount of white on the throat to be variable in some examples; it does not quite extend to the chin; probably such are mature birds.

Distribution.—The common Indian Swift is not migratory to Ceylon, as was supposed by Layard, but is merely a wanderer throughout the low country, its movements appearing to be regulated by the weather and monsoon winds. In the south-west of the island I have noticed it at the seaside only during the first three months of the year, although I have seen it in the hilly parts of the interior during the S.W. monsoon, at which season Mr. Parker, of the Ceylon Public Works Department, has observed it at Puttalam. In the north-east I have seen it at both seasons of the year, but am of opinion that it is no more than a straggler over that flat region, traversing it in the course of a day's wandering from its head-quarters in the hills. In the Kandyan Province it is a common bird and a permanent resident there. It appears to prefer the dry climate of Uva to other parts, although I have noticed it in most of the coffee-districts. It is sometimes

met with about Nuwara ELLIYA and on the Horton Plains, but in all probability does not roost in such high regions.

It is a bird of very extensive range, for besides inhabiting the whole of India and Western Asia as far as Palestine, where it is the *C. galilaensis* of Antinori, it extends through Africa to the extreme south. Although found throughout India from the south to the Himalayas, Jerdon remarks that large tracts of country may be traversed at times without seeing a single individual, and Mr. Hume has likewise found it to be very local. In many parts of Sindh he met with it commonly, but throughout Upper Sindh to Sehwan he did not see it. At Mount Aboo and the plains of the surrounding country it is common, breeding in the celebrated Dilwarra temples. It is rare in the Deccan; and Col. Sykes remarks that though found in all districts in India, it is often confined to a small tract in the neighbourhood of some fine large pagodas and other buildings. In the central regions of Nepal it is said by Hodgson to remain throughout the year. In Palestine Canon Tristram records that it is a permanent resident in the Jordan valley, while every other species of its genus is migratory there. In the portions of Africa which are inhabited by it it is likewise non-migratory. With regard to this peculiarity in its economy, it is singular that the same is true of its representative on the eastern side of the Bay of Bengal, the *Cypselus subfurcatus* of Blyth, which Mr. Swinhoe recorded as "resident on the Chinese coast" as far north as Amoy.

Habits.—In the mountains of Ceylon this stout little Swift is usually seen coursing over coffee-estates, steep patnas, or the so-called "Plains" in the upper ranges, while in the low country it affects every variety of open situation, particularly on sultry rainy evenings, when the damp tropical air is teeming with an abundance of insect-food. It congregates in large flocks, and hawks about with a rapid powerful flight, careering round and round at a great height, and then suddenly descending, will fly as low as the Common Swallow, picking up its evening meal right and left with no apparent exertion. In the hills it consorts with the Swiftlet, and may often be seen late in the evening flying with that species in some given direction on its way to a distant roosting-place, probably some inaccessible cliff where it has been bred. It is not usually a noisy bird, its note being a weak scream, resembling that of the European Swift, but not so soft in tone, and which Blyth styled a "shivering" cry. In the breeding-season, however, its cries are incessant; packing in small troops like the common Swift of Europe, it dashes round the spot where its nests are swarming with young, alighting for an instant to convey to the hungry mouths the food which it carries in its bill, and then sweeping off in a body, separates in search of a fresh store or continues its circular peregrinations. Jerdon, who remarks that its flight is fluttering and irregular in the morning and evening, writes that "small parties at these times may be seen flying close together, rather high up in the air and slowly, with much fluttering of the wings and a good deal of twittering talk; and after a short period of this intercourse all of a sudden they separate at once and take a rapid downward plunge, again to unite after a longer or shorter interval." They may occasionally be seen flying beneath culverts and road-bridges like a Swallow, evidently feeding on the insects which congregate about the water in such places. Mr. Blyth, it may be remarked, has stated that he has seen this Swift rise from off the ground.

Nidification.—This species breeds either in large colonies or in company with a few of its fellows, and rears its young at various periods between the months of March and July. It builds in the verandahs of outhouses, beneath bridges and culverts, under overhanging rocks, or in caves, in all of which situations I have known its nest to be found. Layard found them breeding at Dambulla in April about the rocks there, and at Tangalla beneath a bridge. I met with a large colony nesting in March in a salt-store at Kirinde, and another in May under the celebrated wooden bridge at Wellemade in Uva. In the month of April several pairs used to breed annually in a small seaside cave near Trincomalie. Mr. Holdsworth found it nesting "under the rocks overhanging the entrance to the famous temple at Dambulla." The nest is constructed of feathers, straw, grass, and at times pieces of rag, wool, twine, or any miscellaneous material which the bird can find and which will assort well with the rest of the structure. The whole mass is firmly cemented together with the saliva of the bird, and is shaped in accordance with the situation in which it is built, which likewise determines the position of the aperture. The interior is spacious, and sometimes several nests are fastened together. Nests which I have seen in caves or beneath bridges

have had the entrance at the top, and others fixed under tiles have been very long structures with the opening at the end. My correspondent, Mr. Parker, writes me of a pair which took possession of a Red-bellied Swallow's nest under a road-bridge near Kurunegala. To get possession of the eggs a hole had to be made in the side of the nest, which the bird used afterwards as an outlet. On a second visit a piece of the side came out, which the bird clumsily repaired the third year with feathers and leaves, making up a piece of patchwork which reminded one of a "hole in a window-pane stuffed with a piece of cloth!" The number of eggs is generally three; they are long ovals in shape, smooth in texture, and pure white in colour; they vary from 0·8 to 1·0 inch in length by 0·55 to 0·65 inch in breadth.

From what has been written of its nidification in India, it appears that there its nest varies in character, as in Ceylon, according to its situation. Mr. Aitken, writing of its breeding at Berar, remarks that when the nest is attached to the roof of a building and not supported in any way, the straws of which it is composed are so firmly agglutinated that it tears like a piece of matting.

CYPSELUS BATASSIENSIS.

(THE PALM-SWIFT.)

Cypselus batassiensis, Gray, Griff. An. Kingd. ii. p. 60 (1829); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 128 (1854); Jerdon, B. of Ind. i. p. 180; Blyth, Ibis, 1866, p. 340; Sclater, P. Z. S. 1865, p. 602; Holdsworth, P. Z. S. 1872, p. 420.

Cypselus balasiensis, Blyth, Cat. B. Mus. A. S. B. p. 86 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 167.

Cypselus balisiensis, Kelaart, Prodrum, Cat. p. 117.

Cypselus palmarum, Gray & Hardwicke, Ill. Ind. Zool. i. pl. 35 (1832); Hume, Nests and Eggs, i. p. 87; Ball, Str. Feath. 1874, p. 384.

Putta-deuli and *Tari ababil*, Hind.; *Tal-chatta*, Bengal, lit. "Palm-Swallow;" *Batassia*, Bengal (Jerdon); *Chamchiki*, Beng., a name also applied to Bats (Blyth).

Wahaelaniya, Sinhalese.

Adult male and female. Length 5·1 to 5·3 inches; wing 4·3 to 4·7; tail 2·4 to 2·8, outer feather 1·0 longer than the middle; tarsus 0·4; middle toe and claw 0·32; bill to gape 0·5. The wings reach 0·5 beyond tail, which is deeply forked, with the feathers pointed at the tips.

Iris sepia-brown; bill black; legs and feet vinous-brown; claws blackish.

Above glossy ash-brown, darkest on the head and tail; the lower back and rump paler than the interscapular region and with dark shafts to the feathers; quills blackish brown, with the internal margins slightly paler than the rest.

Bases of the loreal feathers white; beneath mouse-grey; the under tail-coverts with dark shafts, and the flanks darker than the breast.

Young. On leaving the nest the young bird is clothed like the adult, but the upper surface is not so glossy.

Distribution.—The little Palm-Swift is the most numerous of its genus in Ceylon, and is found throughout the entire low country and sub-hill region. It is seen now and then in the Kandy district; but is not a permanent resident there, and on the Uva side of the Central Province it ascends from the plains in fine weather to a considerable altitude, Mr. Bligh informing me that he has seen it in Haputale as high as 4000 feet. It is a common bird in the south and west of the island, and more numerous on the sea-board than in the interior. In the palmyra-districts, on the northern coasts, it is very abundant, and is the only Swift, as far as I can ascertain, which commonly affects the Jaffna peninsula and adjacent islands.

As regards the Palm-Swift's distribution in India, Jerdon informs us that it is abundant in all districts where palmyra- and cocoanut-palms are found, and that it is common on the Malabar coast, the Carnatic, the northern Circars, and Bengal, but rare in the central tableland and North-west Provinces. In Chota Nagpur Mr. Ball says it is found in abundance where its favourite trees are common, and so local is it that he has observed a small colony settled in a single tree, where, perhaps, for many miles around not another tree or Swift could be found. It is said to extend into Assam and Burmah; but this can only be as a straggler, as it is not recorded in 'Stray Feathers' from either Pegu or Tenasserim; it is replaced in these provinces by *Cypselus infumatus*, the Sooty, or, as called by some, the "Palm Roof-Swift." It has not as yet been procured in Sindh.

Habits.—The localities preferred by this Swift are fields and open lands in the vicinity of cocoanut- and palmyra-groves. In the northern parts of the island it is seen much about the sea-shore, which is, in many places, completely lined with the widely spread *Borassus* palm, its favourite tree all over India; indeed Jerdon remarks that it is seldom found at any distance from where this palm grows. This, however, is not its habit in Ceylon; for it abounds in many parts of the Western Province, where the tree is unknown, but where its place is supplied by the cocoanut, and particularly the areca-palm, around which latter it careers

in little flocks with lively screams in just the same manner. These remain about the place of their birth throughout life, roosting in the trees which contain the nests in which they were reared, and to which they return early in the evening, flying up to the fronds and again darting off in search of their evening meal. It associates in parties of considerable numbers, and may often be seen, in company with the Swiftlet, hawking at evening time over the paddy-fields in the Western Province. Its flight is swift and regular at times and fluttering at others, particularly when hawking in a flock; it flies late at nights, and, as Dr. Jerdon remarks, it is not uncommon to see Bats and these Swifts hawking together at dusk, a circumstance which perhaps has given rise to the belief that it is nocturnal in its habits, and is also doubtless the origin of its Bengal appellation "*Chamchiki*." I have seen it flying rather leisurely about, taking winged termites, at sunset. Its note, which it constantly utters, is likened by Blyth to the sound *titèeya*, which is a very correct rendering of it, although there is a pretty shrillness in the cry that cannot be well expressed in words. Dr. Hamilton considered this bird to be nocturnal in Bengal, appearing at sunset and going to rest at sunrise! It certainly hawks very late; but it is difficult to understand what became of those that were seen at sunrise, and whose disappearance must have given rise to this strange belief.

Nidification.—This species breeds from October until April, probably rearing two broods in the season, as I have found eggs and young of the same colony during both these months. Although it invariably nests in the palmyra-palm wherever these trees are to be found, I am of opinion that it takes to the areca in the south of the island, as I have seen them thronging around these trees at Galle during the breeding-season. It very often selects an isolated palmyra, and sometimes one situated in a most public spot, to breed in—to wit, the solitary tree which stands on the shore in front of Fort Frederick at Trincomalie, and in which there is always a little colony to be found. The nest is built on the under surface of the hanging fronds, which droop round the head of the trunk beneath the cluster of more vital and horizontal ones; it is attached principally to the ribs of the leaf, and situated high up where these lie at a convenient distance from one another. If, however, it is placed low down, near the tip, it is firmly fixed to the hollow portions as well as the ribs. In shape it resembles a little open pocket, with a shallow interior of about 1 inch in depth and $1\frac{1}{2}$ in width; the back part, adjoining the leaf, which is thin, is continued for some distance up, affording an additional support, and often a partial foundation, for another nest built immediately above it. The materials consist of "wild cotton," the down from the pod of the cotton-tree, mixed with feathers which are placed in regular layers round the front and firmly incorporated with the cotton, which is agglutinated with the saliva of the bird. Sundevall, remarks Jerdon, shot these birds with their mouths slimy and filled with the down of some syngenesious plant which they appeared to catch during their flight. Mr. Hume finds the nests in India to be constructed of the fine down of the *Argemone mexicana* and similar plants. The eggs are two or three in number, much elongated and smooth in texture, pure white, and the shell very thin; they measure from 0.65 to 0.7 inch in length, and from 0.43 to 0.46 inch in breadth. The young, when able to use their feet, cling to the leaf above the nest, supporting themselves in an upright position; the old birds, when feeding them or entering their nest, alight at the bottom of the palm-leaf and run nimbly up the ribs.

Genus COLLOCALIA.

Bill smaller and more hooked than in *Cypselus*. Wings with the 1st quill considerably shorter than the 2nd. Tail slightly forked, and the tips of the feathers rounded. Tarsi and feet very small and feeble; tarsus naked, the hind toe directed backward and only partially reversible.

COLLOCALIA FRANCICA.

(THE INDIAN SWIFTLET.)

Collocalia francica, Gm. Syst. Nat. i. p. 1017. no. 15 (1788); Walden, Ibis, 1874, p. 132.

Hirundo brevirostris, M'Clelland, P. Z. S. 1839, p. 155.

Hirundo unicolor, Jerdon, Madr. Journ. Sc. xi. p. 238 (1840).

Collocalia nidifica, G. R. Gray, Gen. Birds, i. p. 55. no. 1 (1844); Blyth, Cat. B. Mus.

A. S. B. p. 86 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 98 (1854);

Bernstein, J. f. O. 1859, p. 118; Jerd. B. of Ind. i. p. 182 (1862); Legge, Ibis, 1874, p. 13.

Collocalia brevirostris, Kelaart, Prodrumus, Cat. p. 118; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 168.

Collocalia fuciphaga, Holdsworth, P. Z. S. 1872, p. 420.

Collocalia unicolor, Bourdillon and Hume, Str. Feath. 1876, pp. 374, 375.

Esculent Swallow of Latham and Stephens; *Indian Edible-nest Swiftlet*.

Wahalaniya, Sinhalese.

Adult male and female. Length 4.5 to 4.8 inches; wing 4.1 to 4.6, reaching 0.8 to 1.1 beyond the tail; tail 1.9 to 2.1; tarsus 0.4; middle toe and claw about 0.4; bill to gape 0.4.

Iris brown; bill black, vinous-brown at base; legs and feet dusky fleshy reddish, in some fleshy brown.

Above uniform dark smoke-brown, with a green lustre on the back, wings, and tail; primaries and tail deep glossy brown; the feathers of the rump albescent at the margins near the base, the light portions concealed beneath the overlying feathers; lores whitish at the base and tipped black; beneath glossy mouse-grey, palest on the neck and chest; the under tail-coverts with a slightly greenish gloss.

Young. The nestling is plumaged like the adult as soon as fledged; the tips of the quills finely margined with albescent.

The skin of the unfeathered chick is dark brown; and the head becomes quite feathered before the body commences, the scapulars following next.

Obs. No little confusion has existed in the synonymy of this and the Javan Swiftlet, *C. fuciphaga* of Thunberg; and ornithologists are therefore much indebted to Lord Tweeddale for his note on these species in the 'Ibis,' 1874, in which Indian, Ceylonese, and Andaman specimens of the species are shown to be identical with those from Mauritius and Seychelles. His lordship writes me that a specimen which I have lately forwarded him for examination is identical with birds from the Nilghiris, Darjiling, Andamans, and Malacca. The peculiarity of this species is that the tips of the concealed basal parts of the webs of the dorsal feathers are albescent, which increases in paleness towards the rump, showing in some specimens on the surface of the plumage and imparting a light appearance to that region. I regret that I did not collect more examples of this Swiftlet while in Ceylon; in the several that I have examined this latter degree of paleness has not been perceptible on the surface of the rump-plumage, although the basal portions of the feathers exhibit the above-mentioned character. Layard, in his correspondence with Blyth on the subject of this Swiftlet's nesting, writes of it as *C. nidifica*, but styled it *C. brevirostris* in his published notes, an older title bestowed by M'Clelland on a specimen from Assam, but which Mr. Hume is of opinion in reality applies to *Cypselus infumatus*, Sclater. Gmelin's title has not yet come into use in the pages

of 'Stray Feathers,' as Mr. Hume still applies Jerdon's name of *C. unicolor* (bestowed in the Madras Journal on the first specimens he received from the Nilghiris) to examples from Southern and Northern India.

C. fuciphaga from the Andamans as well as Java is a much smaller bird than *C. francica*. Total length about 3·5 inches; wing 3·8, reaching 1·5 beyond tail; tail 1·5.

Above glossy black-green, with a very strong lustre on rump and upper tail-coverts and tail; throat and sides of fore neck dark brownish grey, chest-feathers edged with whitish; breast and abdomen white, the feathers with mesial brown lines; under tail-coverts concolorous with the back, the shorter feathers broadly margined with white.

Distribution.—The little Swiftlet of Ceylon is spread over the whole island, taking up its quarters in the low country near the many isolated rocky hills which abound therein, and wandering thence over the surrounding districts, while in the Kandyan Province, full of precipices and caves, it everywhere finds a home. There are consequently many parts of the low-lying forest districts where it may always be found, such as the rocky ranges in the Eastern Province, the hilly Pattus and Korales in the south-west, from which it strays to the neighbourhood of Galle, the vicinity of the curious rock-ridges stretching from Kurunegala to Dambulla and northwards to the isolated and singular mountain of Rittagalla, whence it overruns all the Vanni to the extreme north; in these localities, as also about sundry rocks on the north-east coast to the south of Tirei, the precipices of Yakhahatua near Avisawella, and other crags in the Raygam Korale, I have invariably noticed the Swiftlet. It is occasionally seen, on fine mornings, about the cinnamon-gardens of Colombo, but not so often as round the southern port. It is abundant in the higher parts of Uva, round Nuwara Eliya and Hakgala, and similar spots in the main range.

This species is found throughout the south of the Indian peninsula, and is said to be more abundant on the Travancore and Nilghiri hills than in the low country. In the north of India it is found in Sikhim and in the neighbourhood of Darjiling. Southward it extends into Malacca and to the Andamans, where a nearly allied species, *C. spodiopygia*, Peale, with a paler rump, is found. In the opposite direction it reappears in the Mauritius and Seychelle group of islands.

Habits.—This Swift generally affects the crags and rocky hills in which it has been bred, wandering great distances during the day over the surrounding country. At early morn, when sallying out from its roosting-places, the caves of its birth, it flies about the vicinity with a rather tardy, uncertain flight, and then starts off for distant questing-grounds, when numbers may be met with, all making for the same direction, whence they doubtless spread outwards in search of food. In the afternoon they return in great numbers and pack into a large flock, dashing about their native rocks in close company, uttering their low, hissing cries. They commonly associate with the Palm-Swift, and when questing with these on open ground, such as the "cinnamon," fly very low and may easily be shot. They can always be recognized from *C. batassiensis*, on the wing, by the short tail and the absence of the well-known note of this latter species. I have noticed them hawking about the bunds of large tanks, flying close to the water and keeping up their evening meal until quite dark. Jerdon mentions them returning to the caves in Pigeon Island, off Honore, as late as 9 P.M., and comments on the vast distance they must have flown to arrive at their roosting-place three hours after dark! Their powers of flight are certainly very great, their progress being much more rapid than that of the Palm-Swift. The food of this species consists of gnats, mosquitos, and other small flies. It appears, like other Swifts, to be constantly in the act of catching its food; even late at night, when sitting on a lofty cliff overlooking one of the magnificent prospects of the splendid province of Uva, I have watched them picking off insects in their rapid progress homeward.

Nidification.—The breeding-season of this little Swiftlet in Ceylon lasts from March until June. It nests in large colonies in various caves in the hills and mountains of the central and southern parts of the island. Many of these are known from seeing the birds haunt the vicinity of certain precipitous hills; but few have been visited and examined, on account of the general inaccessibility of these resorts. Among those which are known are:—two situated on the rocky hills of Diagallagoolawa, near Pittegalla, on the banks of the Bentota river, and which are referred to in the extract given below from Layard's notes; several occupied by large and small colonies on the Dambettenne and Piteratmalie estates on the south face of the Haputale range; one on Pedrotallagalla, spoken of by Kelaart; and another which I was informed of in a hill called Maha-ellagala, near

the "Haycock" mountain, as also another in the Nitre-cave district. Besides these there are, I believe, colonies in the "Friars-Hood" or some of the surrounding rock-hills and in Rittagalla, the above-mentioned mountain situated between the Central and Trincomalie roads. The celebrated cave in the Haputale range, and the only one which I have had the good fortune to visit, is situated in a bold peak standing out above and towering over the Dambetenne and adjoining estates, which form one of the finest sweeps of coffee-ground in Ceylon. On a sultry day in May 1876, my friend Mr. Bligh and myself set out from Catton bungalow to see the Swifts' cave. A long tramp round the adjacent spur brought us to the gorge in which lies the fine estate of Mousakella, up which we toiled, gradually winding our way up the zigzag paths, and at last reached the inviting shade of the tall forest crowning the top of the ridge. Here our journey was enlivened by the notes of the usual denizens of these belts of fine jungle; and as we trudged along, listening to the clear, strong whistle of the Grey-headed Flycatcher, the churr of the handsome Trogon, and the twittering of the brilliant "Sultan-bird" (*Pericrocotus flammeus*), we congratulated ourselves that we had reached the highest point of our journey (6000 feet), and that we had but a short and immediate descent to our destination. Another half-mile and we had passed over the ridge and came into sudden view of the glorious prospect beneath, such a one as only can be witnessed in the higher ranges of the beautiful Central Province. Before us lay a magnificent amphitheatre, the top of it a dark sweep of forest, and the middle a splendid basin of coffee, consisting of the Dambetenne and Piteratmalie estates, in luxuriant growth, between which and ourselves a narrow ravine ran down from the range on our right and suddenly opened out into an abysmal gorge, the wooded slopes of which stretched up to the foot of the coffee. In these woods Mr. Bligh, some years previous, had discovered the handsome Whistling Thrush (*Arrenga blighi*). At a point where the great gorge suddenly commenced, by a sheer precipice dropping down about 1000 feet into the lower estate, stood the fine bungalow occupied by the gentleman, Mr. Imray, who was to be our kind host for the night; and at the back of this, at the top of a rich slope of coffee, towered up a rocky buttress, in which the Swiftlets of Haputale propagate their species. In this precipice a vast boulder, about 70 feet in height and 50 in breadth, has at some period slipped away from the face of the mountain, and leans against it at an angle of about 30°, forming a lofty narrow cavern. Here about 300 pairs of birds have their nests built against the inner side of the boulder, which is convex and corresponds with the concave face of the main mass. There are no nests on this latter, down which there is doubtless a considerable amount of drainage; and the instinct of the little birds is here wonderfully displayed in rejecting the wet side of the cavern, which would seriously impair the stability of their gelatinous nests. These are placed in tiers, one above the other, about 15 feet from the guano at the bottom of the cave; in places three or four were joined together, the back part of the under nest being prolonged up to the bottom of the one above it. The little structures were by no means edible, being constructed of moss and fine tendrils, arranged in layers and cemented with the inspissated saliva of the bird, the back part attaching the nest to the rock, as well as the interior of the cup, being, however, entirely of this material. I have seen one or two nests from Pittegalla almost wholly made of this substance; but even these were mixed, to a certain extent, with foreign or vegetable material. The interior of these Dambetenne nests was in most cases oval, the longest diameter, which varied from 2 to 2½ inches, being parallel to the rock. In depth the egg-cup was, on the average, about 1 inch. At the date of my visit, the 22nd May, nearly all the nests contained young, two being the average number. A series of eggs procured at another time, and which I have examined, were of various shapes, long ovals being the predominant; they are pure white, and varied from 0·81 to 0·83 inch in length by 0·51 to 0·54 in breadth. It is noteworthy that the partially-fledged young which were procured for me on this occasion, and which I kept for the night, scrambled out on to the exterior of the nests and slept in an upright position, with the bill pointed straight up. This is evidently the normal mode of roosting resorted to by the species.

The interior of this cave, with its numbers of active tenants, presented a singular appearance. The bottom was filled with a vast deposit of liquid guano, reaching, I was informed, to a depth of 30 feet, and composed of droppings, old nests, and dead young fallen from above, the whole mingled into a loathsome mass with the water lodged in the crevice, and causing an awful stench, which would have been intolerable for a moment even had not the hundreds of frightened little birds, as they screamed and whirled in and out of the gloomy cave with a hum like a storm in a ship's rigging, powerfully excited my interest and induced a prolonged examination of the colony. This guano-deposit is a source of considerable profit to the estate, the hospitable

manager of which informed us that he had manured 100 acres of coffee with it during that season. Besides this colony, there are two other smaller offshoots on the adjoining estate, in one of which, Mr. Bligh tells me, the birds have to pass through a cloud of spray in order to gain access to their nests.

Concerning the large breeding-station on the Bentota river, Mr. Layard writes, in the 'Annals and Magazine of Natural History' for 1853, xii. p. 168, as follows:—"Having fully described my acquaintance with these birds in a letter to my friend Mr. Blyth, I cannot do better than copy what I then wrote:—"The cave is situated at a place called Havissay, about thirty-five miles from the sea and twenty from the river, and about 500 feet up a fine wood-clad hill called Diagallagoolawa or Hoonoomoolocota. Its dimensions are as follows—length between 50 and 60 feet, about 25 broad and 20 high. It is a mass of limestone rock, which has cracked off the hill-side and slipped down on to some boulders below its original position, forming a hollow triangle. There are three entrances to the cave, one at each end, and one very small in the centre. The floor consists of large boulders, covered, to the depth of 2 or 3 inches, with the droppings of the birds, old and young, and the bits of grass they bring in to fabricate their nests. The only light which penetrates the cavern from the entrances above mentioned is very dim; when my eyes, however, got accustomed to the light, I could see many hundreds of nests glued to the side of the fallen rock, but none to the other side, or hill itself. This I attribute to the fact of the face of the main rock being evidently subject to the influence of the weather, and perhaps even to the heavy dews off the trees; but for this the side in question would have been far more convenient for the birds to have built on, as it sloped gently outward, whereas the other was much overhung and caused the birds to build their nests of an awkward shape, besides taking up more substance. I was at the spot a few days before Christmas, and fancy that must be about the time to see the nests in perfection. This is corroborated by the fact of my finding young birds in all the nests taken by me, and by what the old Chinaman said, that the 'take' came on in October. I find that they have three different qualities of nests, and send two for your inspection; the best is very clean, white as snow and thin, and is also very expensive. The most inferior are composed of dry grasses, hair, &c.; but I could not detect any thing like the bloody secretion as described (though only under peculiar circumstances of exhaustion) by Mr. Barbe, even in a fresh nest. I was in the cave late (after 5 P.M.) in the evening of a day which threatened rain; but the old birds were still flying round the summit of the mountain at a vast altitude, occasionally dashing down into the cave with food for their nestlings.'"

Genus DENDROCHELIDON.

Bill much as in *Collocalia*, but smaller, if any thing, and much hooked at the tip. Wings with the 1st quill the longest. Tail very long and deeply forked, the lateral feathers much attenuated. Tarsus very short, much less than the middle toe; three anterior toes subequal; hallux long, directed backwards, and not reversible.

DENDROCHELIDON CORONATUS.

(THE INDIAN CRESTED SWIFT.)

Hirundo coronatus, Tickell, J. A. S. ii. p. 580, xv. p. 21 (1833).

Macropteryx coronatus, Blyth, Cat. B. Mus. A. S. B. p. 87 (1849); Kelaart, Prodromus, Cat. p. 117 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 167.

Macropteryx longipennis (Swainson), Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 236.

Dendrochelidon schisticolor, Bonap. Consp. Av. i. p. 66 (1850).

Dendrochelidon coronatus, Gould, B. of Asia, pt. xi. (1859); Jerdon, B. of Ind. i. p. 185 (1862); Holdsworth, P. Z. S. 1872, p. 420; Hume, Nests and Eggs, i. p. 92 (1873); Legge, Ibis, 1874, p. 13; Ball, Str. Feath. 1874, p. 384; Oates, Str. Feath. 1875, p. 45; Fairbank, ibid. 1877, p. 393.

Adult male and female. Length 9·3 to 9·75 inches; wing 6·1 to 6·3; tail 5·3 to 5·7 (outer feathers 3·25 to 3·6 longer than the middle); tarsus 0·35; middle toe and claw 0·65; bill to gape 0·75. Female slightly the larger. Iris deep brown; bill black, inside of mouth slate; legs and feet vinous-brown, claws blackish. Eye very large for the size of the bird. Coronal feathers elongated and capable of being erected.

Adult male. Head, back and sides of neck, back, scapulars, and rump bluish ashy, palest on the back, and with a greenish gloss on the head and upper tail-coverts, continued in some birds to the back; wing-coverts deep though obscure lustrous green; quills and tail obscure metallic green, with a steel-bluish lustre about the tips of the shorter primaries; terminal portions of the tertials greyish.

Lores black, surmounted by a thin white supercilium; a blackish orbital circle; chin, cheeks, and ear-coverts glossy chestnut, palest on the chin; throat and chest ashy, blending into the deeper hue of the sides of the neck and passing down the flanks, the lower parts of which are concolorous with the rump; lower breast, abdomen, and under tail-coverts white, blending into the surrounding grey hue; under wing-coverts dusky bluish ashy.

Female. Wants the rufous chin and cheeks of the male, the face and behind the eye being black, as are the lores; beneath the cheeks a whitish line; chin concolorous with the throat; white of the lower parts less pure than in the male; under tail-coverts with dark shafts.

Young. On leaving the nest the nestling has the head, back, and rump fulvescent greyish, the feathers rounded at the tips and with silky white edges and the basal portions metallic green; the lower scapulars and rump paler than the back; wing-coverts, quills, and tail deep metallic green, the terminal portions of the coverts of the same hue as the back; under surface delicate ash-grey, with finer white edges than on the back, which are separated from the grey by a fine dark border.

Bird of the year. Upper surface less glossy than in the adult, the feathers of the hind neck, rump, and tail-coverts terminally margined with white; tertials deeply tipped with the same and brownish on their terminal portions; shorter primaries tipped with white; beneath pale bluish grey, paling to albescent on the centre of the breast and under tail-coverts, which parts have the feathers tipped with brown, most extensively on the latter.

Obs. Indian examples of this Swift correspond in size to Ceylonese. Mr. Ball gives the wing of two males as 6·05 and 6·1 inches, and that of two females as 6·15 and 6·35; a female from Pegu measured 6·3.

Distribution.—The Crested Swift is diffused throughout the whole island of Ceylon, extending into all parts of the Kandyan Province and the mountain-ranges of the south. In the low country it is more common as a resident in some districts than in others; but wandering about in its powerful flight as all Swifts must do, it is liable to be met with anywhere as a straggler. I have never found it so numerous on the sea-board of the Western Province during the S.W. monsoon as at the opposite time of the year, although I have occasionally

met with it about the Slave-Island lake in the height of the boisterous weather. In the Galle district it is a very common bird, and follows the coast round to the Hambantota district in fair numbers, and thence spreads throughout the flat, jungle-clad country to the Haputale hills. I have noticed it in all parts of the Eastern Province that I have visited, and in the jungles of the northern half of the island have found it chiefly confining itself to the vicinity of the grand old tanks, such as Minery, Topare, Kanthelai, &c., and likewise affecting any large clearings which may exist in the forests of the Vanni. In the Kandyan Province it is common enough in the coffee-districts, and in fine weather may be seen about the Elephant, Kandapolla, and Horton Plains. Mr. Holdsworth does not record it from Nuwara ELLIYA; but I have seen it a few miles from that place, about which it no doubt flies in the course of its day's wanderings.

On the mainland this fine Swift is found, according to Jerdon, throughout Southern and Central India, but "most abundant on the Malabar coast and the Wynaad, extending up the slopes of the Nilghiris to 4000 feet or thereabouts." Mr. Fairbank only observed one example in the Palani hills. It is recorded by other observers to inhabit the sub-Himalayan districts; and Mr. Hume says, in 'Nests and Eggs,' that it breeds "below Kumaon and Gurwhal." Mr. Ball says it is found in most parts of Chota Nagpur, but nowhere abundant; he also obtained it in the Satpura range and Rajmehal hills. It extends into Burmah. Mr. Oates found it common throughout the year in Upper Pegu; Mr. Davison procured it in the pine forests north of Kollidoo in Northern Tenasserim; but in the south he did not meet with it, as it appears to be replaced there by *D. comatus* and *D. klecho*, which two species, in common with other Malayan forms, do not seem to extend much to the north of Mergui.

Habits.—This species is strikingly arboreal in its habits, haunting open hill-sides or clearings in the jungle studded with dead trees, on which it perches almost as freely as a Passerine bird. In such localities little colonies may often be met with, the majority of the birds in which will be seen dashing about with great velocity in quest of insects, while half a dozen or less are perched on the topmost branches of some tall dead tree standing among a group of rocks, where it has escaped the woodman's axe, but has been charred and killed by the fire which has swept his clearing. Here it sits elevating and depressing its crest and constantly uttering its loud call, until it dashes forth and commences to hawk round the adjacent tract with its companions, who, in their turn, settle for a while and join in the noisy cries. When thus perched the Crested Swift presents a singular appearance, its long wings, crossed widely over its attenuated tail, forming a broad arrow, the striking aspect of which is increased by the long body in continuation of it, and the crest erected as fiercely as that of a Cockatoo. When wandering about from place to place, it has a very swift flight, performed with quick and powerful strokes of the wing, varied with wide sweeps and downward plunges, from which it gracefully rises on its rapid course. At times it flies high in the air, but, as a rule, keeps a short distance above the trees of the forest or the wooded tank over which it is hawking. Jerdon remarks that "should there be a tank or pool of water or river near, it is fond of descending suddenly, just touching the water, and then rising again with unrivalled grace and speed." It utters its loud cry when flying, as do other members of the family, but not so repeatedly as when perched, at which time it appears to call to its companions on the wing, and is then very tame, allowing a near approach without taking flight. Its food consists of small flies, of which it consumes quantities, its stomach being very capacious for the size of its body.

Some Indian writers speak of the great velocity with which this Swift flies. This has never struck me as any thing very extraordinary if only compared with that of the lightning-like speed of the Spine-tail. Mr. Oates speaks of it flying over a certain bungalow in Pegu, and "dipping with incredible velocity to the surface of the Irrawaddy." It certainly has, as I have remarked above, a great speed when thus launching itself downward from its course.

Nidification.—Nothing authentic has ever been discovered of the breeding of this bird in Ceylon. The natives assured Layard that it built in old *Euphorbia*-trees; possibly it may; but this tree is not well suited to its habits, and I have never myself seen the bird about it. The inhabitants of the Malabar coast informed Jerdon that it bred in holes in trees; this certainly is erroneous, for, as a matter of fact, its curious nest, which has several times been found in India, is, according to Mr. Hume, "a little, shallow, saucer-shaped structure, composed of thin flakes of bark, gummed, probably by the bird's own saliva, against the side of a

tiny horizontal branch. The nest is nowhere more than $\frac{1}{8}$ inch in thickness, is at most $\frac{1}{2}$ inch deep in the deepest part, and can be exactly covered by half-a-crown." Mr. Thompson writes "that it is entirely filled by the solitary, rather largish, white, oval egg. The bird looks for all the world as if she were sitting on the branch, and no amount of looking from underneath would show you that there was a nest under her." The flakes of bark of which the nest is composed are sometimes mixed with a few feathers, which, cemented with the inspissated saliva of the bird, serve to bind the whole together. Mr. Hume gives the measurements of an egg in his possession as 0.85 by 0.55 inch.

PICARIÆ.

Fam. CAPRIMULGIDÆ.

Bill with the culmen short and curved and the gape very wide, receding below the eyes, and furnished, in some, with stout bristles. Wings moderate, or long and pointed. Tail of ten feathers. Legs and feet very small.

Sternum short, deeply keeled, the posterior edge emarginated.

Plumage soft and mottled. Eyes very large. Of nocturnal habit.

Subfam. STEATORNINÆ.

Bill large, inflated, the margin curved and receding beyond the posterior corner of the eye; gape enormously wide; base of upper mandible clothed with bristly feathers. Wings, when closed, scarcely reaching beyond the middle of the tail. Feet very small, the middle claw not pectinated.

Genus BATRACHOSTOMUS.

Of small size.

Bill short and enormously wide, both mandibles inflated at the sides and suddenly compressed at the tips; culmen much curved and the tip of the upper mandible hooked. Nostrils horizontal, linear, placed in a membrane, which is completely covered by the frontal plumes; gape smooth; a series of erect branching plumes in front of the eyes. Wings short, rounded; the 1st quill about two thirds of the length of the 4th and 5th, which are subequal and longest. Tail long, even at the tip much graduated, the lateral feathers very short. Legs and feet small; the tarsus shorter than the middle toe, feathered more or less in front, the bare portion scutellate. Middle toe considerably longer than the lateral toes, both of which are joined to it at the base by a membrane; hind toe short.

Sternum small, with a shallow keel, with two deep emarginations in each half of the posterior edge.

A tuft of long hair-tipped feathers springing from above the ears.

BATRACHOSTOMUS MONILIGER.

(THE CEYLONESE FROG-MOUTH.)

Batrachostomus moniliger (Layard), Blyth, J. A. S. B. 1849, xviii. p. 806, ♀; Kelaart, Prodromus, Cat. p. 117 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 165; Jerdon, B. of Ind. i. p. 189 (1862); Nevill, J. A. S. B. (Ceylon B.) 1870-71, p. 33; Holdsworth, P. Z. S. 1872, p. 420; Legge, Ibis, 1874, p. 12; id. Str. Feath. 1875, p. 198; Walden, J. A. S. B. 1875, pt. ii. Extr. No. p. 84; Hume, Str. Feath. 1876, p. 376; Tweeddale, P. Z. S. 1877, p. 439, pls. 48 & 49, et Ibis, 1877, p. 391; Hume, Ibis, 1878, p. 122.

? *Podargus javanensis* (Horsf.), Jerdon, Madr. J. L. Sc. (*nec* Horsf.).

Batrachostomus punctatus, Hume, Str. Feath. 1874, p. 354; Blanford, Ibis, 1877, p. 251; Tweeddale, Ibis, 1877, p. 391; Hume, Ibis, 1878, p. 122.

The Ceylon Oil-bird, Kelaart; *The Wynaad Frog-mouth* of Jerdon.

CEYLON.

Collection.	Length. in.	Wing. in.	Tail. in.	Tarsus. in.	Middle toe. in.	Claw (straight). in.	Width of bill at gape. in.	Bill to gape. in.
(1) ♀. Brit. Mus. (Whyte)	9.4 (from skin)	5.0	4.7	0.5	0.6	0.25	1.3	1.35
(2) ♂. " " (")	8.9 (" ")	4.6	4.5	0.6	0.6	0.25	1.3	1.3
(3) ♂. Legge	9.1	4.6	4.2	0.5	0.6	0.2	1.4	1.4
(4) ♀. "	9.0 (from skin)	mutilated	4.85	0.56	0.6	0.21	1.4	1.45
(5) Juv. ♂ ? . Legge . . . . .	..	4.8	mutilated	0.55	0.6	0.2	1.3	1.4
(6) ♀. Lord Tweeddale	(not recorded)	4.5	4.5	0.5	0.63 (with claw)	..	1.25	..
(7) ♀ ? . " "	(" ")	4.5	4.4	0.6	0.65 (" ")	..	1.25	..
(8) ♂. " " ..(Nevill) . (" ")	(" ")	4.68	4.5	0.5	0.75 (" ")	..	1.2	..
(9) ♂. " "	(" ")	4.75	4.75	0.5	0.7 (" ")	..	1.2	..
(10) ♂. Hume (type of <i>B. punctatus</i>). .	7.75 (from skin)	4.3	4.0	0.5	0.75 (" ")	..	1.2	1.3
(11) ♀ ? . Layard (Poole Collection) ..	..	4.65	4.5	0.6	..	..	1.2	1.4

TRAVANCORE.

(12) ♀. Hume (Bourdillon)	9.0	4.75	4.0	0.6	..	..	1.37	1.35
(13) ♂. " (")	9.0	4.75	4.5	0.59	..	..	1.4	1.4

Iris yellow; bill olive-brown or greenish brown, the under mandible paler than the upper; lower part of tarsus and feet fleshy grey, darkest on the toes; claws dark brown, inside of mouth dull greenish.

Male, nearly adult (Galle). General aspect above brown, mingled with rufous and grey, the head and upper part of hind neck being the darkest and the wing-coverts the most rufous portions. Most of the feathers of the head, hind neck, and back with a terminal spot of black; the extreme tips of the head and neck-feathers rufous, and the spots bordered above by the same, while the rest of the web is mottled with fulvous and whitish; superciliary feathers creamy white, tipped with black; feathers across the lower part of the hind neck much mottled with pale fulvous, imparting the appearance of a lightish band; on the back and rump the ground-colour is chiefly rufous and the mottlings black; the upper tail-coverts with an angular white terminal spot; outer webs of the longer lateral scapulars and the entire portion of the external shorter feathers dull white, mottled with blackish; wing-coverts boldly marked with black, and the innermost secondary wing-coverts with terminal white feathers on the outer webs; primary wing-coverts blackish brown, mottled with rufous; primaries and secondaries deep neutral brown,

more or less mottled with fulvous-grey at the tips; the outer webs of the primaries with deep rufous and buff indentations, and those of the secondaries with mottled bar-like markings of the same; tertials silvery grey, mottled chiefly with blackish and slightly with rufous, the feathers with terminal black spots; tail crossed with five mottled and vermiculated grey bands, each with an anterior irregular black border, increasing in width towards the tip, the extreme tip whitish, preceded by a black spot, outer web of lateral tail-feather chiefly buff-white with black bars.

Loral and frontal plumes tipped and barred with black; cheeks and throat pale rusty fulvous, with numerous black cross pencillings, the feathers just beneath the gape darker than the rest; feathers across the lower part of the fore neck with large white terminal spots, in some of which the portions of the extreme tips and an anterior border are black; beneath from the chest pale fulvous, mottled with blackish, many of the feathers at the sides of the breast with the terminal portions pure white, conspicuously marked with black cross pencillings; abdomen, thigh-plumes, and under tail-coverts more fulvous than the breast and less mottled, and crossed with regular black lines; longer under tail-coverts with terminal white spots; under wing-coverts pallid rust-colour with blackish markings; tarsal plumes pale fulvous, marked with blackish brown.

Male (British Museum, *ex* Whyte). Slightly less rufous above than the foregoing, with the black terminal markings deeper, and the whitish stippings across the hind neck clearly defined; the scapulars with more white, and the terminal spots larger, which is likewise the case with the tertials and outer and median wing-coverts, the spots on the latter preceded by bold black markings; the light indentations on the outer webs of the primaries larger and more albescent; tail paler in the ground-colour, the bands the same; throat and chest less rufous, the white breast-spots larger and the black anterior edges bolder.

This specimen, I conclude, is somewhat older than the foregoing. An adult (?) male, described by Lord Tweeddale in his excellent monographic notice (P. Z. S. 1877, p. 442), is similar to the above examples, with the exception of a white collar across the hind neck, thus portrayed:—"Nuchal plumes with a subterminal white band confined between an upper and a terminal dark brown transverse line: a well-defined nuchal collar is thus formed." The outer rectrices have pure white marginal spots; the margins of the white throat- and breast-spots are described as dark brown instead of black; the wing-coverts are terminated with very bold white spots; the breast and flanks appear to be more rufous than in my specimens; but the greater development of the white markings pronounce it, I think, to be one of the oldest birds yet procured.

Young male? It is probable that the young of this sex have a grey or cinereous character from the nest, though the plumage may be much mixed with rufous. I have an example (No. 5 in the table of measurements) of a dark brown general aspect, with the wing-coverts rufous and with most of the upper plumage mottled with fulvous, which I take to be a male, on account of its very pale scapulars, the black tippings of the hind neck and interscapular region, and the spotted appearance of the breast above the lower pectoral region where the white black-bordered spots exist. In the females I have examined the breast is of a uniform hue from the white necklace down to the ventral spottings; there is a pale supercilium, the feathers being tipped with black; the narial plumes have the terminal portions black, as are also the bases of the feathers round the gape; the tips of the auricular plumes are blackish brown; the lateral scapulars are fulvous-white, with black terminal spots, and the greater wing-coverts have large terminal white spots; some of the long nuchal feathers are barred with black, with a light edge, but there is no further indication of any collar; the outer webs of the primaries are rusty fulvous; the under surface is rufescent fulvous, the breast mottled with black and tipped with the same; the white throat-spots have an anterior border of black, the white extending to the tip, and the same is true of the ventral and lower flank-feathers. I regret to say that the rectrices are wanting in this interesting specimen (No. 5), it having knocked itself about while in confinement in Kandy and lost the entire tail. Both in this and the first example described in this article there is a very remarkable tuft of downy undeveloped feathers, similar to that well known in the Herons, springing from the side just above the femur; it lies so close to the skin that it is with difficulty detected.

A presumed immature male described by Lord Tweeddale (*loc. cit.*) has a greyish-brown general aspect; the superciliary plumes are rusty fulvous on the outer webs and brown on the inner; a few feathers on the nape slightly tipped with white, some with fulvous, forming "a rudimentary uncompleted nuchal collar;" rest of the upper plumage somewhat similar to the first specimen above described, but more rufous, and the margins of the white spots brown: the chin and throat are rusty, and the white necklace well developed; upper pectoral plumes rusty, the lower fulvous-grey, broadly tipped with white. The wing in this specimen (which is No. 9 in the above Table) is 4.75, a very large dimension indeed for an immature male; and I have no doubt that some of these rufous males are older than has been supposed, and that adults will be found, when a large series has been got together, to vary somewhat in the character of their plumage.

Adult female (British Museum, *ex* Whyte; No. 1 in table of measurements). General hue of head, hind neck, back, rump, and wing-coverts dull rufous, darkest on the back and lesser coverts, and very pale on the tertials and outer scapulars, the whole very closely and finely stippled with dark cinereous brown, deepening into a blackish hue on the wing-coverts; the brown hue of these mottlings overcomes the rufous on the head and hind neck, which parts have an ashen tint; feathers of the forehead with a small black subterminal spot succeeded by a fine white tip; across the lower hind neck the feathers are terminated with broad white bars, bounded above and beneath with a black border; the median row of wing-coverts with the same, without the terminal black border; greater secondary coverts, an indistinct pale terminal spot, secondaries, and the primaries with their coverts dark ashen brown, mottled at the tips with fulvescent rufous; the outer webs of the primaries with a deep wavy rufous edge; tail rufous, crossed with six indistinctly defined mottled bands; the outer feathers indented outwardly with white, and crossed with black markings on the outer webs; the extreme tips of the feathers fulvous, preceded by a black edge.

Loral plumes blackish, rufous at the base; over the eye a pale undefined streak; under surface very similar to the upper in hue, as far as the middle of the breast, when the ground-colour becomes fulvous and extends thus to the abdomen and under tail-coverts; across the throat a band of large terminal white spots bordered by a black edging; terminal portions of the lower-breast, flank-, and abdominal feathers whitish, with transverse black vermiculations and a border of the same at the tips; under tail-coverts with a black-bordered terminal white spot; under wing-coverts rufous, faintly mottled with blackish brown.

Another example in my collection has the upper surface almost uniform rufous; there are indistinct mottlings on the scapulars and upper tail-coverts; the latter have the tips slightly paler than the rest of the feathers; the crown is rufous-brown, with the long auricular feathers rufous. The nuchal feathers have the white black-bordered bars forming the collar somewhat distant from the tips of the feathers; the scapulars have a terminal black white-tipped spot, the wing-coverts a very large white anteriorly bordered spot on the tips of the outer webs; the tail is crossed with mottlings of blackish brown gathered into the form of bars, and the penultimate or second lateral feather has the outer web indented with fulvous-white and crossed with black; supercilium pale fulvous; the chin is rufescent fulvous; the chest bright uniform rufous, with the normal white necklace; on the lower breast the feathers change abruptly on their terminal portions into white, pencilled with black; the under tail-coverts have a white black-bordered tip; the abdominal feathers have the middle portions pale fulvous.

Another in the Poole collection (the specimen mentioned by Layard in his Notes) is very similar to this; the nuchal collar and necklace are the same, but there are a few black terminal spots on the frontal feathers just behind the long plumes; the tertials and scapulars are both marked with white terminal spots surrounded by a deep black border; the chest and breast are very rufous as in the above. I am of opinion that these last two specimens are fully aged females; they agree in having the upper surfaces almost uniform in their hue, the mottlings being almost obsolete.

A similar bird (No. 6 in the table of measurements) is described by Lord Tweeddale, *loc. cit.* pl. 49. Judging from the minute description of this bird given by his lordship, it corresponds almost feather for feather with the rufous example treated of above; the tail is perhaps slightly less uniform than in mine, but the upper surface and chest have the same unmarked rufous ground-colour, and the wing-covert spots, nuchal collar, and necklace are likewise to all intents similar.

In a second female example noticed by his lordship the rufous is still deeper in tone than in the latter; the distribution of the white markings the same, but the white bars and terminal rufous-brown fringes of the nuchal-collar plumes are more pronounced.

Young. The nestling procured by Mr. Bourdillon and noticed below was probably a female, and is described by Mr. Hume as "a curious little rufous-brown ball with the characteristic bill of the species, and with distinct traces of black terminal bars to the feathers of the upper back and scapular region."

Obs. At the risk of being wearisome to the most scientific of my readers I have given as complete a series of observations on the plumages of this most remarkable of Ceylonese birds as it was in my power to do. This was, I think, necessary, as there has been so much controversy on the subject of Mr. Hume's presumed new species from Ceylon, *B. punctatus*, which I have thought expedient to unite with the present. This bird, as will be seen at a glance at the above table of measurements, is most variable in size, irrespective of sex. Some males exceed the average of females; but the latter will, I think, be found to contain larger birds in their ranks than the former. Blyth's type specimen, sent to him by Layard, was evidently a large female; while Mr. Hume's (No. 10 in the above list), sent to him, I believe, by Mr. Nevill from the south of Ceylon (where I have obtained a similar example), was a very small male. It would take up too much room in my pages to recapitulate Mr. Hume's description of his specimen, and it will suffice to say that it is a grey bird, corresponding exactly in plumage with those above described. Mr. Hume remarks, at page 122 of 'The Ibis' for 1878, "In no adult *B. moniliger*

does the wing fall short of 4·7 inches; in *B. punctatus*, on the other hand, of which several specimens have now, Mr. Whyte informs me, been obtained, the wing appears to be always under 4·5 (in the type it is only 4·3)*. With regard to the size of *B. moniliger*, I refer my readers to the above table; in respect to that of Mr. Hume's *B. punctatus*, I have only to remark that the second male specimen described in this article (a strictly *punctatus* type of bird) has lately been sent home by Messrs. Whyte and Co. with "*sp. incog.*" written on the label (!)—proof evident that these naturalists do not know which phase of plumage represents *B. punctatus*. The female of Mr. Bourdillon's pair, sent from Travancore to Mr. Hume, is similar to the example from Ceylon described by Blyth, and the male, as described by Mr. Hume, corresponds exactly with my Southern Ceylon one. If, however, these Travancore birds prove different from Ceylonese, a new title should be bestowed upon them; and then *B. moniliger* will stand as one of the peculiar Ceylonese forms. That there should be two species of this rare and remarkable genus in Ceylon is most unlikely.

Distribution.—The Frog-mouth is widely spread throughout Ceylon, but is very seldom procured, as it is strictly nocturnal and an inhabitant of the inmost recesses of the jungle. Two examples were brought to Layard from the Western-Province jungles round Avisawella and Ratnapura, and a pair were met with near the latter place by Mr. Mitford. One was obtained by Mr. Nevill near Amblangoda, in the south of Ceylon, and another by myself at Wackwella near Galle. A third was shot in the Chilaw district in 1868 by the taxidermist of the Colombo Museum. Two more were captured on their flying into houses in Kandy at the latter end of 1875 and the beginning of 1876. In March of the former year Major Sandford, of the Royal Engineers, came upon one seated asleep on a branch in low jungle near the Peria-Kulam tank, Trincomalie, and described to me its toad-like and inanimate appearance as it sat with its bill pointed upwards. In February 1875 Mr. Edwin Watson met with another, under similar circumstances, in jungle above Ragalla Estate, at an elevation of 5600 feet. Besides the above-mentioned examples, there are the male and female sent home to the British Museum by Messrs. Whyte and Co., both of which were procured near Kandy, the latter at the end of last year, and the former on the 30th of January of the present year. The south-eastern, eastern, and north-western portions of the island are therefore the districts in which the Frog-mouth has not yet been procured or observed; and of all parts in which it has been found the neighbourhood of Kandy is that in which it has proved most numerous. It is, however, in my private opinion, much more common than is supposed; for throughout much of the northern forest-tract, as well as in many of the bamboo-districts between Colombo and Ratnapura, I have heard a singular note which I firmly believe is that of this bird. It is uttered just about sunset, and from that until about 10 o'clock, and is renewed again at daybreak on the following morning. It always proceeds from dense jungle, and all my efforts, which were many, proved fruitless in getting a sight of the mysterious bird.

The Frog-mouth of South India, which is presumably the same as the Ceylonese, has been found in the Wynaad and in the Travancore hills up to an elevation of 2100 feet; north of these districts it has not as yet been traced.

Habits.—This singular nocturnal bird frequents thick bamboo-jungle, dense thickets, low umbrageous jungle, and such-like localities. It does not appear, as a rule, to sally forth before dark into the open, as I know of the testimony of but one person who has ever seen them out of jungle. Mr. Mitford, as quoted by Layard in his Notes, says that he observed a pair "frequenting a tree in full flower and capturing the beetles which flew about it." Its position of rest during the day is seated across a branch with the bill pointed straight upwards and its eyes of course fast closed. The bird which I was fortunate enough to meet with was perched on a low bamboo in a dense thicket through which I was creeping. I was close to it when I first saw it, but it was not awake; and struck with its extreme likeness in general aspect to *Podargus cuvieri*, with which I was acquainted in a state of nature, I at once identified it as the much sought after Frog-mouth, and crept away to a convenient distance for shooting it. While moving off a slight crackling of the sticks beneath my feet awoke it, and it slowly turned its head round in my direction, but I do not think it saw me. Its stomach contained beetles, which form, to a considerable extent, the food of the *Podargi* in Australia. In the stomach of one of these latter I once found a green stone of considerable size, from which I infer that

* 5·5 and 5·3 in 'The Ibis'; presumably a printer's error (*vide* Str. Feath. 1874, p. 354).

perhaps these birds pick their food from the trunks of trees as well as capture it on the wing; in so doing the *Podargus* most likely took in the stone, which easily descended its capacious throat. Layard writes of one of the two examples he met with, that "it lived three days with me, but refused all food; during the day it slept, squatting on the ground with its head sunk between its shoulders: on being alarmed it sprang upwards with a sudden jerk, and after executing a rapid summersault in its confined cage, it would again alight and settle down like the *Caprimulgi*." Mr. Whyte, of Kandy, kept one, which was taken in a room into which it had flown, for some few days, during which I saw it; it perched on the bottom of the cage with its head up, and when approached and awakened would open its eyes and mouth wide, glare at me and then commence slowly closing its mandibles, which finally came together with a sudden jerk. I made it repeat this gesture several times, and the mouth always closed in the same curious manner.

Mr. Bourdillon speaks of the peculiar note which I have alluded to above, and likens it to "a loud chuckling cry, with something of the tone of a Goatsucker and not unlike the laugh of a Kingfisher." It is, as he remarks, a difficult call to describe; but his representation of it is, I think, the best that could be given. I will leave it to my numerous ornithological friends and acquaintances in Ceylon, who will, I hope, be interested in this bird, to prove whether or not this is its note. On one or two occasions I heard it in an isolated bamboo-thicket in the Ratnapura district; but I was too hurried to halt for the night and search the copse in the morning, which would probably have resulted in my finding the Frog-mouth had it been there.

Nidification.—The members of this remarkable subfamily of the *Caprimulgidæ* differ from their allies the true Goatsuckers as much in their nesting-habits as in their anatomy. The *Podargi* of Australia construct a nest which they fix on the limb of a tree, and the smaller *Batrachostomi* of Asia nest in a similar manner. Nothing has been discovered concerning the Ceylonese Frog-mouth's nesting; but I will subjoin the following interesting account of the nidification of the Travancore bird, inasmuch as I think it applies to the Ceylonese one as well. Mr. Bourdillon is the only person who has been fortunate enough to discover any particulars concerning the nidification of any of the *Batrachostomi*. The nest to which he refers in the following notes, which Mr. Hume kindly sends me, was found on the 24th of February 1876, in rather open jungle at an elevation of 2100 feet on the Travancore hills.

Mr. Hume says, *in epist.*, Bourdillon's account of the nest of *B. moniliger* is as follows:—

"The nest was brought to me one evening by a coolie who had been working in the jungle.

"It was composed of vegetable down neatly and compactly interwoven with pieces of dead leaves, fragments of bark and dry wood, and one or two pieces of lichen. In shape it is a sort of disk about $2\frac{1}{2}$ inches broad and $1\frac{1}{4}$ inch deep, the upper surface being slightly hollowed out. The young one, partially fledged, was unmistakably a Frog-mouth, from the colour of his plumage, bill, and huge gape. On receiving the nest I at once went with the man, and restoring it to its original position, sat down to watch.

"The chick (I quote from my notes) was much pleased at finding himself in his old quarters, and repeatedly shook himself, as if he could not at first settle down into a comfortable position, this shaking being attended with some danger, as once or twice the bird seemed within an ace of rolling out of the nest. At intervals of about ten minutes it uttered a feeble chirruping call, not unlike an "Ice"-bird at a distance. As darkness increased its cry was more frequent and became a single chirp. I watched till night closed in and it became pitch dark without seeing any thing of the old bird, though once something which might have been either bird or bat flitted past.

"Next morning I returned some time before sunrise, and in the moonlight had a good view of one of the old birds seated on the nest.

"It was in a very peculiar position, more lying down than sitting, with its head well up in the air. The nest was not 15 feet from the ground, in a fork of a sapling, apparently without any attempt at concealment, so that I was able to approach very close to the bird, which, without moving, merely opened its large eyes to stare at me. Now comes the worst part of the story. I was so anxious to secure the specimen that I determined to shoot it on the nest; accordingly I retired as far as possible and fired, the result, owing to intervening bushes, being that, to my great disappointment, the bird went off into the jungle hard hit and was lost.

"Thinking at first the bird could not possibly have escaped I searched about for it, and at the foot of the small tree where the nest was I found the remains of an egg. These I have kept and will send with the nest, as I at least have no doubt that they originally enclosed the young Frog-mouth. You will see, from these fragments, that the egg of the bird is probably pure white, almost round, of thin texture, and with a smooth, glossless surface."

PICARIÆ.

CAPRIMULGIDÆ.

Subfam. CAPRIMULGINÆ.

Bill short, very weak and flexible, the tip hooked slightly. Nostrils tubular; gape furnished with stout bristles. Wings and tail long. Middle toe with the claw pectinated.

Genus CAPRIMULGUS.

Bill short, very wide at base, suddenly compressed towards the tip, which is gently curved and grooved parallel to the culmen. Gape enormous, and protected by long stout bristles. Wings long and pointed; the 3rd quill the longest, and the 1st shorter than the 4th. Tail moderately long and expanding slightly towards the tip, which is even. Tarsus short, more or less feathered, the bare portion in front covered with transverse scales; lateral toes short and united to the middle at the base by a membrane; claws straight, the middle one with the inner edge strongly pectinated.

CAPRIMULGUS KELAARTI.

(KELAART'S NIGHTJAR.)

Caprimulgus indicus, Blyth, J. A. S. B. 1845, xiv. p. 208.

Caprimulgus kelaarti, Blyth, J. A. S. B. 1851, xx. p. 175; Kelaart, Prodrumus, Cat. p. 117 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 167; Jerdon, B. of Ind. i. p. 193; Holdsworth, P. Z. S. 1872, p. 421; Hume, Nests and Eggs, i. p. 97 (1873); Morgan, Ibis, 1875, p. 314; Bourdillon et Hume, Str. Feath. 1876, p. 381.

Caprimulgus indicus, Jerdon, Cat. Madr. Journ. no. 251; Ill. Ind. Orn. pl. 24 (1847).

The Nilgherry Nightjar, Jerdon; *The Newara-Elliya Goatsucker*, Kelaart; *Night-Hawk*, Europeans in Central Province.

Bim-bassa, Sinhalese, lit. "Ground-Owl"; *Pay-marrettai*, Tam., lit. "Devil-bird."

Adult male. Length 10.0 to 10.6 inches; wing 7.0 to 7.5; tail 4.1 to 5.0; tarsus 0.6; middle toe and claw 0.8 to 0.85; bill to gape 1.2 to 1.3. Expanse 22.4.

Female. Length 9.5 to 10.0; wing 6.9; tail 4.6.

Iris deep brown; eyelid brownish yellow; bill vinous brown, paler at the gape, the tip black; legs and feet vinous brown, darker on the toes; soles pale, claws blackish.

Male. Light portions of head, back, and wings pale cinereous, finely pencilled with dark brown, and mottled on the hind neck, wing-coverts, and scapulars with white; over the centre of the forehead and crown a broad black stripe; feathers of the back, rump, and upper tail-coverts crossed with wavy marks of black; the scapulars with velvety black centres and tips of an arrow-shaped or bar-like form set off by pale buff margins; wing-coverts blackish brown, mottled on the inner webs with cinereous, and with a conspicuous terminal buff, dark-mottled spot on the outer webs; tertials with black mesial portions and boldly pencilled with dark brown; quills blackish brown, clouded with cinereous at the tips, and with a round white spot on the inner web of 1st primary and a broad bar across the next three, generally interrupted on the 2nd; the outer quill indented with buff-white; tail black, the central feathers with mottled cinereous transverse spaces, the remainder with mottled, distinctly separated bars, and the four outer feathers with a large subterminal white spot.

A white stripe from gape to beneath the ear-coverts; across the throat a white band, interrupted in the centre and edged below with rich ferruginous buff, which reappears on the sides of the neck, and is continued as a white tracing round to the centre of the hind neck; throat, chest, and upper breast light cinereous, crossed with blackish pencillings, which on the lower parts take the form of dark bands on a whitish ground; belly and under tail-coverts whitish buff, the latter with a few brown bars.

Female. Darker above and also on the chest than the male; spots on the quills buff, of smaller size than in the male, and that on the 2nd quill interrupted in the centre; the four outer tail-feathers wanting the white terminal spots, and merely having a pale bar at the tips mottled with brown.

Note. The group to which this species and *C. indicus* belong is distinguished by having the tail, in the male, with the four outer feathers on each side terminated with a white spot and the tarsus feathered.

Obs. Jerdon first pointed out the differences between Southern Indian examples of this species and *C. indicus*. Blyth afterwards noticed them in 1845, *loc. cit.*, in an example from the Nilghiris, which he, however, still recognized under the latter name. Subsequently, in 1851, he described the species from specimens sent from Ceylon by Dr. Kelaart as *C. kelaarti*, finding these identical with his Nilghiri bird. It differs from *C. indicus* in its more cinereous or albescent hue compared with the rufous tint of the latter, and also in the more mottled black markings, which give it altogether a darker shade. It is likewise, at least so Blyth considered, a smaller bird. Of late years, however, Hume, from the evidence afforded by a large number of examples from different parts of India, finds that neither of these distinctions will hold good as regards peninsular birds, and remarks that every intermediate link between the two typical forms occurs over all India. Some of the very smallest birds are rufous ones from

Malabaleswar and Ahmednuggur, and also from Raipore, Sankra, and Etawah, while silver-grey and black-mottled birds are found near Simla, altogether out of the accepted range of *C. kelaarti*. Moreover in Travancore Mr. Bourdillon has procured both grey and rufous birds, the latter being quite as much so as North-Indian specimens. There is no reason, however, that the two species should not inhabit the same regions; and if we extend the limits of the range of each, this difficulty will be got over. As regards the Ceylonese birds, it is necessary to remark that they are all grey and like typical *C. kelaarti*, which militates against the possibility of suppressing the species in Ceylon, whatever may be done in future as regards India, where it seems difficult to draw the line of separation between it and *C. indicus*. Two of Mr. Bourdillon's specimens from Travancore measure—♂, wing 6.75 inches; ♀, wing 7.25. In Ceylon the females are much the smaller of the sexes.

Distribution.—This very handsome Nightjar, first noticed in the island by Dr. Kelaart, and named by Blyth from specimens sent him by the Doctor, is almost entirely confined to the mountain-zone, and therein inhabits chiefly the upper ranges and the higher parts of Uva. I have seen it in great numbers about Nuwara Eliya, where its discoverer remarks, in his 'Prodromus,' that it swarms in the dusk of the evening in the marshy plains. It is, however, equally abundant during the S.W. monsoon in all the higher parts of the main range which are open and favourable to its habits, such as the Kandapolla and Elephant Plains and similar localities as far south as the Horton Plain. It appears to leave these high regions for warmer districts during the cold nights of the opposite season, as I found it rare in all the above districts in December, and did not meet with it at all on the elevated plateau between Totapella and Kirigalpotta. In Haputale and other parts of Uva, as well as in most of the coffee-districts of about 3000 to 4000 feet in altitude, it is common enough throughout the year; but it is almost unknown in Dumbura, its usual limit being the neighbourhood of Deltota and Hewahette on the south of the valley, and Kalebokka on the north. It does not appear to have been hitherto known from any portion of the low country, although Mr. Holdsworth records as his opinion the probability of its leaving Nuwara Eliya during the cold season; but in August, 1875, I met with it in one locality of the Eastern Province which is at the sea-level, and where it was not at all to be expected. This was in the forest-region at the base of the Friars-Hood group of isolated hills, which form so prominent an object in the Batticaloa country. This tract is connected with the eastern slopes of Uva by detached groups of hills; but they spring from a low base, and are not situated in such a manner as to favourably foster a migration from the mountains to such a remote part as the Devilane district; and I therefore am inclined to think that the species must be resident in portions of the Eastern Province, particularly as I found it there at the season when it flocks to the upper hills. In corresponding parts of the Western Province, which lie much higher than the Friars Hood, it does not appear ever to be found; nor have I any evidence of its inhabiting the Morowak-Korale mountains, although it doubtless does so, but has been overlooked by gentlemen collecting in that part of the island.

On the continent of India, Kelaart's Nightjar is found in the Nilghiris and the wooded Ghâts of the Central Provinces, all over which latter hills Mr. R. Thompson records it as being common. Mr. Bourdillon notes it as a winter visitor to the Travancore hills, occurring rather abundantly from November until March. It must, in this case, ascend the range from the low country, which is the very opposite of its habit in Ceylon. I observe that Mr. Fairbank did not meet with it on either of his trips to the Palani hills, which does not augur in favour of its being widely spread in the mountains of South India.

Habits.—This Nightjar affects stony patnas, open glades in the forest, and all the confines of the Downs or so-called Plains which are such a singular feature of the fine jungle-clad ranges of Ceylon. It hides during the day among rocks near the edge of the jungle or among coffee-bushes, and from such places of concealment sallies out early in the evening and on all sides simultaneously is heard its curious call-note, *chump-pud*, *chump-pud*, repeated for several minutes and then suddenly stopped on the bird moving out to some conspicuous perch, such as a stump or huge rock, from which it recommences to utter its call. It is a very noisy bird in the breeding-season, but in the cold weather is almost silent, a peculiarity which was curiously noticeable in the birds I met with at Devilane tank, which, on three consecutive evenings before I shot them, were observed silently hawking on the bund of the tank. This species has a bold and dashing flight, rapidly and noiselessly performed, with frequent dexterous turns in the air, as it seizes its prey, and when disturbed in the daytime it quickly darts off and realights on the ground. It is, however, more rarely flushed during the day than either

of the two following species, as it lies very close and does not repose in open spots like the Common Nightjar.

Dr. Jerdon writes, in his 'Birds of India,' that "it is now and then flushed from the woods when beating for game; and more than one has fallen before the gun of the inexperienced sportsman, its extent of wing and the lazy flapping having caused it to be mistaken for the Woodcock." I have myself observed this peculiarly lazy flapping, which is not the usual mode of progression, at sunset, and several times have heard the strange sound which the bird makes, resembling the beating of an immense fan or wing in the air: whether this is caused by the motion of its pinions, or by the utterance of a guttural note, I am unable to say; but much as it resembles a mechanical effect, it is doubtless the result of some curious vocal power in the bird. Its food consists almost entirely of beetles, of which it consumes immense numbers, its stomach being crammed with these, one would think, indigestible insects at an early hour in the evening. It is worthy of remark that the majority of specimens procured of this species are *males*: what becomes of the females in the evenings it is hard to say; but one thing is certain, that they keep out of the way and are seldom shot, except when flushed in the daytime from their nests or in company with a young brood.

Nidification.—Mr. Holdsworth remarks that the breeding-season about Nuwara ELLIYA commences in March and April. Its eggs appear to be seldom found; and the only instance of their being taken that ever came under my notice was related to me by a gentleman in Haputale, who informed me that his sons sometimes procured them on the estate. In India they are well known. In the Nilghiris and Central Provinces, according to Mr. Hume's correspondents in 'Nests and Eggs,' it commences to breed in March and continues to lay until August. The eggs are deposited "in a slight depression under a bush or tuft of grass;" but they have been found, Mr. Davison relates, in a heap of ashes produced by the *Burgas* burning weeds in their fields. The eggs are two in number, and are said to be counterparts of those of the closely allied *C. indicus*; they are of a pale yellowish or salmon ground-colour, marbled with brown among blotches of a lighter shade, which sometimes resemble a darker tint of the ground-colour; they are long ovals in shape, and "vary from 1·08 to 1·23 inch in length, and from 0·8 to 0·9 inch in breadth."

Mr. Rhodes Morgan on one occasion found the eggs deposited on a heap of ashes; he describes them as of a "pinkish buff, blotched with pale violet-brown."

CAPRIMULGUS ATRIPENNIS.

(THE JUNGLE-NIGHTJAR.)

Caprimulgus atripennis, Jerdon, Ill. Ind. Orn. pl. 24, letterpress (1847); id. B. of Ind. i. p. 196; Holdsworth, P. Z. S. 1872, p. 421; Legge, Ibis, 1874, p. 12.

Caprimulgus spilocercus, Gray, List Fissirostres Brit. Mus. p. 7 (1848); Hume, Stray Feath. 1873, p. 432.

Caprimulgus maharattensis (Sykes), Kelaart, Prodrum, Cat. p. 117 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 166.

Maharatta Goatsucker, apud Kelaart; *The Spotted-tailed Goatsucker*, Gray.

The Ghât Nightjar, Jerdon; *Goatsucker*, *Night-Hawk*, Europeans in Ceylon.

Bim-bassa (West Prov.), *Ra-bassa*, *Omerelliya* (South Province), Sinhalese; *Pathekai*, lit. "Roadside-bird," Jaffna Tamils, also *Pay-marrettai* (Jerdon).

Adult male. Length 10.6 to 11.0 inches; wing 7.0 to 7.2; tail 4.9 to 5.3; tarsus 0.7; middle toe and claw 0.95 to 1.0; bill to gape 1.3 to 1.4.

Adult female. Length 10.0 to 10.4 inches; wing 6.6 to 6.7.

Iris deep brown; eyelid pale reddish (yellowish in female); bill reddish brown, tip black; legs and feet reddish brown or pale reddish, claws dusky brown.

Male. Top of the head and upper part of hind neck cinereous brown, very finely stippled with grey, the feathers of the centre of the crown and nape having broad black mesial stripes, the ground-colour of the latter part passing with a ferruginous hue on the hind neck into the blackish of the back, rump, and upper tail-coverts; the margins of the feathers on these parts stippled with fulvescent grey, and the black confined chiefly to a central stripe; scapulars very handsomely marked with oblique bands and spade-shaped patches of velvety black, the shorter feathers with oblique external margins of rich buff, the longer feathers being mostly grey near the tips, vermiculated with blackish; lesser wing-coverts blackish, mottled with ferruginous; anterior feathers of the remaining series black, marked with mottled spots of buff, and in some examples with white tips to many of the feathers; inner secondary coverts mostly mottled with grey on a black ground, and with buffy white tips to some of the feathers; primaries blackish brown, mottled at the tips with pale cinereous; the 1st quill with a white spot on the inner web, and the next three with a white bar in continuation, interrupted on the 2nd quill at the centre; inner secondaries paler than the primaries, marked in places with ochraceous buff; tertials mottled with cinereous grey at the tips; tail blackish brown, the four central feathers mottled with dusky fulvous, the two lateral feathers on each side black, with the terminal third white and the lateral margin tinged with buff, inner margins of all indented with buff.

Lores and ear-coverts russet-brown, mottled with black; rictal bristles black, with white bases; chin and along the base of lower mandible mottled black and fulvous; a thin white stripe at the gape; across the throat a broad white band, its lower edge deeply margined with black, or, in some, barred with this hue and tipped with rufous-buff; chest and upper breast cinereous, finely stippled with brown, and the latter part washed with a russet hue; beneath this the under surface is fulvous, crossed with narrow bars of blackish brown, the centre of the breast being, in many specimens, slightly albescent; under wing-coverts fulvous, cross-marked with brown.

The scapulars vary much in this bird, scarcely any two examples having them marked the same; in some individuals the broad oblique buff margins are almost entirely wanting; the white tips of the wing-covert feathers likewise are variable.

Female. Has not the scapulars so conspicuously marked as the male; the wing-spots are buff or buffy white, small and bar-shaped, that on the 4th quill almost wanting; two lateral rectrices on each side with a buff-white tip, varying up to half an inch in depth, or with the tip only mottled with buff (such examples being probably young); white throat-spot smaller than in male, ground-colour of lower parts duller.

Young (male of the year). Wing 6.6.

Bill and feet paler than in adult.

White tail-spots smaller than in adults, the black running out on the outer web much further than on the inner; the outer margin of the white spot mottled with brown; throat-bar as in females.

Note. The section to which this species and one or two others in India belong is characterized by having the two outer tail-feathers in the male terminated with white and the tarsus feathered.

Obs. Layard speaks of *C. mahrattensis*, in conjunction with *C. asiaticus*, being very abundant in the vicinity of Colombo and throughout the Southern Province. As there is no other Nightjar besides the latter which is common, or even found, in the districts named, it follows that *C. mahrattensis* was mistaken for the present species, as Mr. Holdsworth (*loc. cit.*) has already suggested. Mr. Hume points out ('Stray Feathers,' 1873) that Ceylon specimens do not agree over well with Nilghiri ones.

Distribution.—This fine Nightjar is a denizen more or less of the entire sea-board of Ceylon, and extends into most of the inland districts, being very numerous in all parts which are clad with forest or are even moderately well-wooded. Mr. Holdsworth does not record it from Aripu on the north-west coast; but it is abundant in parts of the Jaffna peninsula, and I have met with it on the coast at Illepekadua, north of Mantotte, and at Pomparipu to the south of it; so that I imagine it is simply locally absent from the open country near the Pearl station, and probably an inhabitant of the adjacent interior. It is very numerous in the northern forest-tract and around Trincomalie, in the wooded districts of the south-west from Kalatura round to Tangalla, and in the jungle-country north of Kattregama. The same may be said of the country north of Kurunegala and many parts of the Western Province, although I found it conspicuously absent from most parts of Saffragam. It ranges into the hills up to an altitude of about 3500 feet, at which elevation I have seen it in Hewahette, and in Dumbara it is common. Mr. Parker does not record it in his letters to me from the Uswewa district; but I have no doubt that it is found there.

On the mainland, the Ghât Nightjar, as it is styled by Jerdon, is found in various parts of the south of India, to wit, on the Malabar coast and in the Ghâts of the north of the Carnatic. It is tolerably common in the Nilghiris; but Mr. Bourdillon has not procured it in the Travancore hills, nor Mr. Fairbank in the Palani ranges, which proves that it is a bird of local distribution in the peninsula.

Habits.—This species inhabits dry forest, low jungle, scrub, and wooded tracts in semicultivated country. It is very partial to the "cheena"-woods in the Galle district, and similar secondary jungle in the east and north of the island, such haunts affording it secure shelter whilst it roosts on the ground, and from which it sallies out at dusk, settling in roads, pathways, or any bare spaces in the woods. I have always observed that it avoids localities in which there are not large trees, which habit is exemplified in its locating itself in numbers about the outskirts of the cinnamon-gardens at Colombo, while it does not haunt the open bushy gardens themselves, where the next species is so common. It comes out a little later than the Small Nightjar, first of all flying up to a low stump or branch and uttering its curious call, like the striking of a hammer on a thin plank; as soon as it is heard this cry is answered by its companions, and in a few minutes these notes resound on all sides and are continued until it is dark enough for the birds to take wing in pursuit of the myriads of beetles and other insects which throng the calm air of a tropical evening. This loud note is generally preceded by a low *grog, grog-grog*, which can only be heard when one is close to the bird. It is a gluttonous feeder, its stomach being generally crammed with beetles or winged termites before dark, which it captures with a powerful swooping flight, often sailing along with very upturned motionless wings. It is just as fond of sitting on roads and paths as the next species; but it is not so tame, and will not suffer itself to be almost kicked as it will. The Tamils in the north of Ceylon call it the "roadside bird" from this habit, and have a strange superstitious notion that it has the power of plucking out the eyes of their cattle; but they do not seem to be able to account for the fact that there is no ocular testimony of this objectionable habit ever having been put into practice! It is noteworthy that this Nightjar perches continually on the tops of small dead branches of low trees; and once I think I saw it sitting in a diagonal manner, though not quite transversely, across a branch, as an ordinary Passerine bird would have done.

Nidification.—In the west of Ceylon the Jungle-Nightjar breeds during the latter part of the dry season

and the commencement of the monsoon rains in April and May. It lays two eggs in a slight depression in sandy ground, beneath the shelter of a shrub; they are of a buff ground-colour, and very sparsely spotted with very dark sepia-brown, rather roundish blots. I have seen several eggs, and have not detected any of the streaky markings peculiar to those of other Nightjars. I unfortunately have no data of the size of this Nightjar's eggs, as I omitted to measure those which I examined in Mr. MacVicar's collection; they are, however, considerably larger than those of the next species, measuring, according to Layard, "14 lines by 11 lines." The dimensions given by Mr. Hume of a pair of eggs from the Nilghiris, viz. 1.13 inch by 0.72, and 1.01 by 0.74, are, I am sure, inferior to those of Ceylonese birds.

CAPRIMULGUS ASIATICUS.

(THE COMMON INDIAN NIGHTJAR.)

Caprimulgus asiaticus, Latham, Ind. Orn. ii. p. 588 (1790); Gray & Hardwicke, Ill. Ind. Orn. i. pl. 34. fig. 2 (1832); Sykes, Cat. J. A. S. B. iii. no. 30 (1834); Blyth, Cat. B. Mus. A. S. B. p. 83. no. 415 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 115 (1854); Holdsworth, P. Z. S. 1872, p. 419; Hume, Str. Feath. 1873, p. 432; id. Nests and Eggs, p. 97 (1873); Adam, Str. Feath. 1873, p. 371; Legge, Ibis, 1874, p. 12, et 1875, p. 281; Ball, Str. Feath. 1874, p. 385; Butler, *ibid.* 1875, p. 455.

The Indian Goatsucker, Kelaart; *Night-Hawk*, *Goatsucker*, "*Ice-bird*," Europeans in Ceylon (the latter name from the resemblance in the bird's note to a stone scudding on ice).

Bim-bassa, *Ra-bassa*, Sinhalese; *Pathekai*, Tamils in Ceylon.

Adult male. Length 8.9 to 9.1 inches; wing 5.65 to 5.8; tail 4.0 to 4.2; tarsus 0.85; middle toe and claw 0.85 to 0.9; bill to gape 1.2.

Iris deep brown; eyelid light reddish yellow; bill reddish or reddish brown, with the nostril and tips black; legs and feet brownish red, darker at the ends of the toes, claws dark brown.

Light portion of head and upper surface cinereous ashy, finely and distinctly pencilled with brown, and the scapulars and wing-coverts richly marked with buff-yellow; centre of the forehead and crown striped with black, the feathers edged with rufescent yellow; back and upper tail-coverts pale cinereous, most of the feathers with a narrow mesial black line, and the whole finely pencilled with brown; scapulars with arrow-shaped velvety black centres, bounded by broad, rich buff margins; secondary wing-coverts with the terminal portions buff, paling to white at the edges; quills and primary-coverts dark brown, the latter, together with the secondaries, barred with reddish buff; the primaries mottled with grey near the tips, the first with a white spot on the inner web (in some with a corresponding external pale edge) and a similar one on both webs of the next three; centre tail-feathers cinereous, with narrow wavy cross bars; remainder blackish, with wavy cross lines of reddish buff, the two outer feathers with a terminal white spot ($1\frac{3}{4}$ inch in depth in old birds), the tip of the lateral feather nearly always with some dark mottling and its outer margin buff.

Ear-coverts dark brown, beneath there is a narrow whitish rictal spot; a white bar across the throat, divided by a buff-mottled patch in the centre, and continued as a buff collar round the hind neck; chest with the feathers across the centre deeply tipped with pale buff; breast, flanks, and sides of belly barred with brown on a buff ground; belly and under tail-coverts whitish buff, unbarred.

Female. Length 8.4 to 8.6 inches; wing 5.6 to 5.8. Bill paler than in the male, brownish olivaceous at the base and gape; legs and feet brownish olive, claws brown.

Upper surface similar to male; quills paler, edges of primaries greyish near the tips; spots on the outer web of 2nd, 3rd, and 4th quills buff, *in some examples wanting altogether*; tail-spots not so large as in the male, about $\frac{3}{4}$ of an inch in depth, the lateral margin of the outer tail-spot sullied with brown, except in *old* birds.

Young. Iris as in adult; bill dusky olive-brown, the tip dark brown; legs and feet brownish fleshy, palest on the sides of the tarsi.

Above paler or less marked with dark brown and black than in adults; scapulars in some broadly margined with buff, in others almost uniform with the back; quills tipped with buff, the primaries apparently darker in the male than in the female; the white spots on the outer webs of the primaries more or less tinged with buff, as is also that on the inner web of the 4th quill; outer margin of the terminal tail-spots washed with buff and mottled with brown; exterior of lateral tail-feathers broadly edged and indented with buff in those birds which have richly marked scapulars.

Chin and along base of bill whitish in some, this part being, as in the adult, variable in its marking; under surface in the quite young bird fluffy, and the markings undefined in older examples; the ground-colour is greyer than in adults; under tail-coverts usually barred with brown.

Note. This species and its allies have the tarsus bare and the tail-feathers as in the last.

Obs. With age the white terminal spots of the rectrices increase in size, and the throat-band develops and becomes whiter. Examples from the dry, hot districts in the south-east and north of the island are more rufous in their tints than those from the west and south; they thus resemble Indian examples of the species, which are, as a rule, as Mr. Holdsworth remarks, *loc. cit.*, much less grey than those from the island. It must, however, be borne in mind that this Nightjar is a very variable bird in its coloration; some individuals seem to have the tendency to buff markings more exaggerated throughout the entire plumage than others, this being particularly noticeable in the scapulars and tail-feathers; the wing-spots vary considerably in character, and while the ground-colour of the primaries is almost black in one bird, it will be a medium brown in another of the same age.

Distribution.—This little Nightjar inhabits, in considerable numbers, all the maritime portions of the island, affecting, by choice, those localities where sandy scrubs or sparsely clothed open lands border the sea-coast; it is consequently less common in the damp wooded district of the south-west than in the hot eastern and northern divisions of the island. It is very abundant in the Batticaloa, Hambantota, and Trincomalie districts, and likewise in the Jaffna peninsula and down the western coast as far south as Kalatura. In the interior it is less numerous, and such wooded tracts as Saffragam, the Pasdun, and lower portion of the Kukkul Korale are haunted but little by it. It ascends into the Kandyan Province, and is by no means uncommon in Dumbura and Deltota and in the low-lying basins drained by the affluents of the Mahawelliganga. In Uva it ranges to a considerable altitude, and I have seen it in May as high as 4000 feet in the Fort-Macdonald district. Higher than this I have no evidence of its occurring.

Elsewhere on the continent this species, which is the commonest of the Indian Nightjars, is found throughout all India, and ranges, according to Mr. Hume, into the Himalayan mountains in the spring and summer, at which season it may be met with as high as 6000 feet. It extends into Burmah, and is common in the British Provinces there, Mr. Oates recording it as numerous in the plains of Pegu, but not in the hills. As regards India proper, I find that it is local in Sindh, having only been met with at Sehwan. In the Sambhur-Lake district Mr. Adam says it is not common, but in northern Guzerat and the surrounding plain country it is so. Mr. Fairbank notes that it is plentiful in the Deccan; it is likewise so in the southern parts of the Madras Presidency, but does not appear to occur in the hills, as Mr. Bourdillon does not record it in his list of Travancore birds, and Mr. Fairbank procured but one example of it at the base of the Palanis.

Habits.—The Common Indian Nightjar affects scrubby waste lands, low sandy jungle-tracts, cinnamon-plantations, and openly wooded country intermingled with small wood. It is a tame and familiar bird, and is better known to most people than the last species. It roosts during the day on bare ground between shrubs and sleeps soundly, suddenly getting up when almost trodden on, and quickly realighting again at a little distance off. The young brood remain with the parents for some time, and thus a little party of three or more may often be surprised roosting in close proximity to native houses. It is a well-known bird in the cinnamon-gardens of Colombo, alighting in the roads just after sunset, and on dull afternoons an hour earlier, and allowing itself to be almost driven over before it rises. Layard well describes the habits of this and the last species when he says that "the belated traveller hurrying homeward ere the last dying gleams of the setting sun fade in the west, is startled by what seems to be a stone flying up with a few rapid querulous notes, and gliding along on noiseless pinions settling again within a few yards of him." It is a very noisy bird at sunset and before daybreak, uttering its notes likewise on moonlight nights, although it is quite silent in darkness. Its well-known note, persistently repeated for a long time together, is wearisome when heard around one's bungalow at midnight, and many liken it, both in India and Ceylon, to the sound made by a stone scudding along ice. It resembles somewhat the sounds *chuk-chuk-chuk chuk-urrr-ruk*; but some liken it, according to Jerdon, to the syllables *tyook-tyook-tyook*. However this may be, the peculiar note has given rise to its name "Ice-bird;" and not unappropriate it is too, notwithstanding that the idea does not assimilate well with a temperature of 84° Fahr. ! Its flight is buoyant and skilful, enabling it to capture its coleopterous prey with great ease. It feeds more on beetles than moths, and some say that the singular pectination of the middle claw is adapted by nature for the removal of beetles' claws from its gape. This species usually settles on the ground; but I have several times seen it perched on stumps, like the preceding.

Nidification.—The breeding-season on the western side of the island is during the first three or four months of the year. It lays usually two eggs on the bare ground, often without any depression or nest-formation; but the shelter of a bush or stump is generally chosen. The eggs are ovals in shape and smooth in texture, of a light salmon or reddish-grey ground-colour, marbled slightly and blotched openly throughout the surface with sienna-red over faint clouds of bluish grey. An egg obtained in the cinnamon-gardens measured 1.12 by 0.73 inch; but in 'Nests and Eggs' the average is given at 1.04 by 0.77 inch. The eggs are much more salmon-coloured than those of the last species and smaller. In India this species breeds chiefly in April and May, but its eggs have been taken in July; and Captain Butler is of opinion that it lays twice in the year, he having shot a hen bird, in company with a young one just fledged, on the 20th of July, and found, on dissecting her, that she was about to lay again. It is said not to be so particular in choosing its situation as other Nightjars. Mr. R. Thompson, as quoted by Mr. Hume, says that he has found the eggs "in a quite unsheltered spot in the middle of a dry pebbly *nullah*."

Order P A S S E R E S.

Primaries usually 10, in one section only 9; greater coverts arranged in a single row, not reaching beyond the middle of the secondaries; rectrices usually 12, rarely 10. Hallux stout, furnished with a larger claw than the other toes.

Sternum with a single notch at each side of the posterior margin.

Sect. A. TURDOID or THRUSH-LIKE PASSERES*. *Wing with 10 primaries, the 1st reduced in size.*

Fam. CORVIDÆ.

Bill without a distinct notch in the tip of the upper mandible; stout and straight in most genera, curved in some. Wings variable. Legs and feet stout, the tarsus strongly scutate. Hind toe very strong, claws well curved.

Sternum broad, the keel rather high, the posterior edge with a wide deep notch in each half near the side.

Subfam. CORVINÆ.

Bill more or less long and straight, stout, and the culmen high and much curved, an obsolete notch near the tip of the upper mandible. Nostrils placed in a deep depression, and protected by an impending tuft of bristles.

* The system of classification of the great Order Passeres which I shall follow in this work will be that of Mr. Wallace, as drawn up in 'The Ibis' for 1874, with such modifications adopted by Mr. Sharpe in the 'Catalogue of Birds' as seem to me justified by my own personal experience.

Genus CORONE.

Bill very stout, straight, the culmen very high, and curved from the base, the ridge keeled. Nostrils round, concealed by overlying bristly plumes. Wings long and pointed, the 3rd and 4th quills much exceeding the 2nd and 5th; the 1st about half the length of the 3rd, and longer than the outer secondaries, but shorter than the innermost. Tail moderate and rounded. Legs and feet stout; the tarsus longer than the middle toe and claw, and protected by strong transverse scutæ. Toes strongly shielded, lateral ones nearly equal.

CORONE MACRORHYNCHA.

(THE BLACK CROW.)

Corvus macrorhynchus, Wagler, Syst. Av. *Corvus*, sp. 3 (1827); Hume, Stray Feath. 1877, p. 461; id. *ibid.* (B. of Tenasserim) 1878, p. 660.

Corvus levaillanti, Less. *Traité*, p. 328 (1831); Holdsw. P. Z. S. 1872, p. 460; Hume, Nests and Eggs, ii. p. 411; id. Str. Feath. 1874, p. 243; Ball, *ibid.* p. 418; Hume, *ibid.* 1875, p. 143.

Corvus culminatus, Gray, Cat. Mamm. &c. Nepal Coll. Hodgs. p. 102 (*nec* Sykes) (1844); Blyth, Cat. B. Mus. A. S. B. p. 89 (1849); Kelaart, *Prodromus*, Cat. p. 124 (1852); Layard, Ann. & Mag. Nat. Hist. xiii. p. 213 (1854); Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 553, in pt. (1856); Jerdon, B. of Ind. ii. p. 295 (1863); Legge, Ibis, 1874, p. 23, et 1875, p. 398.

Corvus sinensis, Moore, Cat. B. Mus. E. I. Co. ii. p. 556 (1856).

Corone levaillanti (in pt.), Sharpe, Cat. Birds, iii. p. 39 (1877).

The Indian Corby, The Bow-billed Corby, The Indian Raven (of some) in India.

The Carrion- or Jungle-Crow in Ceylon.

Dhar, Hind. in the north; *Dheri-kowa*, Hind. in the south; *Dad-kag*, Beng.; *Kaki*, Telugu; *Ulak*, Bhotias.

Kaka or *Goyegamma kaka*, lit. "High-caste Crow," Sinhalese; *Kaka*, Ceylonese Tamils.

Adult male. Length 17.0 to 19.5 inches; wing 11.5 to 12.3; tail 6.75; tarsus 2.1 to 2.2; mid toe 1.3 to 1.35, its claw (straight) 0.6; bill to gape 2.0 to 2.2; culmen 1.9 to 2.1. In this species the culmen is much arched.

Female. Length 16.5 to 18.0 inches; wing 10.75 to 11.5.

The smallest birds are from the south of the island.

Iris hazel-brown; bill, legs, and feet black.

Entire plumage black, highly glossed on the scapulars, wing-coverts, and rump with purple; outer webs of the tail-feathers glossed in a less degree with the same; feathers of the throat and breast more or less illumined with steel-blue reflections.

The throat-feathers are stiff and furcate at the tips.

Obs. The Ceylon Crow is the *smallest* race of the species, upon which Wagler bestowed his title of *macrorhyncha* (*cf.* Sharpe, Cat. B. iii. p. 38), and which is spread over a great part of Asia and its archipelago, culminating in the very large form inhabiting Japan, which is named *japonensis* by Bonaparte. In Malacca and the Malayan archi-

pelago it is of medium size, and exhibits the peculiar character of white bases to the feathers of the body; passing round into India it gradually decreases in size southwards towards Ceylon, the white bases becoming scarcer until, in the latter locality (as far as I can judge from a small series), they disappear altogether; while stretching northwards through China and Eastern Siberia to Japan, it increases in bulk and also again loses the white-based feathers. Our bird has usually been styled *C. levaillanti*, in common with that from South India; but in accordance with the results arrived at by Mr. Hume on an examination of an immense series of examples from India, Burmah, and Malacca, as well as by myself from an inspection of a number of specimens from a still wider range, in the British Museum, I do not see the propriety of separating it from the Malaccan species. Mr. Hume, in his exhaustive notice of this bird in 'Stray Feathers,' 1877, p. 461, shows that the characteristic of the white bases to the body-feathers is not of much value, as it is found in Indian examples and is absent in some from Malacca. He, moreover, remarks that this character is not constant in the same bird, as in some specimens the bases of the mantle-feathers were of one colour and those of the rump or the breast of another. I would surmise, in passing, that these were not fully adult birds, which would eventually have acquired the white bases throughout. As regards size, Mr. Hume's tabulation of seventy specimens shows that the wing in males from Malacca, Pegu, and the Andamans varies from 11·7 to 13·5, and in the Indian race as far south as Ootacamund from 11·5 to 14·0 (the latter dimension being, however, very exceptional, and that of an example from Cashmere). In Ceylon, as will be seen above, it diminishes still further. The Andaman birds are characterized by their length of bill; the culmen of one measured by Mr. Hume was 2·85 inches, and the length of another, from gape to tip, examined by myself, 2·5; the latter had the wing 13·3 inches, and the bases of the body-feathers white; the smallest bill in the series in question was 2·15 along the culmen. One example from Fokien, in the British Museum, has the wing 13·8, and the bases of the feathers the same as in Ceylon specimens; the wing-coverts and secondaries have the same amount of purple reflection: one from Sumatra, wing 12·75, bill to gape 2·3, white bases to body-feathers; another from N. India, wing 14·0, bill 2·3, feathers whitish at the base; one from Timor and another from India are greyish white at the base of the body-feathers, but the first-named has the bill very long, 2·6 to gape. Two from Japan have wings 14·16 and 15·0, bills 2·75 and 2·85 to gape; the wing-coverts in these are a richer purple than in any others. The tint of the hind neck varies: in some it has a greyish-green hue; but this is not constant in any locality, and a specimen from Nynsee Tal is identical with one from Ceylon in this respect.

Concerning the coloration of the bases of the clothing-feathers in our birds, I am unable positively to say whether it is ever found to be white, as I did not procure a sufficient series to form an opinion; in one example some of the feathers have a tendency to a light greyish hue about the base, the others being pale brownish. I commend this subject to future workers in Ceylon ornithology. The tendency with Malayan birds to exhibit white bases to the feathers may be analogous to the grey plumage in the Hooded Crow of Europe (*C. cornix*), which freely interbreeds with the black form, and is, according to the opinion of many writers, a mere variety of the latter.

Distribution.—The Black Crow is very abundant in Ceylon, being found throughout the whole island, but chiefly in the interior, with the exception of the coast between Kalatura and Hambantota, along which it replaces the next species as "a citizen" of the towns and villages there. At Colombo it is common in the cinnamon-gardens, but does not come into the bazaars and streets of the town. Some miles to the south of that place it commences gradually to inhabit the cocoanut-lined coast, until it becomes common along the above-mentioned strip. It is very numerous throughout the whole interior, being found in the forest as well as in the open regions, in which latter it locates itself principally near native villages. In the Central Province it is common up to 2000 feet, frequenting the towns of Kandy, Gampola, Matale, &c.; above this altitude its numbers materially decrease, and it seldom ranges above 4000 feet. It has, however, been reported of late years several times to have visited Nuwara ELLIYA for a few days, departing as suddenly as it came.

JERDON writes as follows concerning this bird's distribution:—"The Common Carrion-Crow of India is found throughout the whole country, from the extreme south to the Himalayas, as far west as Cashmere, and eastwards it occurs in Assam, Burmah, and the Malayan peninsula. . . . In the south of India, as at Madras, the Nilghiris, and elsewhere, it is almost as familiar and as impudent as the Common Crow, but towards the north it is perhaps less seen about towns and villages." Mr. Ball remarks that in Chota Nagpur its distribution is somewhat capricious, and its presence or absence in particular tracts it is not always easy to account for. It occurs as high up in the Himalayas as Mussoorie throughout the year; and Mr. Hume records it from Simla. In Pegu it is common away from large towns (*Oates*), and southward of this it extends through the peninsula to Malayana, where it has been found in Java, Sumatra, Borneo, Flores, Timor, and Bali (*Sharpe*, Cat. Birds). It occurs, according to Mr. Davison, all over the Andamans, including the uninhabited islands;

but in the Nicobars it is only found in Camorta and Trinkut, having been introduced into the former place from Port Blair.

From Burmah its range extends as far east as China and Eastern Siberia. Swinhoe notes it as being found throughout the former, including Formosa and Hainan; and, in its large form of *C. japonensis*, it inhabits North China and Japan. The smaller Raven, designated *Corvus culminatus* by Sykes, and kept distinct by Mr. Sharpe, has been found at Yarkand.

Habits.—This bold bird frequents native villages, some of the towns in Ceylon, pasture-lands, and other situations in open country, as well as the wildest forest and jungle of the low country. It is usually found in pairs, except when collected to feed on carrion, when large flocks come together. They are constantly in attendance on cattle and buffaloes, perching on their backs and feeding on the ticks which infest these animals. In the interior it is very destructive to poultry and young chickens and is particularly partial to eggs. Several pairs always take up their quarters during the breeding-season in the swamps and tanks where Herons and Egrets breed, and rob the nests right and left while the owners are absent. I have seen one drop into the nest of a Purple Heron, turn over the eggs, and selecting one, adroitly carry it off in his bill, in less time than it takes to write this. On two occasions I have known them to kill squirrels (*Sciurus penicillatus*), in one of which the marauder seized the animal by the tail and dashed it against the limb of a tree until it was killed; in the other, which I witnessed myself, my attention was attracted by the creature's cries, when I observed it to be doubled up, in its agony, round the bird's bill, which had transfixed its stomach, the Crow holding it firmly, without any apparent exertion. It is a bird of powerful flight, traversing wide tracts of country high in the air, and frequently mounting to considerable altitudes in its pursuit of Hawks and Eagles. In its own turn it is subject to the feeble but troublesome attacks of the "King-Crow" (*Buchanga leucopygialis*). The "caw" of this Crow is louder than that of *C. splendens*, but it has the power of modulating it and altering the tone to an extraordinary extent.

Jerdon speaks of it in India as eminently a carrion-crow, and often the first to discover a dead animal; while Mr. Ball writes of it as being a most useful guide to the sportsman as to the whereabouts of both dead and living game, for, he says, "A tiger or a bear cannot walk about in the daylight without being made the subject of some loudly-expressed remarks on the part of the Crows of the neighbourhood."

I have myself observed this inquisitive tendency in the Corby in Ceylon; and Layard remarks that though a wounded deer may retire to the most tangled brake to die, its covert is invariably revealed to the hunter by the Crows, who, congregating in small parties on the surrounding trees, patiently wait till life is extinct to begin their repast with the jackals and wild hogs.

Nidification.—The principal months for breeding are May, June, and July, most nests being built during May. The nest is placed in the fork of a top bough, often so slender that it will not admit of the eggs being safely reached; or it may rest at the bases of cocoanut-fronds, entirely concealed from sight below. It is a large structure of sticks and twigs, lined with fine roots, hair, wool, &c. The exterior is often very straggling; but the nest is very little larger on the whole than that of *C. splendens*. As remarked in a former article, it is the favourite receptacle for the eggs of the Koel, containing sometimes as many as three or four of them. The eggs are usually four in number, and much resemble those of *C. splendens*. They are long ovals, and in many cases somewhat pyriform, of a pale sea-green or light bluish-green ground, some being thickly spotted with small specks of pale brown or umber-brown over the whole surface, mingled with linear spots of the same; others have the markings much darker, larger, and more openly distributed. They vary, in general, from 1·7 to 1·58 inch in length by 1·2 to 1·7 in breadth; but Mr. Hume records one specimen as 1·95 in length, and says that in India they vary *inter se* surprisingly in size, in tone of colour, and in character of marking, and that the birds of the plains lay slightly larger eggs than those of the Himalayas or Nilghiris, the average of twenty of the former being 1·74 inch by 1·2 against 1·73 by 1·18 and 1·7 by 1·18 respectively.

CORONE SPLENDENS.

(THE COMMON GREY CROW.)

Corvus splendens, Vieill. N. Dict. d'Hist. Nat. viii. p. 44 (1816); Blyth, Cat. B. Mus. A. S. B. p. 90 (1849); Kelaart, Prodromus, Cat. p. 124 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 214; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 559 (1856); Jerdon, B. of Ind. ii. p. 298 (1863); Nevill, J. A. S. (Ceylon Br.) p. 33 (1870-71); Legge, ibid. p. 52; Holdsworth, P. Z. S. 1872, p. 460; Legge, Ibis, 1874, p. 23; Butler, Str. Feath. 1875, p. 493; Hume, ibid. 1876, p. 463.

Corvus impudicus, Gray, Hand-l. B. ii. p. 14 (1870); Hume, Nests and Eggs, p. 413 (1873); id. Str. Feath. 1873, p. 206; Adam, ibid. p. 386; Ball, ibid. 1874, p. 418.

Corone splendens, Sharpe, Cat. B. iii. p. 33 (1877).

The Indian Hooded Crow, Kelaart; *The Common Indian Crow*, Jerdon.

Kowa, *Patti-kowa*, *Desi-kowa*, Hind., in various districts; *Kag* or *Kak*, Beng.; *Manchi-kaki*, Telugu; *Nalla-kaka*, Tam. (Jerdon).

Karavi-kaka, lit. "Low-caste Crow," Sinhalese; *Kakum*, Ceylonese Tamils; *Gráya*, Portuguese in Ceylon.

Adult male and female. Length 15.75 to 17.0 inches; wing 10.0 to 11.0; tail 6.0 to 6.5; tarsus 1.9 to 2.0; mid toe 1.4 to 1.5, claw (straight) 0.5; bill to gape 1.9 to 2.0. This species is as variable as the last in size, but females average smaller than males.

Iris dark brown; bill, legs, and feet black.

Forehead, crown, chin, cheeks and throat, back, wings, and tail black; the back, wing-coverts, and outer webs of secondaries with purple, and the throat, primaries, and tail with green reflections; nape, ear-coverts, sides and back of neck cinereous grey, blending into the black of the surrounding parts, and passing on the chest into a slightly dusker hue than that of the hind neck; breast and lower parts greyish black, glossed slightly with greenish and blending into the hue of the chest; under surface of primaries, particularly near the base, pervaded with greyish.

Young. Birds of the year have the wing varying from 9.0 to 10.0 inches.

In the nest-plumage the hind neck is dull grey and the crown is pervaded with the same; the chest and under surface are of an earthy brown, and at the age of three or four months the greenish-black feathers appear on the breast.

Obs. The plumage of this Crow is subject to variation dependent on age and freshness of the feathers; in abraded plumage the hind neck becomes quite fulvous, losing the grey tint of the newly acquired feather. This character is not the result of age in the individual: birds that are in moult may be seen with grey feathers intermingled with old fulvous-coloured ones. The amount of metallic reflections present on the upper-surface plumage increases somewhat as the bird grows to maturity.

Ceylonese specimens have been said to be blacker than Indian; but I do not know whether this alleged character would invariably hold good as regards the upper surface, were an equally large series of adult examples from the two localities compared; certainly continental birds are paler on the chest, and the grey tint descends lower down than in those from Ceylon, but some examples from India will coincide as regards the hind neck with insular ones. Birds which I have examined from Nepal and Darjiling are very pale on the hood and chest. The wings of eight specimens measure respectively 11.2, 11.0, 11.4, 10.8, 10.0, 11.9, 11.0, 10.8 inches; the largest are from Nepal. Ceylonese examples compared, therefore, with the above series will be seen to be smaller than their Indian fellows; but in regard to size insular birds vary very much; one has only to look at a number of adults as they hop about in the streets to notice at once the variation in size which exists among them. Mr. Hume writes that specimens shot in the Laccadives were very dark, recalling *C. insolens*.

In Burmah is a nearly allied race or subspecies of the present, the *Corvus insolens* of Hume. It differs from the Indian bird in being blacker with a somewhat dull appearance about those parts which in the Indian Crow are

of a pale brownish grey or pale greyish white, and it has moreover, says Mr. Hume, a somewhat longer, slenderer, and more compressed bill. Examples in the British Museum resemble *C. splendens* in the back, wings, and tail, but have the hind neck, its sides, and the chest blackish grey, faintly suffused with greenish, and the upper part of the breast concolorous with the rest of the under surface, which is greenish black suffused with grey. The wings of six examples measure respectively 10·4, 9·5, 10·6, 10·2, 9·5, 10·55 inches.

Distribution.—This Crow, which is very abundant in Ceylon within its limits, is localized in a curious manner round the coast. It is found on both sides of the north of the island, following the west coast down to about Kalatura, and the east to somewhere in the neighbourhood of Arookgam Bay; beyond this, towards Hambantota, it may occur as a straggler, but certainly not in any numbers. Its cessation on the west coast under similar conditions of climate and food to those at Colombo, where it is so abundant, is most singular. The fact was first noticed by Mr. Nevill, C.C.S., in the J. A. S., C. B., 1870-71, and was at that time received by many with some little reserve. For my part, however, I very soon verified his statement on going to Galle, at which place, as likewise round the whole southern sea-board, I found it entirely absent. It is chiefly confined to towns and their immediate environs, being found in the interior only as a straggler, and even then is not met with many miles from the coast. Even at small villages on the sea, between many of its favourite resorts, it is almost replaced by its inland relative, thus appearing to congregate almost entirely where large native populations afford it an abundance of food.

Mr. Nevill, in his above-mentioned notice of this Crow, remarks that there "is no doubt that it is not indigenous to the south of the island, having been introduced by the Dutch at their various stations as a propagator of cinnamon, the seeds of which it rejects uninjured." I do not know whether there is, in the records of the former rulers of Ceylon, any thing to support this statement; but I am inclined to think, with Mr. Holdsworth, that it is the habits and inclinations of the species which prevent it from spreading into the south; being a bird of powerful flight it has been long enough in the island to diffuse itself over the whole surface of the low country, no matter in what manner it was first introduced; and the fact that it is still remarkably local goes to prove that it confines itself to districts which suit its disposition, and that probably it avoids the south-west corner of the island owing to the humidity of the climate, a cause which alone localizes so many Ceylonese species.

This well-known bird inhabits the whole of India from the south to the Himalayas; it is found in Nepal, but does not extend as far into the range as the interior of Sikkim; it is obtained at Darjiling, however, whence there are specimens in the national collection. To the eastward of the Bay of Bengal the dark race, *Corvus insolens* of Hume, replaces it, but it reappears, whether as a migrant or resident is still uncertain, in Malacca. The specimen in the British Museum from this region was purchased from Mr. Boucard, who got it from a collector who shot it himself. I do not observe any other instance of its capture in Malacca, and some further light upon its presumed existence in that country is much to be desired.

As regards the peninsula of India it extends as far to the north-west as Sindh, where it is plentiful. In Chota Nagpur Mr. Ball remarks that it is more plentiful than the preceding species, and that it usually inhabits a distinct tract of country from that bird, although sometimes found with it about towns and villages. In the south it does not ascend the hills as it does in the Himalayas; Mr. Fairbank only found it at the base of the Palanis, and it is not recorded from the Travancore ranges at all. It extends across to the Laccadive Islands, in which group Mr. Hume found it at Amini, and heard of it at one or two of the islands nearest Cannanore.

Habits.—The space allotted to me in such a work as the present is far from sufficient to describe the habits of this bold "citizen" of Eastern towns. He is gifted with as much as, if not more intelligence than any member of his sagacious family; and annoying as he is, on account of his large share of brains, he is nevertheless a most useful adjunct to the sanitary regulations of Indian towns. He thrives to a marvellous degree in all these, his prosperous condition depending mainly on his utter audacity, his entire disregard of man, his thieving propensities, and his accurate powers of observation. He devotes himself to the timely occupation of the back yard, the bungalow verandah, the barrack-square, the abattoir, and the commissariat meat-

store; or he resorts to the scene of the fisherman's occupations on the sea-beach, or the door of the native cottage at the morning hour of cooking, in all cases exactly at the opportune moment, and he is sure not to come away without his wants being satisfied. While living at Trincomalie I always found him winging his way at early morn, while it was yet dusk, in long lines to the sea-beach and to the troops' meat-store, to be in time for the dragging of the sein-net or the cutting up of the oxen; and gathering on the sands in noisy knots, or lining the branches in "cawing" rows, these skilful robbers would never miss a chance of snatching up an unguarded morsel. But it was at meal-time in the barrack-squares of Colombo that he was more particularly in his element; crowding in scores round the verandahs at the bugle-call of "dinners up," the audacious thieves waited until the tables were spread and eagerly watched for the opportunity of acquiring a midday repast. Luckless was the soldier who turned his back for an instant! From the adjacent branches to the table and back was the work of a second, and in this space of time the savoury meat had disappeared from the gunner's plate and was being discussed by half a dozen sable beaks. In the bungalow verandah the Crow proves himself a terrible nuisance; seated on the tops of the green "tats," or slyly perched on the window-sill with his head awry, he does not scruple to pounce down, and in the momentary absence of the Ayah snatch the bread from the children's hands, or dart into the nursery and upset the milk-jug on the table; or he will glide noiselessly through the breakfast-room window and in an instant pounce upon the sideboard or table, and having from afar selected the most tempting-looking cutlet or the best viand is off again before the Appu, who is laying "master's" breakfast, can, with a well-aimed blow, effectually stop the thief. The only satisfaction that "master" gets is the Appu's tale, "Sar! I go to kitchen for a minute, and that Crow take away master's breakfast." I have witnessed one of these birds come into the mess-room at Colombo, pull off the napkin that had been placed over a cold joint on the sideboard, and begin pecking away most vigorously at the meat.

Concerning the Crow's exploits in Ceylon, Layard writes as follows:—"He levies contributions on all alike: leave but your breakfast-table for a moment, and as you return the rustling of hurrying wings, the marks of many feet on the white table-cloth, the gashes in the pat of butter, and the disappearance of plantains and small viands, proclaim who have been the robbers. The old 'hopper woman' sits frying her cakes under the lonely 'pandal' of her cadjan hut, and over her, with head inclined, taking a bird's-eye view of her cookery, sits the 'caca;' and now the 'appah' (anglice 'hopper') is done, lifted from the pan, and laid on the little circular basket ready for a customer. With a grunt of satisfaction the aged crone surveys her handiwork, and drops her spoon to feel for her beloved betel-pouch: a tiresome little bit of areca-nut has got into a corner, and the old dame bends over it, unmindful of her charge; a dark figure drops from the roof, and though she is instantly on the alert and aims an ineffectual blow at the thief, the nice white 'appah' is borne off. Sometimes, however, the robber has but a poor hold on it and drops it on the red cabook road; down pounce a host of Crows that have been looking on from many a tree, and a scuffle ensues: but anxious at least to cheat them of their booty, if not to retain the damaged article for her own eating, the old woman hurries to the rescue; but this makes matters worse, the castle is defenceless, and unseen foes drop down from beam and rafter or fly in through open doors. The rice-basket is invaded, the chilli-box overturned, the dried fish stolen, and lucky is the dame if the crash of most of her little store of crockery and glass, swept to the ground and scattered in shining fragments, does not hastily recall her to her hut."

This account is by no means overdrawn, for to the natives of the bazaars the Crow is an utter pest. I question, however, whether his absence from the towns would not in the end lead to much harm, for he is a most useful scavenger, and clears the streets and back premises of every thing thrown out from the houses, which would otherwise speedily decompose in the rays of the tropical sun. Notwithstanding its utter disregard for the native (which is so great that I have seen one pounce on to a basket carried on a boy's head and seize from it a cake or a fruit), it entertains a marked respect for the white man, and stands in wholesome dread of the gun, flying off the moment a stick even is pointed at it; and so quick-sighted is it that it espies any one trying to stalk it and decamps at once, though it has not seen the gun in the enemy's hand!

At certain hours in the day these Crows assemble in large flocks and hold a noisy parlance which lasts for some time. At Colombo it was usually on the beach at the "Galle Buck," over an evening meal

on sandflies, which they are very fond of, or engaged in pranks with the hermit-crabs, that the affairs of the day seemed to be discussed. Often at midday a noisy meeting would take place on the banks of the lake, and while several dozen birds held an angry debate on some fellow Crow who was posted in the middle of the circle, others would bathe up to the thighs in the water, ducking themselves and splashing in all directions. A striking instance of the Crow's love of mischief and his innate impudence was exemplified at Colombo in his habit of annoying the unoffending little Grebes which frequented the lake; apparently for the sake of seeing them disappear under the water, he would dart down on them over and over again.

In the towns the Grey Crow invariably roosts on the fronds of cocoanut-trees, sitting close together in rows, but not settling down for the night until a considerable time has been spent in noisy discussion. It appears to feel the tropical heat at midday, taking shelter under the shadiest branches, and often panting with its bill wide open.

Nidification.—The breeding-season on both west and east coasts lasts from May until July. The nests are built in trees near human habitations, generally at a considerable height from the ground. Scarcely ever more than two are found in the same tree, and it is usual to find but one. They are placed in the fork of a tree and made of sticks lined with coir-fibre, small roots, wool, hair, or any substance which will suit the purpose; the interior is very shallow in some and moderately deep in others, and usually measures about 6 inches across. The eggs are from three to four in number and vary much in shape, although typically they are slightly pointed ovals. The ground-colour is also somewhat varied, being in some of an olivaceous bluish green, and in others of a light blue-green. Normally they are rather closely freckled and spotted with brownish grey and light brown all over, but chiefly at the large end, where there are, in some instances, a few darker brown streaks. They vary considerably in length, but not in general bulk, averaging about 1.4 by 1.06 inch, the largest that I have measured not exceeding 1.6 by 1.08 inch.

It breeds in the Himalayas up to 4000 feet; the season, *par excellence*, says Mr. Hume, "is June and July; but occasionally nests will be found earlier even in Upper India, and in Southern and Eastern India a great number lay in May." Miscellaneous material is used for the construction of the nests, particularly in the matter of lining; and Blyth speaks of some nests being exclusively composed of wires taken from soda-water bottles, which had been purloined from heaps set aside by native servants for sale.

The same variety of form and marking of the eggs is observable in Indian specimens, and the average of a large number "is 1.44 by 1.06 inch."

Genus CISSA.

Bill moderately short, stout, wide at the base; culmen well curved, the tip with a plainly indicated notch; nasal bristles short; gape furnished with short rictal bristles. Eye surrounded by a prominent naked wattle. Wings short, rounded, the 6th quill longest. Tail long and graduated. Legs and feet stout. Tarsus equal to the middle toe with its claw; lateral toes subequal.



CISSA ORNATA.

(THE CEYLONESE JAY.)

(Peculiar to Ceylon.)

Pica ornata, Wagler, Isis, 1829, p. 749.

Cissa puella, Blyth, J. A. S. 1849, xviii. p. 810; id. Cat. B. Mus. A. S. B. p. 93 (ex Layard, MS.); Kelaart, Prodromus, Cat. p. 124 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 213.

Cissa pyrrhocyanæa, Gould, B. of Asia, pt. i. pl. 13 (1850, ex Licht. MS.).

Kitta ornata, Bp. Consp. i. p. 166 (1850).

Citta ornata, Licht. Nomencl. Av. p. 9.

Cissa ornata, Blyth, Ibis, 1867, p. 298; Schlegel, *Coraces*, p. 69; Gray, Hand-l. B. ii. p. 7 (1869); Holdsworth, P. Z. S. 1872, p. 461; Legge, Ibis, 1874, p. 23; Holdsworth, *ibid.* p. 124; Sharpe, Cat. B. iii. p. 87 (1877).

The Mountain-Jay, Europeans in Ceylon; also *Blue Jay*.

Kahibella, Sinhalese.

Ad. capite et collo undique castaneis: dorso lætè ultramarino, uropygio cum dorso postico et supracaudalibus magis cyanescentibus: tectricibus alarum omnibus ultramarinis: primario primo nigro: remigibus reliquis extùs castaneis, intùs nigris: caudâ cyaneâ, rectricibus latè albo terminatis, fasciâ subterminali nigrâ transversim notatis: subalaribus ultramarinis, interioribus cineraceis: remigibus infrâ nigris, extùs castaneis, intùs versus basin rufescentibus: palpebrâ et iride sanguineis: rostro rubro: pedibus corallinis.

Adult male and female. Length 18·0 to 18·5 inches; wing 6·5 to 6·7; tail 10·25 to 10·7, outer feathers 6·5 shorter than central; tarsus 1·6 to 1·8; mid toe and claw 1·5; bill to gape 1·5 to 1·6. Expanse 20·5.

Iris light brown; eyelid deep red, orbital skin somewhat paler; bill, legs, and feet coral-red; claws reddish yellow at base, dusky at tip.

Whole head, neck, and chest deep shining chestnut; interscapulary region, lesser wing-coverts, and beneath the hue of the chest cobalt-blue, paling into light cærulean blue on the lower back, rump, and underparts; greater wing-coverts duller blue than the lesser; quills light chestnut on their outer webs, and dull black on the inner, those of the tertials overcast with blue, basal inner edges of quills rufescent grey; tail greenish blue, the edges brightest and the terminal inch white with a dividing black band chiefly developed on the inner web, the four lateral pairs of feathers with the white running up the outer edge; thighs dusky cobalt-blue.

Young. Tail in nestling plumage about 6 inches in length; feathers pointed. Iris brown, with the outer edge pale, orbital skin brown; bill dusky orange with a pale tip; legs and feet dusky red.

Head, hind neck, throat, and chest pale chestnut; back and upper breast bluish green, becoming dusky on the lower breast, with the belly albescent; lesser wing-coverts as the back; the greater coverts and quills as in the adult. At a further stage the chestnut of the head and throat becomes darker, and the back and breast more blue, but not nearly so pure as in the second year or fully adult dress.

Distribution.—The Ceylon Jay inhabits the mountains of the Central Province, including the detached Muneragala range beyond the south-eastern slopes of Madulsima, and all the peak forests which descend into the Western Province and form the northern slopes of Saffragam. Beyond this district, to the south and west respectively, it is found in the jungles of the Rakwana district, the Morowak and Kukkul Korales, and the immense forests covering the low ranges between the Singha-Rajah jungle and the Kaluganga. This latter district comprises the lower part of the Kukkul Korale and the Pasdun Korale, and the highest parts do not exceed 1700 feet. I found it in the valleys of this wild and little-known region during the rainy month of August, at an elevation considerably under 1000 feet, which leaves no doubt that it is a resident there.

Since the jungle in the Central Province has been felled to such an enormous extent for coffee-planting, the Jay has decreased very much in numbers below 4000 feet. Its chief home now is in the forests of the main range, the Nuwara-Elliya plateau, the Peak wilderness, the upper part of Haputale, and the summits of the Knuckles. In patna-jungles, however, it is always liable to be found, particularly during the boisterous weather of the S.W. monsoon, when it is driven down from the mountains above.

The Jay was first made known by Wagler, who described it in the 'Isis' for 1829, from a specimen in the Berlin Museum, to which the East Indies was assigned as the habitat.

It seems to have escaped the notice of subsequent ornithologists until Layard's time; while collecting in Ceylon he met with it, and, being under the impression that it was new to science, he gave it its appropriate synonym, *C. puella*, and transmitted his specimens to Blyth, who established the name. Layard writes of it, "This, the most lovely of all our Ceylon birds, was discovered by me along the course of a mountain stream in the jungle near Ambegamoa."

I am glad to hear that many gentlemen in the planting districts are endeavouring to preserve this handsome species, and thus prevent the disappearance of such a pleasing ornament to the woods in the vicinity of their estates. These efforts, I understand, are chiefly being made in the Dimbulla and Lindula districts.

Habits.—This beautiful bird is of a shy disposition; it associates generally in parties of about half a dozen, and passes most of its time in the branches of tall trees, searching for lizards and large beetles, and partaking of fruit of many kinds. It is, however, often met with in low underwood; and I have several times flushed it from the ground, when it flies on to low branches and speedily makes its way off. It is fond of the green lizard (*Calotes*), which I have on several occasions found in its stomach in large fragments. At early morning they roam about the forest, keeping to the tops of the trees, and following each other with a loud clanking cry, until suitable trees to feed in have been found, in which they settle down, uttering a harsh croaking note as they move from branch to branch. When feeding in underwood or on the ground I have noticed that they are usually silent and very watchful, which they have need to be, for their beautiful blue plumage quickly attracts the attention of the sportsman. It has, notwithstanding its wary habits, a considerable amount of inquisitiveness in its disposition. Layard writes thus of it:—"The last I procured fell a victim to that curiosity so characteristic of the Jays. I was creeping through some thick jungle to get a shot at a large Wood-Pigeon, when a *Cissa* flew down from some lofty trees, and, coming close to me, peered into my face. I waited until the bird had leisurely surveyed me and flown to a little distance, still watching my movements. This enabled me to shoot it." Mr. Holdsworth remarks, "They are very noisy, continually uttering a Jay-like scream, both when perched and flying. There is consequently little difficulty in finding them out when they are in the neighbourhood; but from their keeping so much to the dense jungle, I have on several occasions worked my way quietly through the bushes to within a few yards of the birds without being able to get sight of them."

The beauty of the Jay's plumage has caused it to be recklessly shot for the sake of its feathers; but in this matter people in Ceylon are no more to blame than those in Norway, South America, and Australia, who have so ruthlessly slaughtered Kingfishers, Humming-birds, and Parrakeets to satisfy a culpable taste on the part of the fair sex for the ornamentation of their hats with the feathers of many of the most lovely members of the bird creation!

Nidification.—This bird breeds during the cool season. I found its nest in the Kandapolla jungles in January; it was situated in a fork of the top branch of a tall sapling, about 45 feet in height, and was a tolerably bulky structure, externally made of small sticks, in the centre of which was a deep cup, 5 inches in diameter by $2\frac{1}{2}$ in depth, made entirely of fine roots; there was but one egg in the nest, which unfortunately got broken in being lowered to the ground. It was ovate and slightly pyriform, of a faded bluish-green ground, thickly spotted all over with very light umber-brown over larger spots of bluish grey. It measured 0.98 inch in diameter by about 1.3 in length.

The front figure in the Plate accompanying this article is that of a fine female example shot in the forest surrounding the Horton Plains, and the one in the background that of a young bird.

PASSERES.

Fam. ORIOLIDÆ.

Bill rather long, wide at the base ; culmen curved towards the tip, which is distinctly notched. Nostrils exposed, linear in form, placed in front of the base of the bill and near the margin of the mandible. Tarsus considerably longer than the middle toe. Feet small.

Sternum narrow in front, widening posteriorly, with a deep pointed notch in each half of the posterior edge ; the posterior part of the opening almost united.

Genus ORIOLUS.

Bill with the characters of the family. Wings rather long, the 4th quill the longest ; the difference between the secondaries and primaries less than half the length of the tail. Tarsus stout, covered in front with broad transverse scales. Feet rather small ; the lateral toes unequal, the outer one joined at the base to the inner.

ORIOLUS DIFFUSUS.

(THE BLACK-NAPED INDIAN ORIOLE.)

Oriolus sinensis, Swains. An. in Menag. p. 342 (sub *O. coronatus*).

Oriolus chinensis (nec Linn.), Jerd. Cat. B. S. India, Madr. Journ. 1859, x. p. 262 ; Swinhoe, P. Z. S. 1871, p. 374 ; Hume, Str. Feath. 1874, p. 477.

Oriolus indicus, Jerd. Ill. Ind. Orn. pl. 15 (1847) ; Blyth, Cat. B. Mus. A. S. B. p. 216 (1849) ; Layard et Kelaart, Prodromus, Cat. Birds Ceylon, App. p. 58 (1853) ; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 270 (1854) ; Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 124 ; Holdsw. P. Z. S. 1872, p. 452 ; Blyth & Walden, B. Burm. p. 139 (1875).

Oriolus diffusus, Sharpe, Cat. Birds, iii. p. 197 (1877).

Adult male and female. Length 9·5 to 10·0 inches ; wing 5·8 to 6·3 ; tail 4·0 to 4·1 ; tarsus 0·9 ; mid toe 0·8, claw (straight) 0·3 ; bill to gape 1·4, width at nostrils 0·45.

These measurements are taken from a series of examples in the British Museum ; the wings of the two examples procured by Layard in Ceylon measure 6·1 and 6·5 respectively ; these are now in the Poole collection.

“ Iris rich blood-red ; bill pinky red ; legs and feet plumbeous ” (*Jerdon*).

Male. Forehead, as far back as the centre of the crown, throat, entire neck, upper and under surface of body, including the upper and under tail-coverts and the underwing bright yellow, as also the lesser wing-coverts, the outer webs of the greater coverts, and the terminal portion of all but the central tail-feathers ; tips of the primary-coverts and edge of wing paler yellow than the aforesaid parts, and the outer webs of the secondaries marked with the same as follows—the entire web of the innermost and those of the remaining feathers decreasing gradually to an edging on the outermost ; primaries marked with a still narrower margin ; lores, a space above and behind the eye, posterior part of crown, occiput, and nape, as also the wings and tail, with the exception of the parts above named, jet-black.

Female. Back and scapulars slightly tinged with olivaceous.

Young. Bill dusky or dingy pinkish.

Upper surface with the scapulars and those parts of the wing which are bright yellow in the adult dusky greenish

yellow, brightest on the upper tail-coverts; in front of the eye a small black spot; outer webs of greater coverts clear yellow, the parts of the wing which are black in the adult dark brown; sides of neck yellower than the back part; throat, chest, and breast whitish, tinged strongly with yellow on the sides of the breast, flanks, and under tail-coverts, and streaked on the fore neck and under surface of body with blackish lines, finest on the fore neck, and boldest on the breast and flanks.

Obs. Mr. Sharpe has given this species the above title, although it has generally been known by that of *indicus*, as it appears that the name given by Brisson is not admissible, inasmuch as it related to a bird which had blue in its plumage, a character not to be found in any Oriole. As it is found in China it is more widely diffused than any other Black-naped Oriole, and hence Mr. Sharpe's name for it. Linnæus's name *chinensis* is said to be referable to the Philippine bird. Examples from China differ somewhat from Indian ones in having a "slightly larger bill, a somewhat larger wing-spot, and decidedly more yellow on the tertiaries" than the latter; but Mr. Hume, whose remarks I quote, finds Tenasserim specimens to match both Chinese and Southern-Indian, thus establishing an unbroken chain.

The Black-naped Orioles form a closely allied and very interesting group. *O. tenuirostris* from Burmah, as its name implies, has a slenderer bill and has more yellow on the primary-coverts and tail than *O. diffusus*. *O. andamanensis* from the Andamans and *O. frontalis* (a splendid species) from the Sula Islands are chiefly distinguished by their black, almost unmarked wings; and the latter has the head nearly all black, with only a narrow frontal band of yellow.

O. macrurus, Blyth, from the Nicobars is another black-winged species of Black-naped Oriole with a broader occipital band than *O. andamanensis*.

Distribution.—The present species has proved to be only a straggler to the island of Ceylon, but two specimens of it having been procured as yet. Layard, who introduced this Oriole into our lists, writes of it (*l. c.*):—"A single pair of these birds fell under my notice; they were shot by a native at the back of the Bishop's residence near Colombo." It enjoys a wide range, and no doubt is much in the habit of moving from place to place, so that it may occur again at some future period within our limits.

Jerdon remarks that it is spread more or less throughout India, but is rare everywhere; he procured it in the Malabar jungles. Mr. Elliott found it at Dharwar, and it occurs near Calcutta; it is, however, as Jerdon says, much more common in the countries to the east of the Bay of Bengal, extending southwards into the peninsula of Malacca as low down as Pinang. Mr. Hume records it from Tenasserim, in which province Mr. Davison procured it south of Moulmein. It is spread eastward from Burmah as far as China, where Swinhoe remarks of it as follows:—"Throughout China, and Formosa in summer. Resorts in winter to Cochin-China, Tenasserim, and India." It would appear from this that it is merely a visitant to India, a fact which would well explain its being a casual straggler to the shores of Ceylon. As it is a summer inhabitant of China, it probably breeds there, and that country may be considered to be its proper headquarters.

Habits.—But little is recorded concerning the habits of this Oriole. It appears in India to frequent forest-districts, and to keep more to jungle than most other species of its family. It is evidently a bold bird, and well able to hold its own in the forests. Mr. Swinhoe, in writing on the ornithology of Formosa in 1865, gives the following account of its prowess:—"Walking along the avenue this morning, my attention was attracted by a Halcyon's scream, and two birds, one chasing the other, dashed through the thicket. The first bird I was not quick enough to catch sight of. The pursuing bird was an Oriole (*Oriolus chinensis*). The Oriole discontinued the chase, and, perching on a tree not far from me, began to whistle its absurd attempt at a song, as if glorying in the defeat of its enemy. It was a mature bird, and looked very showy in the sunlight." The diet of this species is probably of a mixed nature, as is the case with many of its congeners, who are both insectivorous and frugivorous.

I know nothing of its nidification.

ORIOLOUS MELANOCEPHALUS.

(THE BLACK-HEADED ORIOLE.)

Oriolus melanocephalus, Linn. Syst. Nat. i. p. 160 (1766); Blyth, Cat. B. Mus. A. S. B. p. 215 (1849); Kelaart, Prodromus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 123; Horsf. & Moore (in pt.), Cat. B. Mus. E. I. Co. i. p. 269 (1854); Jerdon (in pt.), B. of Ind. ii. p. 110 (1863); Hume, Nests and Eggs, ii. p. 301 (1874); id. Str. Feath. 1874, p. 230; id. *t. c.* (1878) (B. of Tenass.), p. 330.

Oriolus ceylonensis, Bonap. Consp. Av. i. p. 347 (1850); Jerdon (in pt.), B. of Ind. ii. p. 111 (1863); Holdsw. P. Z. S. 1872, p. 453; Hume, Str. Feath. 1873, p. 439; Fairbank, *ibid.* 1877, p. 406; Sharpe, Cat. Birds, iii. p. 216 (1877).

The Black-headed Indian Icterus, Edwards, Birds, p. 77, pl. 77; *Le Lorient de Bengale*, Brisson; *The Southern Black-headed Oriole*, Jerdon, B. of Ind.; *Mango-bird*, Europeans in Ceylon. *Pilak*, *Zardak*, Hind.; *Konda-ranga pandu*, Telugu.

Ka-kurulla, lit. "Yellow-bird," Sinhalese; *Mamkoel*, *Mambala kuruvi*, Tamils in Ceylon.

Adult male. Length 9.5 to 10.0 inches; wing 5.0 to 5.2; tail 3.2; tarsus 0.9 to 1.05; middle toe and claw 0.95 to 1.0; bill to gape 1.25, width at nostrils 0.37.

Iris bright ruby-red; bill faded lake-red, paler about the base beneath; legs and feet dusky bluish, claws dusky.

Entire head, hind neck, throat, and fore neck down to the centre of the chest shining jet-black; wings and a patch on the centre of the four middle tail-feathers black, less lustrous than the head; rest of upper and under surface, wing-coverts, upper and under tail-coverts, tail and under wing rich yellow, with a *slight* greenish tinge on the back and rump; tips of the primary-coverts, varying from 0.3 to 0.5 inch in depth, tips of the secondaries, varying on the outer webs of the innermost feathers from 0.3 to 0.6 inch in depth, bright yellow; primaries more finely tipped with pale yellow; in most specimens, except those which are evidently very old, the yellow of the central rectrices next the black is sullied with greenish; the black band varies from $\frac{3}{4}$ to 1 inch in width on these feathers. In some examples the outer web of the *shortest* secondary feather, which is almost concealed by the scapulars, is entirely yellow.

Adult female. Length 9.5 inches; wing 4.8 to 5.0. The yellow of the back and breast is less vivid than in the male. Examples not fully adult of both sexes have the back strongly tinged with greenish.

Young. The bird of the year measures 8.7 to 9.1 inches, and has a wing of 4.7 to 4.8. Iris brown; bill black or blackish brown, with the edge of the base of lower mandible light; legs and feet slightly duskier than in the adult; a yellowish stripe runs from the nostril over the eye; orbital fringe yellowish; throat white, with black mesial stripes; the wing-coverts, which are yellow in the adult, have blackish centres; tips of secondaries less conspicuous; margins of primaries whitish at the centre; tail-band brownish, very broad, and extending across all the feathers, but limited to the outer web on the two laterals; the breast striated with black, and apparently more so in males than in females; back washed with brownish. In the nestling just plumaged the head has the feathers edged greenish.

Obs. The Oriole inhabiting Southern India and Ceylon has been usually styled *O. ceylonensis*, a name given by Bonaparte to a bird with less yellow on the wing than he supposed the species described by Linnaeus, under the name of *O. melanocephalus*, exhibited. Linnaeus, however, founded his species on Edwards's plate of the Black-headed Indian Icterus, which is no other than a representation of the Ceylonese and Peninsular-Indian Oriole with the tertials tipped only with yellow; the spot formed by the yellow tips of the primary-coverts is, it is true, very large, and answers well to that which exists in the Himalayan bird usually styled *O. melanocephalus*. This is, however, a mistake of the artist, as is manifest by the letterpress, which runs as follows:—"The remainder of the quills next the body are tipped with yellow, which colour extends a little way along their outer webs; the tips of the covert-feathers where they fall on the greater quills are yellow, which form a distinct spot of yellow a little above the middle of

the wing." Now the alleged differences between Linnaeus's and Bonaparte's species lie in the smallness of the wing-bar and the scanty amount of yellow on the tertials of the latter, characters which in reality, by virtue of Edwards's plate, apply to the former (*O. melanocephalus*). If, therefore, there be two races of this Oriole which deserve subspecific rank, it is the northern bird, which must be separated from the southern and receive a name, which I would propose as *O. himalayanus**, because the birds from that region principally, as I shall presently show, exhibit the characteristic on which they could alone be specifically separated.

As much has been written for and against the characters which have been held to separate the northern and southern races of this Oriole, I have carefully examined the whole series in the British Museum, and give here a Table of the results of my examination. The specific names are those used on the labels of the specimens from the localities named.

		Wing.	Bill to gape.	Wing-spot	Coloration of outer
		in.	in.	(broad). in.	web of innermost exposed secondary.
a.	<i>Oriolus melanocephalus</i> . N.W. Himalayas.....	5·6	1·32	0·7	Entirely yellow.
b.	" " Nepal	5·45	1·35	0·65	" "
c.	" " N.W. Himalayas.....	5·4	1·45	0·45	" "
d.	" " Nepal	5·65	1·3	0·7	" "
e.	" " Nepal	5·7	1·3	0·62	" "
f.	" " Pegu.....	5·4	broken	0·7	" "
g.	" " Kamptee	5·12	1·35	0·4	Large spot at tip.
h.	" " Madras	5·1	1·3	0·55	" "
i.	" " Madras	5·2	1·25	0·45	" "
j.	" " Madras	5·4	1·3	0·5	" "
k.	" " Travancore	5·61	1·35	0·75	" "
l.	" " Tenasserim	5·2	1·28	0·4	" "
m.	" " Behar	5·4	1·3	0·4	" "
n.	" " Behar	5·5	1·3	0·6	" "
p.	<i>Oriolus ceylonensis</i> . Nuwara ELLIYA.....	5·1	1·32	0·3	" "
q.	" " Nuwara ELLIYA.....	4·8	1·2	0·3	" "
r.	" " Galle	5·2	1·25	0·5	" "
s.	" " Nuwara ELLIYA.....	5·0	1·25	0·5	" "

Examples *g* to *o* are not to be separated from the four last Ceylonese specimens; the size of the spot at the tip of the outer web of the innermost secondary, as well as the extent of yellow at the termination of the adjacent feathers, varies in each, but it is no larger in the South-Indian than in the Ceylonese series; it will also be seen that no dependence can be placed on the width of the wing-spot formed by the yellow tips of the primary-coverts, the Travancore specimen having it as wide as any Himalayan, although it must be acknowledged that it is larger as a rule in the northern form than in the southern. There is, however, a constant difference in the coloration of the long, exposed inner secondary of the Himalayan bird, which is very remarkable when seen in a series laid side by side with another from the various localities indicated in the above table; so that in the birds from the region above mentioned, in addition to the secondaries having more yellow at the tips than others, there is the fact that the feather in question has always (as far as I can judge from the series examined) the entire web yellow, while others (the true *O. melanocephalus*) have merely a large spot at the tip of the outer web. In most families of birds it would amount to an absurdity to base a separation of two species on the coloration of a single feather; but in the Orioles, which depend so much on the distribution of the yellow for their specific rank, it may not seem an unnatural point to lay stress upon. As long as the distinction which I have pointed out is found to hold good, I see no reason why the Himalayan and Pegu form should not stand as a subspecies or local race of the Indian.

Distribution.—This Oriole is a very common bird in Ceylon, being found throughout the entire low country and the hills, ranging up to an altitude not unfrequently of 6000 feet. It has, indeed, on several occasions been found at Nuwara ELLIYA; and in Uva, where it is very common, it often occurs at 5000 feet. In the north it is numerous, inhabiting the island of Manaar and those adjacent to Jaffna, as well as the extreme north of the mainland; and in the dry forests of the north-central district, in the Seven Korales, and interior of the Eastern Province it is likewise common. In the west and south it is chiefly found in

* *Oriolus melanocephalus*, Sharpe, Cat. B. iii. p. 215 (nec Linn.).

the cultivated portions of the interior and on the sea-board, and in the Galle district retires inland during the rains of the south-west monsoon. In the arid country between Haputale and the sea it is mostly confined to the forest on the rivers. On the Kandy side it is noticeable chiefly in Dumbara and the open valleys through which flow the numerous affluents of the Mahawelliganga.

In India this species is found throughout the greater part of the peninsula from Bengal southwards. Jerdon writes of the race which he styles *O. ceylonensis*, that it is found in Southern India, being common on the Malabar coast, comparatively rare in the Carnatic, and almost unknown in the bare Deccan. On the western confines of this district, however, it has been found by Mr. Fairbank, who records it from "Konkan and the western declivities of the Sahyadris, from Khandola to Goa." There are specimens in the British Museum from Madras, where it is said to be common. As the examples above cited from Behar belong to this species it may be presumed that the Oriole which Mr. Ball says is common in Chota Nagpur belongs to the scantily marked form and not to that which inhabits the sub-Himalayan region. Passing over Pegu, in going eastward of Bengal, we find it again in Tenasserim, whence comes one of the specimens enumerated in the above table. Mr. Hume says that it "extends through the Province as far south as Mergui, but is rare south of Tavoy." I conclude the birds spoken of are the same as the example cited. In the Andamans Mr. Davison says it is a seasonal visitant, leaving them in October and returning in March.

Habits.—This showy bird, which is one of the ornaments of Ceylonese cultivated nature, frequents open paddy-lands studded with woods, detached groves, wooded compounds, the interior of forests in the dry parts of the island, and the borders of rivers and large tanks. Being a tame species, it dwells much in the proximity of houses, and remains perched sometimes on the top of a prominent tree, repeating its well-known note, *ko-ko-wak*, which it also utters on the wing. It has considerable powers of flight, progressing with alternate beating and closing of the wings. Its food consists chiefly of fruits and seeds of jungle-trees, and it consumes largely the berries of the Lantana. The Oriole is almost universally styled the "Mango-bird" by Europeans on account of its yellow plumage; but I imagine the name was imported from India in the first instance. It is a well-known species in the western parts of the island to sportsmen, and often pays with its life the penalty usually imposed upon the unfortunate members of the feathered creation who, unhappily for themselves, are arrayed in more gorgeous dress than their fellows. The first shot fired in the dawn at the much sought after "Kaswatua"* usually arouses the Oriole, and cuts short the morning preening of his yellow dress, frightening him across the misty paddy-field, out of which the Snipe are getting up before the sportsman's gun. When thus frightened it does not fly far, but quickly settles in some thickly foliated tree and gives out its not unmelodious whistle. It is not a sociable bird, although two or more are often seen not far from each other, and occasionally I have aroused a pair from the same tree.

Concerning its habits in India Jerdon writes:—"It frequents both forests, gardens, and groves. It is a lively and noisy bird, constantly flying from tree to tree, and uttering its loud mellow whistle, which Sundevall has put into musical form. It feeds chiefly on fruit, especially on the figs of the Banian, Peepal, and other *Fici*, and it is said also to eat blossoms and buds."

Nidification.—The "Mango-bird" breeds, on the western side of the island, during the first six months of the year, the favourite time being March and April. In the north-east I have found its nest in December. It builds at the fork of a horizontal branch some distance out and high above the ground, suspending its nest by twining the material of the top round the branches. The nest is variable in construction, but is generally large and loose, composed of grass, bark, and small twigs, ornamented with lichens and bleached leaves. The eggs are usually three in number, pointed ovals in shape, and some so much so that they might be called pyriform; the texture is smooth and the ground-colour pinkish white, sparsely spotted and blotched with openly distributed smooth-edged markings of reddish brown, umber, and purplish black. In some eggs the markings are more confined to the large end than in others, and in one or two I have seen sundry hieroglyphic-like spots. Mr. Hume remarks, in 'Nests and Eggs,' that "the dark spots are not unfrequently more or less enveloped in a reddish-pink nimbus." The average dimensions are 1.2 by 0.82 inch.

* Native name for Snipe.

PASSERES.

Fam. CAMPOPHAGIDÆ.

Bill generally stout, moderately hooked and moderately notched; generally thick at the base, rather widened; the nostrils hidden. Wings in most species lengthened, never short.

Shrike-like birds of soft plumage; the feathers of the lower back and rump with stiffened shafts. (*Sharpe*, Cat. Birds, iv. p. 7.)

Genus GRAUCALUS.

Bill stout, massive, wide at base; culmen keeled and much decurved, with the tip notched distinctly. Nostrils covered with setaceous feathers; rictal bristles moderate; the lores bristly. Head massive. Wings long; the 4th quill the longest, and the 1st less than half the length of the 4th. Tail tolerably long, and slightly graduated at the exterior. Tarsus longer than the middle toe. Feet strong, claws curved and strong.

GRAUCALUS MACIL.

(THE LARGE INDIAN CUCKOO-SHRIKE.)

Graucalus macii, Lesson, Traité, p. 349 (1831); Blyth, Cat. B. Mus. A. S. B. p. 190 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 173; Jerdon, B. of Ind. i. p. 417 (1862); Blyth, Ibis, 1866, p. 368; Hume, Nests and Eggs, i. p. 181 (1873); Walden, Ibis, 1873, p. 310; Hume, Str. Feath. 1874, p. 204; Adam, *t. c.* p. 400; Hume, Str. Feath. 1875, p. 94; Butler, *t. c.* p. 464; Blyth & Walden, B. Burm. p. 123 (1875); Armstrong, Str. Feath. 1876, p. 316; Hume, *ibid.* 1877, p. 29; Fairbank, *t. c.* p. 400; Hume & Davison, *ibid.* 1878, p. 210; Sharpe, Cat. Birds, iv. p. 34 (1879).

Graucalus nipalensis, Hodgs. Ind. Rev. i. p. 327.

Campephaga macei (Less.), Gray, Gen. B. i. p. 283 (1845); Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 128.

Graucalus layardi, Blyth, Ibis, 1866, p. 368; Jerdon, Ibis, 1872, p. 117; Holdsw. P. Z. S. 1872, p. 437; Wald. Ibis, 1873, p. 311; Hume, Stray Feath. 1873, p. 435; Legge, Ibis, 1875, p. 287.

Mace's Caterpillar-catcher, Kelaart; *The Large Caterpillar-catcher*. *Kasya*, Hind.; *Kabasi*, Beng.; *Pedda akurai*, Tel., lit. "Large File-bird."

Adult male and female. Length 10.1 to 10.4 inches; wing 5.8 to 6.05; tail 4.3; tarsus 1.0 to 1.1; mid toe 0.85, claw (straight) 0.39; hind toe 0.5, claw (straight) 0.35; bill to gape 1.3 to 1.4. These measurements are from a good series of Ceylonese examples, in which the females average the larger of the sexes.

Iris reddish brown, variable in intensity of colour; bill black; legs and feet black, edges of tarsal scales whitish.

Male. Above the nostril, lores, round the eye, and the gape and point of chin jet-black, passing into blackish on the ear-coverts. The feathers of the lores are bristly. Above slate-grey (individuals varying in depth of colour), paler on the forehead and rump, which latter part is indistinctly barred with white; head and back in some examples with dark shafts; wing-coverts duskiest than the back and with dark shafts; wings and tail black, the former

with the quills edged white, and the outer webs of the tertials and secondaries paling into grey towards the edge; central rectrices dark grey, and the whole tipped white, the two external pairs mostly so, and the white extremity passing up into the grey.

Throat, sides of neck, chest, and upper breast slate-grey, lighter than the upper surface, and paling on the breast gradually into the white of the lower parts, leaving a few *very faint* traces of barring on the sides of the breast; under tail- and under wing-coverts white, the edge of the wing with a few light bars of bluish grey; thighs slate-grey, the edges of the feathers more or less edged with white. The generality of adult examples have a not inconsiderable amount of light barring on the lower breast.

Adult female. In this sex the lores are less black than in the male, as also the space beneath the eye and the ear-coverts, and the upper surface is not so blue; the very old bird has the under surface as in the male.

Young. The nestling, as described by Mr. Hume from the Andamans, has the lores, cheeks, and ear-coverts pale grey, each feather tipped with fulvous; the head and hind neck greyish white, tipped and margined with pale fulvous; back and scapulars French grey, tipped fulvous, and with a subterminal dusky spot on the feathers; the secondaries, tertiaris, and greater and median wing-coverts greyish brown, very broadly margined on the outer webs with creamy white; the primaries margined and tipped with fulvous; chin, throat, and breast greyish white, the feathers tipped and margined with pale, slightly fulvous white; the lower parts pure white and unbarred.

The immature male has the chest and centre of the breast barred on a bluish-grey ground with dark slate-grey bars, which extend to the lower flanks and borders of the abdomen; the throat and fore neck are uniform grey, as in the adult; lores black.

The female has the throat whitish, the ground-colour being pervaded with grey, which changes into white on the chest, and the whole under surface, from the chin to the lower breast and flanks, barred with dark grey: with age the throat and fore neck gradually assume a uniform appearance as the light interspaces darken; in an example before me in this stage the barring is just perceptible on the throat, and the breast is white crossed with dark grey bars.

Obs. The Ceylonese and South-Indian race was separated by Blyth (*loc. cit.*) as *G. layardi*, without further diagnosis or description than that it was of the same small size as *G. javanensis*, and had the anterior surface of the wing underneath strongly barred, and the outer tail-feathers very slightly white-tipped. The first-named feature in the plumage refers to an immature bird, and the latter is a variable character. Ceylon birds certainly, as a rule, are smaller than those from the Andamans, Burmah, North-east India, and many parts of the Peninsula, but in the south of the empire they vary in size. One example from Coorg, tabulated by Lord Tweeddale ('Ibis,' 1873), has the wing 6.0 inches, while another in my own collection from the island of Ramisserum measures 6.5 inches. Mr. Sharpe, moreover, finds that North-west Indian specimens are intermediate in size between Himalayan and Ceylonese; in fact there is one in the British Museum from Kattiawar measuring only 6.0 inches, another from Kamptee 6.4, and a third from Mahabaleshwar 6.3; while a specimen from Mysore is again as large as a North-Indian one—wing 7.1, bill to gape 1.35. Three Maunbhoom specimens, recorded by Lord Tweeddale, measured 6.37, 6.6, and 6.3 in the wing. An Andaman female in my own collection has a length of 6.9; and one from Dehra Doon is noted at 7.37. These data show, therefore, that there is great variation in size in this species, and that while the largest birds come from the sub-Himalayan districts and the Andamans, those from N.W. India and Ceylon (widely separated regions) are nearly alike in dimensions; and these latter are, as regards plumage, when compared with the larger examples of the same age, identical with them.

Distribution.—This fine bird is generally distributed throughout the northern forest-tract from the country lying to the north-east of Trincomalie to the limit of the dry district a little south of Chilaw, likewise throughout the eastern portion of the island (where it is more particularly found about the dead trees in the newly-restored tanks) and the arid jungles between Haputale and the south-east coast. In the Kandyan Province it inhabits Uva pretty generally and the district round Kandy, including the Knuckles and the valleys of the southern affluents of the Mahawelliganga flowing through Hewahette and Maturata. Mr. Bligh has procured it also in Kotmalie, which is on the other side of the Pusselawa range. Among the above-mentioned districts it is especially numerous in the Wellaway Korale and the wild jungles lying between Anaradjapura and Chilaw.

Concerning its general distribution in India, Jerdon writes that it is found over the whole country, from the Himalayas to the extreme south, wherever there is a sufficiency of wood. Its location in the north-west is

somewhat peculiar, for Captain Lloyd says it is common in Kattiawar. Captain Butler observes that it is the reverse in the Guzerat district, for he only saw it near Deesa and in one or two other parts of the plains; while Mr. Hume writes that it has not been recorded from Sindh, Cutch, Jodhpore, or Sambhur. In Chota Nagpur it is, says Mr. Ball, pretty generally distributed; in the Khandala district it is found everywhere, but is nowhere abundant. Mr. Fairbank records one specimen as seen in the Palani hills; and Mr. Hume has received it from Anjango, and myself from Ramisserum Island. Turning towards the north-east we have it not uncommon along the bases of the Himalayas, and procured at such places as Dehra, Kumaon, Gurwhal, and Darjiling; further east still, Mr. Inglis says that it is very common in Cachar during the cold season, being met with there in flocks, but that it is only occasionally seen during the rains. In the Irrawaddy delta Mr. Armstrong met with it in abundance; and Mr. Oates writes that it is common within the limits of Upper Pegu and also in the Arracan hills. In the northern portion of the province of Tenasserim it is also not uncommon, extending thence across the bay to the islands, where it inhabits those of the Andaman group and is a permanent resident in them.

Habits.—The large Cuckoo-Shrike is decidedly a shy species. In the immature stage chiefly it associates in small flocks or troops, which keep in scattered company among tall trees near forest-lined rivers or surrounding the wild tanks of the Northern Province. Single birds are often met with flying high in the air and uttering their shrill call, *kur-ēech*, sometimes suddenly darting down in their course and alighting on the top of a lofty tree, on which they will continue this harsh and far-sounding note. When in small troops, if disturbed, one bird will leave the tree and is then followed by its mates one after the other, who pursue their companions to a new perch and again settle down in company with them. It is consequently difficult to approach within shot, and is usually only procured when it happens to alight by accident in a tree near the position of the sportsman or collector. Though not loud its note is very harsh and peculiarly far-reaching; it is in the evenings that it is peculiarly fond of uttering its dis-syllabic cry, and it will remain for some time perched in the same spot, now and then, in the breeding-season, giving out a low chirping song. Its food consists of caterpillars, grasshoppers, and various kinds of coleopterous insects. Hodgson states its food to be "*Mantides*, *Scarabæi*, berries, vetches, and seeds." I have no record, in my field-notes, of having found the diet of any example of so mixed a nature as this; but, doubtless, the food of this species is as varied as that of many Passerine birds.

Nidification.—Mr. Parker, of the Ceylon Public Works Department, who has had much opportunity of observing these birds in the N.E. and N.W. Provinces, says that they breed in June in the forests of that part, but he did not succeed in procuring their eggs.

Mr. Blewitt, as quoted by Mr. Hume in his '*Nests and Eggs*,' says "that the nest is built in the most lofty branch of a tree, near the fork of two outlying twigs; it is circular in form, and the body is thickly made of thin twigs and grass-roots, while the outer part of the nest is covered with what appears to be spiders' webs; the interior is moderately cup-shaped. The breeding-time is in May and June." Jerdon found the nest in a lofty *Casuarina*-tree, and it was composed of small twigs and roots. The eggs are three in number and are rather elongated ovals, a good deal pointed towards one end; the ground-colour is greenish stone-colour, with, as Mr. Hume remarks, a creamy tinge in some. "The markings are very Shrike-like, and consist of brown blotches, streaks, and spots, with numerous clouds and blotches of pale inky purple, which appear to underlie the brown markings." Average dimensions of eight eggs 1.22 by 0.9 inch.

Genus PERICROCOTUS.

Bill not so massive as in *Graucalus*; culmen straighter and more suddenly bent down at the tip, which is plainly notched. Nostrils oval, placed in a depression concealed by the plumes; rictal bristles feeble. Wings pointed; the 4th and 5th quills subequal and longest; the 1st and 2nd in the same proportion as in the last genus. Tail long, much graduated. Legs and feet small.

Of brilliant plumage; sexes differing in coloration.

PERICROCOTUS FLAMMEUS.

(THE ORANGE MINIVET.)

Muscicapa flammea, Forster, Indische Zoologie, p. 25, pl. 15 (1781).

Phaenicornis flammeus, Swainson, Zool. Ill. 2nd ser. pl. 52 (1831); Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 244; id. Ill. Ind. Orn. pl. 11 (1847).

Pericrocotus flammeus, Gray, Gen. Birds, i. p. 282 (1845); Blyth, Cat. B. M. A. S. B. p. 192 (1849); Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 127; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 142 (1854); Gould, B. of Asia, pt. ix. (1857); Jerdon, B. of Ind. i. p. 420; Holdsw. P. Z. S. 1872, p. 438; Hume, Nests and Eggs, p. 182 (1873); Legge, Ibis, 1875, p. 288; Sharpe, Str. Feath. 1876, p. 208; Hume, ibid. p. 394, et 1877, p. 197; Sharpe, Cat. Birds, iv. p. 75 (1879).

Flammeous Flycatcher, Lath. Gen. Hist.; *The Elegant Red Flycatcher*, Kelaart; *Sultan-bird*, Europeans in Ceylon; *Orange red Bird*, Swainson.

Phari-Balat-chasm, Hind., Jerdon.

Gene-kurula, Sinhalese.

Adult male. Length 7·7 to 7·85 inches; wing 3·5 to 3·6; tail 3·5 to 3·6; tarsus 0·65; mid toe and claw 0·65 to 0·7; bill to gape 0·9.

Iris reddish brown; bill, legs, and feet black.

Entire head, throat, hind neck, upper part of back, wings, central rectrices, nearly the whole of the adjacent pair, and the basal half of the others black, highly glossed on the head, throat, and back; under surface from the throat downwards, under tail-coverts, the tip and terminal half of the outer web of the above-mentioned central tail-feathers, the terminal half of the rest, a band across the wing, commencing on the outer web of the 5th primary, the tips of the greater secondary wing-coverts, and an external spot near the tips of the inner secondaries fiery orange-red, most intense on the chest, tail-feathers, and upper tail-coverts; under wing-coverts and under surface of the scarlet wing-band, as also an inner marginal spot on the 3rd and 4th primaries, pale yellowish red; thighs dusky black.

Female. Smaller than the male; wing 3·4 to 3·5 inches.

Iris brown; head, back of neck, scapulars, and lesser wing-coverts dark bluish ashy; the forehead and that portion of the wings and tail which is red in the male, together with the entire under surface, primrose-yellow; the wing-spot commences on the 5th primary; lores dark grey; the yellow of the forehead produced above the eye; quills and tail dusky blackish; rump and upper tail-coverts greenish yellow, blending into the hue of the back.

Young. Iris brown.

Immature males are clothed in the garb of the female. A specimen in my collection assuming the adult plumage has the head, hind neck, back, and wing-coverts bluish grey, intermingled with black feathers; throat yellow, mixed

with black: under surface bright yellow, with orange feathers appearing on the chest; rump greenish yellow, with the upper tail-coverts orange-red; part of the wing-bar is yellow and part orange-red, and the same with the spots on the inner secondaries; the wings and central tail-feathers are black, and the pale portions of the tail yellow.

Obs. Mr. Hume gives the measurements of the wings of a series of males from South India as varying from 3.6 to 3.75 inches, and of females from 3.45 to 3.7. These, it will be seen, exceed the usual size of Ceylonese individuals. Two examples in the British Museum, from Travancore and Madras respectively, measure in the wing 3.5 and 3.6, and they have the wing-spot extending as far as the 5th primary; there is another, collected by Captain Elliott, the locality unknown, with the spot extending upon the 4th primary, but it does not reach across the web from the margin quite to the shaft. The northern species (*P. speciosus*), which inhabits the eastern portion of the slopes of the Himalayas as far as Western Bhotan and also Central India, and the eastern and smaller race of that bird, which inhabits Burmah and Assam (*P. elegans*), are allied to the present. The former is a larger bird than *P. flammeus* (wing, ♂, from 4.0 to 4.3), and has the wing-band extending further out than in the latter—that is to say, the first *two* primaries only, according to Mr. Hume, in the male, and the first *three* in the female and young male want the bright patches on the outer webs. The female is of a more orange hue than that of the present species. Mr. Hume speaks of it as follows:—"Is a clear full gamboge- or orange-yellow below, the orange of the forehead extending over the anterior half of the crown, and sometimes further." The wing in *P. elegans* is similarly marked; but the outer webs of the central tail-feathers are red, whereas in the larger form they are wholly black, as in *P. flammeus*.

Distribution.—This conspicuously-plumaged bird is found in most of the forests and wild jungles of Ceylon. It is numerous in the coffee-districts of the centre and south of the island and in the main range, including the Horton Plains, in the woods of which it was one of the commonest birds I saw there during the month of January. Among other places in the Kandyan Province where it is frequent is the Knuckles district. It is found pretty generally in the forests between Colombo and Saffragam, in the Pasdun Korale, and in the wild country on the banks of the Gindurah from Baddegama up to the Singha-Rajah forest. In the jungles of the flat country lying between Haputale and Kattregama, in the Friars-Hood hills, and in the interior of the northern portion of the island it may always be met with where the trees are large and shady. Mr. Parker tells me it is very common at Uswewa, near Puttalam. It is not found in the Jaffna peninsula, as far as I am aware—its northernmost limit being fixed by Layard at Vavonia Velankulam; as there is, however, much heavy forest north of that place, I am of opinion that it will be found between it and "Elephant Pass."

On the mainland this Minivet is confined to the south of India. Mr. Hume thus sketches out its distribution (Str. Feath. 1877, p. 198):—"It is essentially a bird of the hills of Southern India. . . . In the Assamboo hills and their continuation, the Andaman hills, the Western Ghâts, as far north, at any rate, as Khandala, whence I have specimens, the Pulneys, Anamallis, and Nilghiris, the bird is common, and in the cold season it may even be found, at some little distance from the bases of these, in convenient jungles, and on the Malabar coast to the shores of the sea; but it is in no sense a plains bird, and never occurs in India in the open country at any distance from one of these hill series." Now it is singular that though it cannot be called a denizen of open country in Ceylon, it should be so plentiful an inhabitant of low-country forest in many parts of the island. The solution of this problem, no doubt, lies in the fact that the flat or low districts of South India are not covered with forest as in Ceylon. Jerdon remarks that it is found in all the lofty jungles from near the level of the sea to 5000 feet on the Nilghiri slopes, and says that it is, perhaps, most abundant at moderate elevations.

Habits.—The Orange Minivet affects lofty trees in the up-country forests and in patna-woods, keeping much to the topmost branches, or flying gaily about from limb to limb; in the low country it is partial to fine jungle bordering rivers or surrounding remote or secluded tanks. The male is a very showy bird, enlivening the gloom of the primeval forest as it flies from tree to tree or displays its bright red plumage among the green boughs far overhead. When not breeding, it associates in little flocks, either of several females alone, or one or two males accompanied by a little party of the other sex; and from this habit it has acquired its name of "Sultan" in the coffee-districts. It is constantly uttering a weak, though cheerful, little warble, or

otherwise it would be generally overlooked by the collector while threading his way in the underwood beneath it. Its diet consists of small butterflies and various winged insects, some of which it will occasionally take on the wing as they pass through the branches. In the woods of the Horton Plains I saw it catching insects in the moss with which the trees are entirely covered in that cool region, and its brilliant plumage furnished a striking contrast to the cold grey-looking aspect of the jungle.

Jerdon notices that in India "it keeps generally to the tops of high trees, usually in flocks of four or five; the sexes often apart from one another, all frisking about, picking insects off a branch or leaf, or occasionally catching one in the air."

Nidification.—I have never been able to obtain any information concerning the nesting of this species in Ceylon; but Mr. Hume describes the nest, in his 'Rough Draft of Nests and Eggs of Indian Birds,' from information received from Miss Cockburn. He says, "The nests are comparatively massive little cups placed on or sometimes in the fork of slender boughs. They are usually composed of excessively fine twigs, the size of fir-needles, and they are densely plastered over the whole exterior surface with greenish-grey lichens, so closely put together that the side of the nest looks exactly like a piece of lichen-covered branch; there appears to be no lining, and the eggs are laid on the fine little twigs which compose the body of the nest." The season for laying is confined to July, which is probably the same in the damp districts of Ceylon. The egg is described as pale greenish, "pretty thickly streaked and spotted, mostly so at the large end, with pale yellowish brown and pale rather dingy purple."

PERICROCOTUS PEREGRINUS.

(THE LITTLE MINIVET.)

Parus peregrinus, Linn. Syst. Nat. i. p. 342 (1766).

Muscicapa flammea, Forster, Ind. Zool. pl. 15. fig. 2 (1781).

Phœnicornis peregrina, Gould, Cent. Him. B. pl. 9 (1832); Jerd. Cat. B. S. India, Madr. Journ. 1839, x. p. 244.

Pericrocotus peregrinus, Gray, Gen. Birds, i. p. 282 (1845); Blyth, Cat. B. Mus. A. S. B. p. 193 (1849); Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 127; Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 140 (1854); Gould, B. of Asia, pt. ix. (1857); Jerdon, B. of Ind. i. p. 423 (1862); Holdsworth, P. Z. S. 1872, p. 438; Hume, Nests & Eggs (Rough Draft), p. 184 (1873); id. Str. Feath. 1873, p. 184; id. ibid. 1874, p. 209; Legge, Ibis, 1875, p. 284; Sharpe, Str. Feath. 1876, p. 209; Armstrong, *t. c.* p. 318; Hume, ibid. 1877, p. 179; Tweeddale, Ibis, 1877, p. 315; Hume and Davison, Str. Feath. 1878 (Birds of Tenass.), p. 212; Sharpe, Cat. B. iv. p. 76 (1879).

The Crimson-rumped Flycatcher, *The Malabar Titmouse*, Latham; *Small Red Flycatcher*, Sportsmen in Ceylon.

Bulal-chasm, Hind.; also *Sath-sayili* and *Chota sath saki kapi*, Bengal.; *Kunkum-pu-jitta*, Telugu (Jerdon); *Batu gene kurula* or *Kos-kurula*, Sinhalese.

Adult male and female. Length 5·8 to 6·0 inches; wing 2·6 to 2·75; tail 2·6 to 2·7; tarsus 0·65; mid toe and claw 0·55; bill to gape 0·58 to 0·6.

Male. Iris sepia-brown; bill black; legs and feet black.

Forehead and head above, hind neck, and back dark ashy; lores, face, ear-coverts, chin and throat, wings, and three central pairs of tail-feathers, with the bases of the remainder, black; upper tail-coverts, a band across the secondaries, and all the primaries but the first four (in all specimens I have seen), breast, and flanks flame-red or scarlet, palest on the wings; two outer rectrices on each side and a terminal spot on the next pair orange-red; abdomen yellowish red, blending into the scarlet of the breast; under tail- and under wing-coverts yellowish red; thighs blackish.

Female. Iris and bill as in the male; legs and feet brownish black.

The upper parts, which in the male are ashy, are in the female brownish cinereous; wings and tail brownish black, with the same markings as in the male but of a more yellowish colour; upper tail-coverts scarlet, gradually blending with a greenish hue into the brownish grey of the back; above the lores, which are concolorous with the crown, a whitish stripe extending to the anterior upper edge of the eye; beneath whitish grey, washed with orange-yellowish, which becomes the ground-colour on the lower parts; under tail-coverts pale orange-red, concolorous with the outer tail-feathers; under wing-coverts yellowish red.

Obs. In India this species varies to an extraordinary extent in the tone of the orange coloration, which is particularly noticeable in the wing-markings. Mr. Hume, in an exhaustive article on the species ('Stray Feathers,' 1877, p. 179), gives the result of his elaborate researches into the question, from which it may be gathered that males vary in their colours from the blackish iron-grey mantle and orange-scarlet of the breast, abdomen, under tail-coverts, rump, and wing-spot observable in specimens from the extreme south of India, to the pale grey mantle, greyish dusky throat, whitish lower parts (tinged with fiery saffron on the breast), and mingled pale yellow and pale scarlet rump and wing-spot existing in specimens from Sindh. Elsewhere, in the same journal for 1873, he remarks that the deepest-coloured specimens are from peninsular India, then those from Lower Bengal and the eastern portions of the Central Provinces are somewhat paler, those from the rest of the Central Provinces,

the North-west Provinces, and the Punjab paler still, and finally those from Sindh much the palest of all. As regards size, examples from different parts of India, Burmah, and the Andamans are shown to vary in the wing, both in males and females, from 2·6 to 2·9 inches. I observe that three specimens in the British Museum from Kamptee measure 2·6 in the wing, and they have the upper surface precisely as in Ceylonese birds, the breast perhaps a trifle less brilliant, and the wing-bar extending out to the 6th primary. A fourth, from Madras, has the wing 2·8, and the wing-bar reaching to the 5th primary. In Ceylon specimens I have always found this band limited to the 5th quill, the first four being without any orange marking. Mr. Hume notices that from Anjango, Sindh, Dehra, Tenasserim, and Elephant Point males sometimes have the wing-bar extending upon the 5th quill, and from Akyab, Amherst, Port Blair, Moulmein, and Alteran river females exhibit the same character.

Distribution.—The Little Minivet is generally diffused throughout Ceylon, but it is more numerous in the northern half, from Colombo to Jaffna, than to the south of the former place. It may often be seen in the cinnamon-gardens and in the adjacent cultivated, though woody, country. It is plentiful in the Jaffna peninsula, where it replaces the last species, and is also numerous throughout the dry forest-regions between there and Dambulla, as also in the Seven Korales and corresponding low country on the other side of the island. To the south of the Haputale ranges it is likewise to be found in the forests. In the damper portions of the south-west of the island it is not so frequent. I have observed it in most of the coffee-districts; and Mr. Holdsworth records it as a winter visitor to Nuwara ELLIYA, but it is neither so common there nor in the hills of the south as the foregoing species.

On the continent this bird enjoys a more extended range than any of its congeners. Mr. Hume writes:—"I have the species from almost every part of India, Burmah (including Pegu, Arrakan, Tenasserim), and the Andamans; but it is not known to occur in the Nicobars, and is not found, to the best of my knowledge, in the north-west Punjab (Trans-jhilum, in fact), and it neither ascends the Nilghiris nor the Himalayas." In the latter assertion, as regards the south of India, the experience of Messrs. Bourdillon and Fairbank bear him out; for the former does not record it from the Travancore hills, and the latter did not find it above 5000 feet in the Palanis. Mr. Armstrong says it is abundant in Rangoon, and Mr. Davison found it to be a permanent resident in the Andamans. From the latter island its range extends still further to the south, as Lord Tweeddale records a specimen in Mr. Buxton's collection from Lampong, S.E. Sumatra. Mr. Wallace also procured it in Java.

Habits.—This pretty little bird frequents a variety of open situations, but does not like the interior of heavy forests. It is found in the compounds about native villages, among isolated groves, in bushy jungle dotted with large trees, in woods surrounding paddy-fields, and in forest near the edges of tanks and rivers. It usually frequents large trees and keeps mostly to the upper branches. It associates in small parties, which often consist of several females in company with one male, the whole uttering a weak sibilant note resembling the syllables *tsetze*, *tsetze*, and moving on in the pursuit of insects from one tree to another. It may sometimes be seen in company with the preceding species, and often launches out into the air to capture a passing insect. Mr. Holdsworth noticed that at Nuwara ELLIYA it frequented bushes; but in low country it is usually seen seeking for its food in the top branches of umbrageous trees. Jerdon remarks that it is a "restless and active little creature, ever engaged in diligently examining the extreme branches of trees, gleaning among the foliage, and hanging from the slender twigs like a Titmouse. It feeds upon various larvæ (which are its favourite food) and small insects."

Nidification.—I have reason to believe that this bird breeds in the Western Province in May and June, but I was never fortunate enough to obtain its nest. In India it nests during the months of June, July, and August. Mr. Hume writes that the nest is small and neat, and done up generally, like a Chaffinch's, to resemble the bark of the tree on which it is placed. It is sometimes "composed of very fine needle-like twigs carefully bound together externally with cobwebs and coated with small pieces of bark or dead leaves. . . . There appears to be rarely any regular lining; a very little down or cobwebs form the only bed for the eggs, and even this is often wanting." Mr. F. Blewitt writes that in Jhansie and Saugor the tamarind is the favourite tree: nests built in them were composed of "fine petioles of leaves with a thick coating all over

of what looked like spiders' webs ;" attached to this were the dry leaves of the tamarind-tree. The nests were fixed in between two delicate forks at the extreme end of a branch near the top of the tree. The eggs, which are usually three in number, are pale delicate greenish white, and they are richly marked with bright, slightly brownish-red specks or blots, "which, always more numerous at the large end, have a tendency there to form a mottled irregular cap." They average in size 0.67 inch in length by 0.53 in breadth.

Genus LALAGE.

Bill more slender and narrower at the base than in *Pericrocotus*; the culmen gently curved from the base and not suddenly bent at the tip. Nasal bristles short and stiff; rictal bristles scanty. Wings longer than the tail, pointed, and with the 3rd and 4th quills subequal and longest; the 1st longer than in the last genus. Tail moderately long, rounded at the tip. Tarsus about equal to the middle toe and its claw, and shielded with broad scutæ. Toes slender; the middle toe equal to the inner with its claw.

LALAGE SYKESI.

(THE BLACK-HEADED CUCKOO-SHRIKE.)

Ceblepyris canus, Sykes, P. Z. S. 1832, p. 87.

Lalage sykesi, Strickl. Ann. & Mag. Nat. Hist. 1844, xiii. p. 36; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 175; Sharpe, Cat. B. iv. p. 89 (1879).

Campephaga sykesii, Gray, Gen. B. i. p. 283; Blyth, Cat. B. Mus. A. S. B. p. 191 (1849); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 128; Blyth, Ibis, 1866, p. 368.

Volvocivora sykesii, Bp. Consp. i. p. 356; Jerd. B. of Ind. i. p. 414 (1862); Hume, Nests and Eggs, i. p. 179 (1873); Ball, Str. Feath. 1874, p. 399, et 1875, p. 291; Butler, ibid. 1875, p. 464; Fairbank, ibid. 1876, p. 256, et 1877, p. 400; Butler, ibid. 1877, p. 220.

Lesser Caterpillar-catcher of some.

Jungli kasya, Hind.; *Chuma akurayi*, lit. "Lesser File-bird," Telugu.

Adult male. Length 7·3 to 7·75 inches; wing 3·8 to 4·0; tail 3·0; tarsus 0·8; middle toe and claw 0·75 to 0·8; bill to gape 0·85.

Iris brownish red; bill black; legs and feet black, with slaty edges to the scales of the tarsi; claws black.

Head, back, and sides of neck, chin, throat, and fore neck glossy black, abruptly divided from the pale grey of the chest and flanks, and blending into the slate-grey of the back, scapulars, wing-coverts, and upper tail-coverts, on which latter this colour is palest; wings and tail black, the 1st primary wholly so, the remainder with the basal portion of their inner webs white; secondaries and greater coverts margined with the grey of the back; the three outer pairs of tail-feathers white at the tips; the next pair have their extreme tips slaty white, the two central ones slaty, darkening into blackish near the tips; lower parts white, blending into the grey of the flanks and chest; under wing-coverts whitish, washed with slaty; thighs slaty.

Adult female. Shorter in the wing, which usually measures 3·7 inches.

Iris brown; bill blackish, light at the gape and base of lower mandible; legs and feet brownish slate.

Above dusky bluish grey, wanting the black head; a light line above the brownish lores; ear-coverts striped with white; rump barred with white; wings brownish black, with the edgings whitish; the central rectrices without the black patch. Beneath white, barred, except on the belly and lower tail-coverts, with blackish brown; thighs slaty, barred with dark grey.

Young. Bill not so black as in the adult female. Upper surface brownish slate, the feathers with a blackish subterminal bar and white tip. Tertials very broadly edged with white, and the quills and tail-feathers all tipped white. Beneath barred as the female.

Male in second stage very similar to the adult female. The lores and ear-coverts black, and the head generally mingled with black feathers; a bluish wash over the throat and chest; the bars on the flanks and lower breast not so bold as in the adult female. The loreal spot is blacker than adults of the other sex. An example in this stage before me has also the ground-colour of the throat pervaded with greyish, but nevertheless barred quite up to the chin; there are a few black feathers on the crown, some of which are new, while others are old and appear to be changing from the grey to the black colour.

Obs. Blyth has stated that the adult female has a black head and neck, as in the male. Mr. Holdsworth's experience of the plumage of this sex accords with my own; and I cannot come to any other conclusion but that Blyth's specimens from which he drew this inference were wrongly sexed. Mr. Adam, I observe, speaks of an immature female, shot at Sambhur, having some of the head-feathers black, and the under surface, from the throat to the abdomen, crossed with wavy lines; this is the precise character of the change of plumage in the young male.

Ceylonese specimens of this bird compare well with Indian. The latter are, perhaps, a trifle larger. Two examples

(males) in the British Museum, from Mysore, have the wings 3·9 and 4·0, and the tails 3·0 and 3·3; both these are *slightly* more nigrescent on the interscapular region than Ceylonese birds, and the slate-colour of the breast descends further down the under surface. A young male from Vingorla has the wing 4·1, and is somewhat more cinereous on the back than immature Ceylonese examples.

Distribution.—This small Cuckoo-Shrike is found in most lowland districts in the island, and ascends into the Kandyan Province to a general altitude of 3000 feet, although in Uva and Madulsima I have seen it much higher than this. It probably finds its way to the Nuwara-Elliya district from the Uva patnas in the dry season, for I find there are some examples from the Sanatorium in the British Museum. They were collected by Mr. Boate, and, I imagine, must have been stragglers thither during the N.E. monsoon. Neither Mr. Holdsworth nor Mr. Bligh have seen it at Nuwara Elliya; but I observe that Layard says it is found “over the whole island.” This expression, however, may refer to the low country. As regards the latter region, I may remark that it is a common bird in the maritime districts of the south-east and north, and in the Western district between Puttalam and Galle it is likewise frequent. According to my experience its numbers decrease towards the hills, except perhaps in the Eastern Province, throughout which I found it plentiful; for it evidently prefers the low open jungles of the sea-board to the thick forests of the interior. In the Western Province it is, however, more plentiful in Saffragam and in the Raygam and Pasdun Korales than near Colombo.

On the mainland it is found, according to Jerdon, throughout the whole of India; but is neither common nor abundant. It is most plentiful in wooded countries where there are considerable tracts of low jungle, not being found in the forests of Southern India, although it is met with in avenues in that part of the country. I do not find it recorded from the Travancore hills; but Mr. Fairbank obtained one example at Periur in the Palanis; he also found it rare at Ahmednagar, though common in certain localities in the Belgaum district. Proceeding north we find Mr. Ball recording it as a rare bird in Chota Nagpur, Mr. Levin having shot a single example at Palamow; further to the north-east it is found, according to Jerdon, at Calcutta; on the western side of the peninsula it does not appear to be common. Captain Butler obtained a few specimens at Mount Aboo, but none elsewhere; and Mr. Adam records it from the Sambhur-Lake district, though only as a straggler.

Habits.—This species frequents tall trees in open forest or in native compounds, low bushes on the borders of waste land on the sea-coast, isolated clumps in partially cleared forest, and low scrub jungle. Out of the breeding-season the males wander about alone, and the females and young birds become gregarious, associating in flocks of 5, 10, or 20, and may be seen at evening time flying from bush to bush on the flats round the salt lagoons in the north. In the south it affects Jack-trees in preference to others, climbing about the small branches and among the leaves, preying on the caterpillars and various insects which abound in them. The note of the male is a melodious whistle, and the females have a monosyllabic chirp. Layard merely remarks of it that it is “found in pairs, frequenting high trees and avoiding the neighbourhood of habitations; it feeds on insects.” This observation as to its consorting in pairs is only true of it as regards the breeding-season. Jerdon writes more correctly of it that “it hunts usually in small parties, occasionally singly or in pairs, flying from tree to tree, and slowly and carefully examining the foliage, prying searchingly all round and under the leaves to discover a suitable morsel. It continues its search, hopping and flying from branch to branch, till the tree has been well inspected, when the flock flies off together to another tree. Its favourite food is caterpillars and other soft insects. It is usually a silent bird, but has a harsh call; and on one occasion in June I heard the male giving out a clear whistling call as he was flying from tree to tree.”

Nidification.—With us this Cuckoo-Shrike breeds in April in the Western Province. Mr. MacVicar writes me of the discovery, by himself, of two nests last year near Colombo. One was built in the topmost branch of a young Jack-tree, about 40 feet high. It was very small and shallow, measuring 2·8 inches in breadth and only 0·8 inch in depth, and the old bird could be seen plainly from beneath sitting across it. The other was situated on the top of a tree about 20 feet from the ground, and was built in the same manner. The materials are not mentioned; but I conclude they consisted of thin twigs and roots with most likely a coating of

spiders' webs on the exterior, as has been found to be the case in India. The eggs measured 0·87 inch by 0·62 and 0·85 by 0·62 respectively.

Mr. Blewitt found the nest in India in July, and describes its construction as above, with the remark that its formation was exactly that of the Large Cuckoo-Shrike, *Graucalus macii*. The eggs were two in number, deep green, mottled densely with brown towards the large end, and blotched and streaked throughout with pale blue; they measured 0·85 by 0·65 inch.

P A S S E R E S.

Fam. PRIONOPIDÆ.

Bill Shrike-like, with a distinct notch in the tip of the upper mandible. Tail moderate, rounded or even. Legs and feet small.

Feathers of the rump not stiff, as in the last family.

Subfam. PRIONOPINÆ.

Bill broader than it is high. (*Sharpe*, Cat. B. iii. p. 270.)

Genus TEPHRODORNIS.

Bill stout, wider at the base than high; culmen keeled and curved rather suddenly near the tip. Nostrils covered by bristly plumes; rictal bristles long. Wings with the 4th quill the longest, the 2nd equal to the secondaries, and the 1st about half the length of the 2nd. Tarsus longer than the middle toe, and feathered slightly below the knee. Outer toe slightly syndactyle and longer than the inner; claws well curved.

TEPHRODORNIS PONDICERIANUS.

(THE COMMON WOOD-SHRIKE.)

Muscicapa pondiceriana, Gm. Syst. Nat. i. p. 939 (1788).

Tephrodornis superciliosus, Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 237.

Tephrodornis pondiceriana, Blyth, J. A. S. B. 1840, xv. p. 305; id. Cat. B. Mus. A. S. B. p. 153 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 169 (1854); Jerdon, B. of Ind. i. p. 410 (1862); Holdsworth, P. Z. S. 1872, p. 437; Hume, Nests and Eggs, i. p. 176 (1873); id. Str. Feath. 1873, p. 177; Adam, *t. c.* p. 376; Ball, Str. Feath. 1874, p. 399; Hume, *ibid.* 1875, p. 92; Legge, *ibid.* 1876, p. 243; Hume, *t. c.* p. 458.

Tephrodornis affinis, Blyth, J. A. S. B. 1847, xvi. p. 473; id. Cat. B. Mus. A. S. B. p. 153 (1849); Kelaart, Prodromus, Cat. p. 124 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 131; Blyth, Ibis, 1867, p. 305; Hume, Str. Feath. 1873, p. 437; Legge, Ibis, 1874, p. 16.

Tephrodornis pondicerianus, Sharpe, Cat. B. iii. p. 275.

Gobe-mouche de Pondichéry, Sonnerat; *The Keroula Shrike*, Latham; *Butcher-bird*, Kelaart; *The Bush-Shrike* in India.

Keroula, Hind.; *Chudukka*, Beng.; *Ula pitta*, lit. "Whistling-bird," Tel.

Adult male and female. Length 5·9 to 6·4 inches; wing 3·2 to 3·5; tail 2·4 to 2·5; tarsus 0·7 to 0·8; mid toe and claw 0·65; bill to gape 0·95 to 1·05.

Iris pale olive or yellowish olive, sometimes with the inner half bright yellow, at others with a green inner ring; bill with the upper mandible and terminal half of the lower dark brown, base beneath light fleshy; legs and feet dusky slate-blue or bluish slate, claws blackish.

Above slaty grey in specimens from the hills and Western Province, duskier or ashy brown in those from the northern parts of the island; lores, upper part of cheek, and the ear-coverts blackish brown; a whitish supercilium, variable in size and in length, but always more or less well defined; beneath the brown cheek-patch a whitish stripe; wings brown, the tertials pale-edged; tips of the longer rump-feathers and the shorter upper tail-coverts white, forming a bar across the rump, which is variable in width and usually broadest in birds which are most slaty in hue; longer upper tail-coverts black, four central pairs of rectrices blackish brown, darkening to black at the base; two outer pairs white with dark bases, and the tips marked as follows:—a brown stripe near the tip of the external web of the outermost, the same at the tip of the next, with an adjacent spot often across the inner web; in some specimens, probably not very old, this latter does not exist, the streaks on the outer webs are very small, and the outer web of the 3rd feather has a white streak at the centre.

Throat, lower breast, belly, and under tail-coverts white; the sides of the throat more or less washed with brownish, in the form of streaks, and the chest and upper part of the breast pale cinereous ashy; thighs brownish.

Obs. As already remarked, the tints in the plumage of this species vary. I have found that the most slaty-coloured specimens come from the Western Province and the Nuwara-Elliya district; a Haputale and a Dumbara specimen are both brownish, nearly as much so as a Trincomalie and an Aripu example. Birds from the Galle district do not seem to be as slaty as those from Colombo. It must be also observed that when newly acquired, the feathers are most bluish; on becoming abraded, they lose the slaty tint and present an ashy appearance.

Young. Bill lighter than the adult, as a rule; iris olive.

In nestling plumage pale rufous-brown above, the forehead and head very conspicuously spotted with white, the back less so; greater wing-coverts and tertials fulvous, with a dark crescentic line and white tips; the *three* outer rectrices are white and more marked at the tips; the dark stripe from the base of the lower mandible is more defined and the supercilium absent, although the white spots sometimes take the form of a stripe.

In the next stage the upper surface is darker and less spotted; there is a trace of a supercilium beyond the eye; in some the upper tail-coverts are partially white; the third rectrix from the exterior is now blackish brown, as in the adult, and all are tipped with white. Under surface much as in the adult; the chest, perhaps, a little darker.

Obs. Concerning few species of Indian birds have opinions differed so much as with reference to the present. The Ceylonese race was separated by Blyth (*loc. cit.*) on account of "its being greyer, and wanting the conspicuous white supercilium." Layard followed Blyth; and then Mr. Holdsworth, in his admirable 'Catalogue of Ceylon Birds,' after the examination of a large series of Indian and insular examples, reunited it with the Indian form. Mr. Hume, in a review of some of the Ceylonese species mentioned in Mr. Holdsworth's paper, expressed his doubts as to the possibility of keeping the Ceylon race distinct, on account of the extremely variable character of the bird throughout its entire range from Burmah across to Sindh, and thence to the south of India and Ceylon. Finally, Mr. Sharpe, in his 'Catalogue of Birds,' vol. iii., adheres to Blyth's determination, and remarks that he considers it not only distinct, but more nearly allied to the Malaccan *T. gularis* than to the Indian bird. I entered upon the battle-field, I must say, somewhat biased in favour of Mr. Sharpe's weighty verdict; but after a most careful examination of all the Ceylonese and Indian examples I could lay my hands on, I find that it is a species which is most unreliable in all those characteristics which are alleged as sufficient to divide it into the two races in question; and I consider that if the Ceylonese bird is separated from the South-Indian on account of its more slaty tints, so must the N.W.-Himalayan bird be held to be distinct from the Nepal and Pegu race on account of the cinereous hue of the former, as distinguished from the sandy colour of the latter. The colour of the upper surface varies throughout the whole range of the bird; and though the supercilia in the Indian birds are longer and generally broader, and the white rump-band less in extent than in the insular form, yet these characters are not always alike in either one race or the other. The distribution of the facial markings is absolutely the same in the Indian and the Ceylon birds, and the coloration of the outer tail-feathers precisely alike in both. Climate has no doubt much to do with the brownish and the slaty tints in this bird throughout its Indian range: it has in Ceylon; for the northern birds are, as a rule, the brownest, and those from the damp parts the bluest. Mr. Hume shows the same to be the case in the south of India, as he finds the birds from the hot arid island of Ramisserum earthy brown, and those from the wet district of Anjango as ashy almost as those from Ceylon. With regard to size the Indian birds are slightly larger; but this is the rule with most species found in both localities. The following are some of the wing-measurements I have taken from a large series examined:—Pegu, w. 3.4 inches; N.W. Himalayas, w. 3.55; Behar, w. 3.45; N.W. Himalayas, w. 3.5; ditto, w. 3.5; Kamptee, w. 3.55. Birds from Pegu and N.E. Bengal appear to have the largest supercilia.

Distribution.—The Bush-Shrike is found throughout all the low country and the hill-regions to about 5000 feet. Large tracts of country may, however, be traversed without seeing it, showing that it confines itself to particular localities. It is generally distributed over the northern and eastern portions of the island, and is resident there during both monsoons. It is likewise numerous in the south-west, and slightly less so on the west coast; but in the latter part it retires from exposed places on the sea-board to some distance inland during the wet weather of the south-west monsoon. I have, however, found it between Kotte and Colombo in June and July, so that its migration is only partial. Mr. Holdsworth, I believe, observed that it left the Aripu district in May; and this movement would be occasioned by the force of the S.W. monsoon. I did not observe the same inland march in the south-western part of the island, probably on account of the sheltered nature of the country, which is hilly close to the sea-coast. Layard, who speaks of it as being common about Jaffna, Colombo, and Kandy, thought it to be migratory. It appears to be a straggler to the upper hills, as there is a specimen in the national collection from "near Nuwara ELLIYA," collected by Mr. Boate. I have never heard of any one else having obtained it there; and it is possible that the locality may be wrong in this instance, as near Nuwara ELLIYA might well mean Wilson's bungalow or other locality down the pass towards the Uva side, where it is no doubt met with. Mr. Bligh has obtained it in Haputale at about 5000 feet elevation.

On the continent it is found in the north of India from Tenasserim and Burmah, through Bengal and the sub-Himalayan districts to the N.W. Himalayas and Sindh, and thence through the peninsula to the extreme south and Adam's Bridge. At Thayetmyo Mr. Oates says it is often seen, and it was obtained as far south as Tonghoo by Lieut. Ramsay. There are specimens from Nepal, N.W. Himalayas, and Behar in the national collection. About the Sambhur Lake Mr. Adam did not find it common; but in Sindh it is the reverse in cultivated regions, though never seen in barren districts. At Mount Aboo Captain Butler remarks that it is somewhat common, though less often seen in the plains. In Chota Nagpur it is resident, says Mr. Ball; and at Maunbhum Captain Beavan noticed that it bred chiefly. Mr. Fairbank procured it at Ahmednagar, and remarks that it is more common along the Sahyadri hills; he likewise met with it in the Palanis. It is not

recorded from the Travancore hills, where Mr. Bourdillon procured the allied species *T. sylvicola*; and I observe that he says it is more abundant in the Carnatic than "either on the Malabar coast or on the bare tableland."

Habits.—This little Shrike frequents isolated trees standing in low scrub or in young cocoanut- or cinnamon-plantations, the edges of forest, small groves in open land, and compounds surrounding villages and native houses. It usually associates in small troops of four or five, which wander from tree to tree, flying one after the other when they move until the flock are again reunited. They are not very active in their movements, hopping slowly about among the leafy boughs of trees, and peering under the leaves in search of their food, all the while uttering a melancholy little whistle of several notes, which has the peculiarity of being very easily carried on the wind, and being, consequently, heard at a considerable distance. Moths and small butterflies form a considerable portion of its food. Jerdon says that the Telugus give it the name of "Whistling-bird" on account of its mellow notes; and Mr. Oates writes that it occasionally "seats itself upon the top of a bough and sings a well-conducted and rather pretty song."

Nidification.—I have no information concerning the nesting of this Wood-Shrike in Ceylon; but its nest appears to be well known in India; and in 'Stray Feathers' we gather that it breeds from the latter part of March until August, although April is the usual month for rearing its young. I have procured the immature bird in spotted plumage in April, and judge from the appearance of its feathers that it had arrived nearly at the end of its first year, which would make the nesting-season in the west of Ceylon about the middle of the S.W. monsoon. Mr. Hume describes the nest as "a broad shallow cup, somewhat oval interiorly, with the materials very compactly and closely put together. The basal portion and framework of the sides consisted of very fine stems of some herbaceous plant about the thickness of an ordinary pin; it was lined with a little wool and a quantity of silky fibre; exteriorly it was bound round with a good deal of the same fibre and pretty thickly felted with cobwebs. The egg-cavity measured 2.5 inches in diameter one way and only 2.0 the other way, while in depth it was barely 0.86." This nest contained three eggs; but the number varies, as Captain G. Marshall found four and Captain Beavan two in a nest. They are described as very Shrike-like in appearance, of "a pale greenish-white or creamy stone ground-colour, more or less thickly spotted and blotched with different shades of yellowish and reddish brown, many of the markings being almost invariably gathered into a conspicuous, but irregular and ill-defined zone near the large end, which is intermingled with pale and dingy purple clouds. The average of a dozen eggs is 0.75 by 0.61 inch" (*Hume*).

Genus HEMIPUS.

Bill wide at the base, triangular; the culmen keeled, straight at the base, and suddenly curved at the tip, which is distinctly notched. Nostrils protected by a tuft of bristles. Wings long, with the 4th and 5th quills the longest, and the 2nd shorter than the secondaries. Tail rather long, the lateral feathers falling short of the middle pair by about the length of the hind toe and its claw. Legs and feet weak; the tarsus longer than the middle toe and its claw.

HEMIPUS PICATUS.

(THE LITTLE PIED SHRIKE.)

Muscicapa picata, Sykes, P. Z. S. 1832, p. 85; Blyth, J. A. S. B. 1842, xi. p. 458; Gray, Gen. Birds, i. p. 263 (1845).

Hemipus picatus, Blyth, J. A. S. B. 1846, xv. p. 305; id. Cat. B. Mus. A. S. B. p. 154 (1849); Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 126; Jerdon, B. of Ind. i. p. 413 (1862); Holdsworth, P. Z. S. 1872, p. 437; Hume, Nests and Eggs (Rough Draft), p. 178 (1873); id. Str. Feath. 1873, p. 435; Ball, *ibid.* 1874, p. 399; Legge, Ibis, 1874, p. 16; Hume, Str. F. 1875, p. 93; Bourdillon, *ibid.* 1876, p. 393; Sharpe, Cat. B. iii. p. 307 (1877); Hume, Str. Feath. 1878 (B. of Tenasserim), p. 207.

The Black-and-white Flycatcher, The Shrike-like Flycatcher of Indian authors; *The Black-and-white Hemipus*, Kelaart.

Adult male and female. Length 5·2 to 5·4 inches; wing 2·2 to 2·4; tail 2·2 to 2·3; tarsus 0·6; mid toe and claw 0·55; bill to gape 0·65 to 0·75.

Iris reddish brown, with a light mottled outer circle; bill black; legs and feet blackish, claws paler.

Head, hind neck, back, wings, upper tail-coverts, and tail deep black, glossed with green on the head and back; an incomplete nuchal collar, a broad band across the rump, a bar on the wing formed by the tips of the greater coverts, the edges of the longer tertials and of several of the secondaries, and the terminal portion of the 4 outer rectrices white; the white marking extends up most of the outer web of the lateral tail-feather and is confined to a small spot at the tip of the 4th; chin, lower part of cheeks, sides of neck, belly, under tail- and under wing-coverts whitish, passing into the reddish ashy of the lower throat, breast, and flanks.

Obs. The northern form of this little Shrike (*H. capitalis* of McClelland) is united with the present bird by Mr. Hume, but kept distinct by Mr. Sharpe, on account of its brownish back. The former contends (Str. Feath. 1873, p. 475) that the brown birds are females. I have not observed this feature in Ceylon examples, the females being just as black as the males; and Ceylonese birds are identical with examples which I have examined from South India and Mahabaleshwar, as regards size, colour of upper and under surface, and distribution of white marking. A male from Darjiling, in the British Museum, is similar to the Mahabaleshwar bird, but has the tail more deeply tipped with white; but several others from the former locality, which may, perhaps, be males, have the upper surface, wings, and wing-coverts brown. The latest testimony, however, with regard to the northern race, and which is contained in Mr. Hume's admirable paper on the birds of Tenasserim, shows that Assam, Sikkim, and Kumaon specimens of both sexes have brown backs, and that out of ten males from Darjiling, one only has the back black. Others, again, from various localities along the Himalayas have the back black; and this, I think, goes to prove that there are two different races—the southern with black head and back, and the northern with black head and brown back, both of which may occur, as Mr. Hume suggests, in the Himalayan districts. The latter seems to be the larger, measuring in total length from 5·35 to 5·45, and in the wing from 2·3 to 2·4. The Mahabaleshwar example above noticed measures—wing 2·3 inches, tail 2·3, tarsus 0·45, bill to gape 0·7.

Hemipus obscurus, Horsf., from Java, is not distantly related to our bird; it has the back and wings green-black, no bar or white marking on the wing; the upper tail-coverts white, without the transverse bar of black in the centre of the white patch; tail black, the lateral feathers with an outer and an inner white edge; beneath white; chest washed with grey.

Distribution.—This little Shrike is dispersed throughout the forests and heavy jungles of the island, but is generally more numerous in the Kandyan Province, even at high altitudes, and in the southern coffee-districts than in the low country. Although scarce at Horton Plains, it is a common bird about Nuwara ELLIYA, Kandapolla, and in the main range, and is likewise met with in all the intermediate coffee-districts. In the timber-forests and also in the cultivated country near the sea-board of the south-west it is tolerably plentiful; and the same may be said of the jungles in the eastern portion of the island, and of the forest-

tract of the northern plains, stretching from Puttalam across to the Mahawelliganga, in a part of which (the high jungles between Minery and Kowdella) I found it as plentiful as in the hills. In the Saffragam forests and the wilder districts of the Western Province nearer the sea it is likewise found; and I have procured it as near Colombo as the jungle at Atturugeria, on the Kotte and Bopé road.

This little Shrike is common in the south of India and the central portions of the peninsula. Jerdon found it in the Nilghiris and along the crest of the Western Ghâts. On the Nilghiris he obtained it as high as 7000 feet. Mr. Bourdillon remarks of it that it is not very abundant in Travancore; and Mr. Fairbank observed but few on the Palanis. Should Mr. Hume be correct in joining the two species, *H. capitalis* and *H. picatus*, the range of this little bird becomes considerably extended, as the northern form is found in Chota Nagpur, Northern India, the Himalayas up to an elevation of 5000 feet, and also in Burmah. In Tenasserim Mr. Davison procured it in the neighbourhood of Pahpoo only; and I conclude this is the most southerly point to which it has been traced on the eastern side of the Bay.

Habits.—This is a tame but at the same time an interesting little bird; so unobservant is it of human intrusion on its haunts that it may be watched most closely without its being disturbed; and I know no diminutive denizen of the tall forests of the Ceylon mountains, save perhaps the lively little Grey-headed Flycatcher (*Culicicapa ceylonensis*), which better repays a cursory glance at its manners and occupations. It is generally found in pairs, frequenting tall trees near the edges of forest and heavy jungle; and it perches high aloft among the branches, sallying out from its seat after the manner of a Flycatcher, and catching a passing insect, which it will frequently convey to its original perch before devouring. It is slower in its movements than the members of the family Muscicapidæ, but on the whole its habits are more those of a Flycatcher than a Shrike. It is of stationary habit, frequenting the same spot for hours together; and it usually prefers the company of its own fellows to that of other small birds, though it may at times be seen with Minivets, Bluetits, and Grey-headed Flycatchers. It constantly utters its shrill little note, which may be likened to the syllables *tchēetiti*, *tchēctiti*, *tchēetiti-chēēē*. Jerdon remarks that in India "it is generally seen in small parties of five or six wandering about from tree to tree, and every now and then darting on insects in the air. It has a pleasing little song, not often heard however." My experience of it in Ceylon differs from this, for there it constantly utters the above-described note. Mr. Oates, in writing of the Tenasserim bird, likewise comments on its Flycatcher-like habits as follows:—"They are rather Flycatchers than Shrikes in their habits, moving about, no doubt, amongst the leaves at the tops of trees like the Wood-Shrike, but continually darting out and seizing insects on the wing, which the Wood-Shrikes, I think, never do. They continually call to each other, uttering a sharp soft note."

Nidification.—In the south of India this little Shrike breeds in March. Mr. Davison thus describes a nest he found:—"For the size of the bird it was an exceedingly small, shallow nest, and might very easily have passed unnoticed; the bird sitting on it appeared to be resting only on a small lump of moss and lichen." It was placed in the fork of an upper branch of a rather tall *Berberis leschenaulti*, and was composed of grass and fine roots, covered externally with pieces of cobweb, grey lichen, and bits of moss, taken evidently from the same tree on which the nest was built. The eggs were three in number, elongated ovals, and entirely devoid of gloss; the ground-colour pale greenish or greyish white, profusely blotched, blotted, and streaked with darker and lighter shades of umber-brown, more or less confluent, in one case, at the larger, and in the other at the smaller end. Dimensions 0·7 by 0·5 inch, and 0·69 by 0·49 inch.

PASSERES.

Fam. LANIIDÆ.

Bill strong, deep, much compressed, with the culmen curved from the base to the tip, which is very deeply notched. Nostrils placed nearer the margin than the culmen; gape armed with stout bristles. Wings shorter or equal to the tail. Legs and feet short. Tarsus covered with stout shields. Outer and middle toes joined at the base; hind toe large.

Genus LANIUS.

Bill with the characters of the family. Nostrils round, protected by a few well-developed bristles. Wings rather short; the 2nd quill longer than the secondaries, and the 3rd and 4th the longest. Tail long and graduated, exceeding the closed wings by about their own length. Tarsus slightly longer than the middle toe with its claw.

LANIUS CRISTATUS.

(THE BROWN SHRIKE.)

Lanius cristatus, Linn. Syst. Nat. i. p. 134. no. 3 (1766); Jerdon, B. of Ind. i. p. 406 (1862); Walden, Ibis, 1867, p. 212; Swinhoe, P. Z. S. 1871, p. 375; Holdsworth, P. Z. S. 1872, p. 436; Hume, Nests and Eggs, i. p. 175 (1873); Str. Feathers, 1874, p. 198, et 1875, p. 91; Butler, ibid. p. 464; Armstrong, ibid. 1876, p. 316.

Lanius phœnicurus, Pall. It. iii. p. 693. no. 6 (1776); Prjevalski, B. of Mongolia, Rowley's Orn. Misc. vol. ii. p. 274 (1877).

Enneoctonus lucionensis, G. R. Gray, Gen. B. i. p. 291 (1845); Swinhoe, Ibis, 1864, p. 420.

Enneoctonus cristatus (Linn.), Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 167 (1854).

Lanius superciliosus (Lath.), Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 130.

Lanius lucionensis (L.), Blyth, Ibis, 1867, p. 304.

Otomela cristata, Schallow, Journ. für Orn. p. 130 (1875).

The Crested Red or Russet Butcher-bird, Edwards, Nat. Hist. Birds, pl. 54; *The Crested Red Shrike*, *The Woodchat Shrike*, *Rufous-tailed Shrike*, *Supercilious Shrike* (Latham); *Butcher-bird* in India.

Batti gadu, Telugu; *Curcutea*, Bengal. (on account of its harsh voice).

Adult male. Length 7·5 to 7·7 inches; wing 3·4 to 3·55; tail 3·0 to 3·2; tarsus 1·0; mid toe and claw 0·85; bill to gape 0·85.

Female. Length 7·4 to 7·6 inches; wing 3·4 to 3·5.

Iris dark brown, sometimes hazel-brown; bill with the upper mandible and tip blackish, gape and base of lower "fleshy;" legs and feet varying from bluish grey to blackish slate; claws darker than the toes.

Adult male (Colombo, Sept. 29, 1876). A broad facial streak from the nostril over the lores, and passing beneath the eye to the ear-coverts, *black*. Nasal plumes black; a more or less narrow frontal streak, widening as it passes over the eye to above the ear-coverts, white; forehead, crown, and nape brownish rufous, passing on the hind neck,

back, scapulars, lesser wing-coverts, and lower back into ashy brown, more or less, according to the individual, tinged with rufous; the change from the colour of the head to that of the hind neck always more or less marked; the brown of the rump passes on the upper tail-coverts into lighter rufous than the head; tail brownish rufous, the shafts of the feathers blackish and the tips albescent; wings brown, the median and greater coverts and the secondaries edged and tipped with rufescent fulvous; throat and lower face white; fore neck and under surface *whitish*, tinged with rufous-buff on the chest, sides of breast, flanks, and vent; under tail-coverts more strongly tinged with this colour than the throat, and the flanks most rufous of all; under wing concolorous with the chest.

Female. Differs from the male in having the eye-streak of less size and not so black; this streak is blackish brown, and only partially envelopes the lores, there being merely a small blackish spot in front of the eye.

Young. Birds of the year have the wing varying from 3·3 to 3·4 inches. Bill paler than in the adult; legs and feet bluish grey.

In the nestling or first plumage the feathers of the head and upper surface are rufescent fulvous, each with a dark terminal edging and ray across the centre; the wing-coverts are broadly margined with rufous, with an internal dark edge; the secondaries are similarly marked, the dark line being chiefly conspicuous at the tips of the feathers; eye-streak narrow, darker in the male than the female; beneath whitish, tinged with buff on the chest and flanks, and marked, except on the throat and belly, with crescentic rays of blackish brown. In the plumage worn by most of our new arrivals, the nestling-feathers on the upper surface have partly or entirely disappeared, and the new feathers are somewhat of the same hue as in the adult, only the back is just as rufous as the head, and is thus wanting in the brown distinctive character; the wing-coverts and secondaries are more or less broadly edged with fulvous, with the internal black edge and the under surface in all stages of marking, the crescentic edgings being of course chiefly confined to the chest and flanks (young females seem to be more tinged with buff than males on the chest); the supercilium is crossed with transverse lines. Some birds are much more advanced on the under surface than the upper, and *vice versa*; but the last remnant of the immature plumage is always to be seen on the flanks. The young of this species, though very similar to, may, I think, be distinguished from those of *L. lucionensis* by being *rufous*-brown on the head, and by having a certain amount, more or less, of pale edging at the margin of the forehead. I have observed this to hold good in a large series of both species which I have examined. The amount of rufous on the crown as distinguished from the hind neck varies considerably in individuals.

Obs. The Ceylonese examples of this species are identical with those from India, as would naturally be the case when we consider that the species is migratory to both countries from beyond the Himalayas. Layard considered it to

LANIUS LUCIONENSIS.

(THE GREY-HEADED SHRIKE.)

Lanius lucionensis, Linn. Syst. Nat. i. p. 135 (1766); Swinhoe, Ibis, 1860, p. 59, et 1863, p. 272; Walden, *ibid.* 1867, p. 215; Swinhoe, P. Z. S. 1871, p. 376; Hume, Str. Feath. 1873, p. 434, et 1874, p. 199.

Adult male and female. Length 6·5 to 7·0 inches; wing 3·5 to 3·65; tail 3·4 to 3·6; tarsus 0·9; mid toe 0·6, its claw (straight) 0·23; bill to gape 0·8.

These measurements are from a series of examples in the Swinhoe collection and a single example in my own from the S. Andamans. Hume gives the length of Andaman examples as attaining 8·25 inches, and the wing 3·75.

“Iris brown; upper mandible horny brown, edged whitish near the gape; the terminal line of the lower mandible horny brown, the basal two thirds bluish or fleshy white; legs and feet dull leaden blue, or dull bluish, or sometimes even greenish horny.” (*Hume.*)

Male. Back, scapulars, and sides of neck earth-brown, passing gradually on the hind neck and crown into the greyish

be a variety of the Indian bird (which he styles *L. superciliosus*, the rufous-backed bird found in Java and Japan), being paler and wanting the rufous crown of that form; but he probably was dealing with immature specimens, which predominate in the island. Blyth (*loc. cit.*) referred these specimens of Layard's to *L. lucionensis*, the species dealt with below. Schalow and Swinhoe unite the Indian bird with Pallas's Shrike (*L. phoenicurus*) from Amoor-land; and I think it is generally admitted now to be the same as the latter species. I have examined specimens of this bird in the Swinhoe collection, now in the possession of Mr. Seebohm, and also examples collected at Krasnoyarsk for this gentleman during June last year, and they are, both as regards young and adult, *identical* with my own from Ceylon. An immature bird from Lake Baikal (wing 3.3 inches) corresponds with one of my specimens; and three adults from Krasnoyarsk, in summer plumage, correspond precisely with examples in full winter plumage from Ceylon. They measure in the wing 3.4, 3.42, 3.5 inches; the extent of whitish grey on the forehead varies, as it also does in Ceylonese specimens.

Lanius superciliosus, which I take to be the species inhabiting Japan, is apparently nothing but a rufous race of *L. cristatus* with a more conspicuous white forehead and supercilium. It is slightly larger in the wing and tail, and is principally distinguished from the present bird by having the back and hind neck almost as rufous as the head, and the head itself, as also the rump, lighter rufous than in our species. Three specimens (Mus. Seebohm) from Yokohama measure—wings 3.6, 3.65, 3.65, tails 4.2, 4.2, 3.9 inches respectively. The tails too are crossed by obsolete dark rays. I may remark here that the figure of *L. phoenicurus* ('Ibis,' 1867, pl. v.) is in reality a representation of this bird, the hind neck being much too rufous, and the frontal band too broad for the former species.

L. isabellinus, which is apparently identical with *L. arenarius*, Blyth (Blanford, Zool. Persia, p. 140), is not very distant from the present species, much resembling it in summer plumage, when it becomes rufous on the head and rump. It may, however, as pointed out by Lord Tweeddale, in his excellent paper on the Rufous-tailed Shrike ('Ibis,' 1867), be distinguished from *L. cristatus* by its broader and less graduated tail. The old male has a white wing-bar extending from the 4th to the 9th primary.

The present species was named *cristatus* by Linnæus on account of the erroneous delineation of a crest in the figure on Edwards's plate. Though the coronal feathers in this section of the Shrikes are elongated, I do not think they are ever raised by the birds even when under the influence of emotion.

Distribution.—This Shrike is a very abundant species in Ceylon during the cool season. It arrives in the north in great numbers, the better part of which are immature birds, during the early part of September, and establishes itself in the islands off the Jaffna peninsula and on the adjacent mainland, considerably outnumbering the resident species, *L. caniceps*; thence it spreads over the whole island, inhabiting the east and west coasts in equal numbers; and ascending the hill-zone it takes up its quarters in many of the open valleys in the coffee-districts, and finds its way up to the Nuwara-Elliya plateau. It is very common on the

of the forehead; on the hind neck there is generally a rufous shade, and the hue of the back is always slightly pervaded with grey; upper tail-coverts rufous-brown, passing into brown on the rump; wings liver-brown, the primaries with a faint rufous edging, and the secondaries and tertials rather broadly edged with fulvous; tail light rufous-brown, the margins lighter than the rest of the web; tips of the outer feathers pale.

Lores and a broad stripe through the eye and over the ears black, surmounted by a whitish supercilium blending into the brown of the head; chin, throat, and face white, passing into the rufous-buff of the chest and underparts; the centre of the breast and belly are generally paler than the flanks; in some examples, fully aged probably, the chest is uniform rufous right across, and the separation between it and the white of the throat plainly indicated; under wing pale rufous-buff and its edge white.

Female has the lore-spot much smaller and, together with the ear-stripe, less black than the male; underparts paler.

Young. After leaving the nest the young are brownish rufous above, brightest on the upper tail-coverts; the head concolorous with the back, and the forehead no paler than the crown, except just at the bill, where the bases of the feathers are more buff than further back; the whole upper surface, including the lesser wing-coverts, crossed with wavy bars of blackish; wings rich brown, the coverts, secondaries, and tertials broadly margined with rufous; primaries narrowly edged and tipped with a paler hue; tail brownish rufous, with a pale tip, which is preceded by a black edging; upper part of lores and an undefined stripe above the eye buff; lower part of lores

west coast, and is one of the best-known birds to ornithological observers in the cinnamon-gardens and similar open bushy grounds in the vicinity of Colombo. Further south it is not so plentiful in the wooded semi-cultivated country west of Tangalla as it is in the south-east of that place. In the low jungle-covered seaboard around Hambantota, and thence north, it is very common, as it also is in districts of similar character between Batticaloa and Trincomalie. Though not uncommon about Nuwara Eliya and Kandapolla, it does not seem to pass over the Totapella range on to the Horton Plains. In the coffee-districts it prefers the patnas to any other localities, and even frequents bushy situations at the top of such isolated peaks as Allegalla, on the summit of which I have met with it. Its departure from the island takes place at the latter end of April. I have seen it about Colombo until quite the end of that month. At Aripu Mr. Holdsworth gives the duration of its visit from October till April.

This species is spread throughout India during the cold season, leaving the country in the hot weather, although some are said to remain and breed in the north. Blyth even says that a few are found about Calcutta at all seasons. It is not recorded from the Travancore hills, nor from the Palanis, either by Mr. Bourdillon or Mr. Fairbank, and the latter says it is rare at Ahmednagar. In Chota Nagpur it is, says Mr. Ball, "common throughout." It extends to the eastward as far as Mount Aboo, where it arrives about the 1st of September, according to Capt. Butler. Mr. Hume remarks that Mount Aboo is quite on the confines of its distribution to the east; and, in fact, it is not recorded at all from Sindh nor the Sambhur-Lake district. Whether, in its migration northwards, it passes round the western end of the Snowy range seems to be not quite certain; for though Mr. Hume at first identified Dr. Henderson's Yarkand birds as this species, Dr. Scully, though he searched well for it, did not meet with it there, and was, moreover, assured by the Yarkandis that only one species, *L. arenarius*, inhabited that region. To the east of the Peninsula it is numerous. Mr. Hume writes that it is a cold-weather visitant to the Province of Tenasserim, and thence it is a straggler to the Andamans as well, though not found in the Nicobars. In Pegu it is, says Mr. Oates, "common during the greater portion of the year, coming in, however, in great numbers in September." The influx here spoken of, which affects the whole of the peninsula of India, is caused, doubtless, by a migration over the ranges to the eastward of the Himalayas, from Thibet, Mongolia, and perhaps Eastern Siberia. In these distant regions it chiefly breeds, leaving them in vast flocks to travel many thousand miles southwards

and aural stripe dark brown, paler and less of it on the lores in the female; all the under surface buff-white, tinged with rich buff or rufous on the flanks; vent and under tail-coverts, and the sides of the neck, chest, and flanks crossed with crescentic markings of dark brown.

In what is probably the plumage of the second year the upper surface is a ruddy brown with a tinge of grey in it, the rump and upper tail-coverts rufous with blackish-brown bars, and the quills and wing-coverts less conspicuously edged; the forehead is still concolorous with the head, and the crescentic margins of the lower parts less pronounced and faded from off the chest. Some examples (for instance one shot in May) have the forehead pale, the upper surface pervaded with greyish, and yet the under surface well marked with the brown bars, but the sides of the chest and flanks have a rufous adult look about them.

In some instances these under-surface markings do not vanish for several years: a specimen before me is fully adult on the upper surface, but has most of the lower surface and even the sides of the neck crossed with brown pencillings; and out of twenty-three, adult as regards the forehead and back, *nearly half of them have some few bars on the flanks.*

Obs. I doubtfully include this species in our lists, not on the evidence of Blyth and Layard (for it appears to me that they were speaking of the race of *L. cristatus* as a whole, as exemplified in the birds which migrate to Ceylon), but on the testimony of Mr. Hume, who writes ('Stray Feathers,' 1873, p. 434) of *an adult* example received by him from Ceylon, of which he speaks as follows:—"An adult bird, with the grey-brown head and back and pale forehead of *lucionensis*, either belongs to that species or to a very closely allied one not yet discriminated."

I know of no other adult bird with the characters of *L. lucionensis* having been obtained in Ceylon. I cannot positively assert whether one or two immature specimens in my collection may not belong to this species, for, as I have said in my article on the last, the young of the two species are very similar; and though, as a rule, the head in the young *L. cristatus*, after getting beyond its nest-plumage, is more rufous than the back, this may not invariably

to its furthest limit, Ceylon. In the solitudes of Thibet it appears to be a resident throughout the year; for Col. Prjevalski writes that it "was observed throughout our travels, with the exception of Koko-nor, Tsaidam, and Northern Thibet. In those localities which we visited in winter, or early in spring, we found it most numerous in the Hoang-ho valley. In Ala-shan they breed in the sacsaulnics; and in Kan-su they generally inhabit the low wooded plains. The first migrants were seen to arrive in the Hoang-ho valley on the 28th of April. It breeds commonly in the woods of Ussuri country, especially in those localities where there are many decayed or felled trees." Swinhoe merely mentions it being found at Amoy, and that he had frequently received it from Trans-Baikal in full summer plumage. Père David is of opinion that it migrates from India to the borders of Lake Baikal and into the eastern parts of Siberia, as also into Southern China. It seems not unreasonable to doubt whether it performs such a stupendous journey as would be incurred in crossing the vast territory known as Mongolia, with its lonely deserts and lofty ranges of mountains, and thence through the scarcely less extensive region of Thibet, passing finally over the spurs of the Snowy ranges, and then spreading throughout the plains of India; and I would suggest that there is probably a double migratory stream—the one from Thibet and the Hoang-ho valley passing into India and Burmah, and the other from the Trans-Baikal region into China. As the *L. phaenicurus* of Pallas, it was, remarks Lord Tweeddale, met with first by this traveller in the month of June "amongst the rocks of the mountain of Adon-Scholo, near the river Onon in Dauria."

Habits.—This "Butcher-bird" frequents bushy land, uncultivated scrubby ground, hedge-rows, the borders of jungle, and all situations in which there are low trees and shrubs, on the tops of which it perches, flying from one to another, and repeatedly uttering its harsh cry. It is very querulous in its disposition; and there is no Ceylonese bird that I know of which gives one so much the impression of always being in a rage as this! On a sudden, when scarcely a bird-note is heard during the usual lull after the morning feed is over, one of these Shrikes will suddenly appear on the top of a cinnamon-bush, having flown up from the ground or from some low shrub, and commence screaming with all its might, whether by way of expressing its approbation of the flavour of the last lusty grasshopper that it has put an end to, or for the purpose of scolding its nearest fellow mate must be left to some one better versed in bird-language than I; but certain it is that the

be the case. I have examples with heads almost as brown as those of the Philippine species. Mr. Hume observes, in his account of this species at the Andamans, that the bill is generally slightly longer than in *L. cristatus*; but this rule does not invariably seem to hold good.

Distribution.—Should this species visit Ceylon to a limited extent (and there is no reason why it should not, as it is found in the Andamans), it most probably strays over most of the low country. Mr. Hume does not mention from what district his specimen came. It was originally described from Luzon, one of the Philippines, whence it was brought by Poivre. Lord Tweeddale writes that "it migrates to North China during the spring, and returns south to the Philippines at the close of summer, many in their passage resting in Formosa, and some, according to Mr. Swinhoe's latest observations, passing the winter in that island. He also observed it passing over at Hong-Kong in the spring, and found it at Talien Bay, North China, during the end of June, where it, however, became much scarcer towards the middle of July." It must breed in China, for Swinhoe remarks (P. Z. S. 1871) that "those collected on the passage through Formosa were all immature, as if they had not strength to make the through voyage to the Philippines without rest." In the Andamans many immature birds no doubt remain during the cool season, for Mr. Hume says it appears to be a permanent resident in those islands. It was found in this group at Port Blair, and at Camorta in the Nicobars. In Tenasserim it is a "straggler to the southern extremity of the Province," and must of necessity occur there on its passage westward from the adjacent north-eastern portion of the continent. An example of a Shrike, similar to that sent to Mr. Hume from Ceylon, is recorded by this gentleman as having been obtained in the Travancore hills in February: it was nearly adult; and this, at such a season of the year, is such an extraordinary occurrence that it fosters the belief already expressed of its being perhaps a new and not yet discriminated species.

Habits.—Mr. Davison remarks that the habits of this Shrike do not differ from *L. erythronotus*; it kept to gardens in the Andamans and was very silent. Swinhoe, however, says that it has a sweet song.

said companion very soon appears on a neighbouring bush and vies with him in creating a general disturbance! There is this much to be said, that it is more noisy when it first arrives than after it has settled down in its new quarters; and is it to be wondered that after *such* a journey it should desire to proclaim its safe arrival? It is a restless bird, continually on the move, and is very difficult to come within range of, as directly it perceives that it is being approached it flies off to another perch. I have often seen it on the ground pursuing grasshoppers by darting at them as they fly out of the grass, and have noticed it proceeding across a road with prodigious hops and very erect carriage. Although its food is almost entirely insectivorous, it is occasionally guilty of the crime which has acquired for its family the name of "Butcher-birds," as Mr. Bligh informs me that he has known it to impale a White-eye (*Zosterops ceylonensis*) after the manner of the European species. It never takes long flights while resident, merely proceeding from the top of one bush to another; and during the winter season its note consists of nothing but the harsh chattering above mentioned. Blyth says that it warbles very sweetly at the end of the cold season at Calcutta.

Nidification.—I am unable to give my readers any further particulars touching the nesting of this bird than those already contained in my extract from Colonel Prjevalski's notes. That it does not breed in India is evident, although Tickell was led to suppose that it did so. The nest and eggs described by him were evidently those of a Bulbul.

LANIUS CANICEPS.
(THE RUFOUS-RUMPED SHRIKE.)

Lanius caniceps, Blyth, J. A. S. B. 1846, xv. p. 302; id. Cat. B. Mus. A. S. B. p. 151 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 164 (1854); Fairbank, Str. Feath. 1877, p. 400.

Lanius tephronotus (Vig.), Kelaart, Prodrum, Cat. p. 124 (1852).

Lanius erythronotus (Vig.), Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 130; Jerdon (in pt.), B. of Ind. i. p. 402 (1862); Holdsw. P. Z. S. 1872, p. 436; Legge, Str. Feath. 1876, p. 243.

Collyrio caniceps (Bl.), Hume, Nests and Eggs, i. p. 169 (1873).

Lanius affinis, Legge, Str. Feath. 1876, p. 243.

Pale Rufous-backed Shrike of some; *Butcher-bird*, Europeans in north of Ceylon.

Adult male. Length 9.0 to 9.2 inches; wing 3.55 to 3.65; tail 4.5; tarsus 1.05; mid toe and claw 0.95; hind toe and claw 0.75; bill to gape 0.9.

Adult female. Length 8.7 to 8.9; wing 3.45 to 3.6; tail 4.1 to 4.3.

Iris hazel-brown; bill black; legs and feet blackish brown.

A broad facial band encompassing the eye, and passing from below the ear-coverts to the nostril and across the forehead, where it narrows, wings, and three central pairs of tail-feathers black; head, back and sides of neck, back, and scapulars pale bluish grey, with a whitish edging at the frontal band and above the eye; edge of the wing and a band at the base of the primaries from the 5th to the 10th quill, under wing, throat, fore neck, and centre of breast white; rump, upper tail-coverts, and flanks rufous; under tail-coverts and *terminal portion of the longer scapulars* rufescent, or paler than the rump.

In abraded plumage the head and edges of the back-feathers become whitish; and I observe that when the plumage is new the longer scapulars are more rufous than when it is abraded, as this colour is chiefly confined to the external portion of the webs.

Female. Has the eye-stripe or band less black than the male, and the frontal bar narrower.

Young. (Nestling shot by Mr. Holdsworth, 8th February, 1869.) Above pale sandy fulvous, darkening gradually into rufous on the rump, longer scapular-feathers, and upper tail-coverts; on the hind neck a slight tinge of greyish; all the feathers barred with wavy marks of dark brown; lesser wing-coverts rufescent, broadly barred with blackish brown; inner webs of the tertials rufous, their external margins and tips of the same colour; four central tail-feathers brown, the remainder and the tips of the first-named rufous tinged with brown; eye-band blackish brown, not extending to the forehead; beneath whitish, tinged with rufescent strongly on the flanks and under tail-coverts.

Obs. This fine Shrike is the southern representative of *Lanius erythronotus*, the Rufous-backed Shrike, found in the Deccan, Central and Northern India. Specimens from Malabar and from the Godavari-river district have just as little rufous on the scapulars and lower back as our birds; in fact a Malabar example in the national collection has less rufous on these parts than some Ceylonese specimens. Two birds from the districts named measure 3.5 and 3.75 inches in the wing, and two from the Palanis, obtained by Mr. Fairbank, 3.3. At the time I wrote my note on this species ('Stray Feathers,' 1876) I had only specimens of *L. erythronotus* in my collection, and was unacquainted with the true *L. caniceps*, and hence my remark as to our bird perhaps being a local race of the former. The Rufous-backed Shrike has the back as far up as the interscapular region, and nearly all the scapular tuft, rufous; and in all specimens I have examined there is an absence of the pale margin at the posterior edge of the frontal band; the secondaries and tertials are more broadly edged with fulvous than in *L. caniceps*. Two examples from Behar measure 3.5 and 3.4 inches in the wing, and two from Futteghur 3.5 and 3.55 respectively.

As our species was entered as *L. tephronotus* in Kelaart's Catalogue, it may not be out of place to mention, for the information of my Ceylon readers, that this Shrike is a very distinct bird from either of those in question. It is a large bird, with the wing varying from 3·9 to 4·3 inches, and the tail about 5½; dark grey on the head and back, with the rump and upper tail-coverts dusky rufous; the wings and tail not so black, but the under surface much as in *L. caniceps*.

Distribution.—This large Butcher-bird inhabits the Jaffna peninsula, the extreme north of the Vanni, and the whole of the N.W. coast, from Poonerin to the country between Chilaw and Puttalam, including the islands of Manaar and Karativoe. On the Erinativoe Islands I did not observe it. It does not seem to extend far inland, although it is very abundant on the sea-board. It has been procured by Mr. Hart on the Puttalam and Kandy road as far up as Nikerawettiya; westward of that about Kurunegala, in the Seven Korales, and in the region along the base of the west Matale hills I searched diligently for it without success. In the Jaffna peninsula it is chiefly abundant about Point Pedro. In the island of Manaar, and on the open bushy plains of the adjacent coast as far south as Pomp-Aripu, it is abundant. Southward of this place its numbers diminish; and no example has ever, to my knowledge, been *procured* south of Chilaw, although I observe that Mr. Holdsworth is of opinion that he saw it occasionally in the cinnamon-gardens at Colombo. The foregoing species is very common in that locality, but the present bird has not yet been obtained there up to the date of my latest advices from the Colombo museum.

On the continent the Rufous-rumped Shrike is found in the south of India and up the east coast as far north as the Godaveri river. I do not observe that it has been found either by Messrs. Fairbank or by the authors of the recent contribution to the avifauna of the Deccan, Messrs. Davidson and Wender, in this region. Mr. Ball likewise does not record it from the coast region north of the Godaveri. It would appear, however, that it has been found in Cashmere and in Afghanistan—that is, if Blyth's identification of Captain Hutton's specimens was correct. As late as 1873 Mr. Hume incorporates the latter gentleman's notes on its nesting in that region in 'Nests and Eggs;' and I therefore infer that he considers the identification correct. It is also found in the N.W. Himalayas; but from intermediate localities, such as Sindh, Guzerat, Sambhur, or the neighbourhood of Futteghur, it does not appear ever to have been recorded. Jerdon writes of this species, in his 'Illustrations of Indian Ornithology,' 1847, at a time when he considered it distinct from *L. erythronotus* (for in his 'Birds of India' he unites the two), that though "occasionally found in the more wooded parts of the country in the Carnatic, it is only common in the neighbourhood of the jungles of the west coast, and is very abundant on the top of the Nilghiris." Mr. Fairbank says that it is resident on the summit of the Palani ranges and breeds there.

Habits.—In its mode of living the present species resembles the remainder of this interesting family. It frequents low thorny jungle, scrubby land, and open places near the sea-coast, which are dotted here and there with clumps of low trees and bushes. When not engaged in catching its prey it seems to pass most of its time on the top of a shrub, uttering its harsh cry as if it were on bad terms with all its neighbours. It is very noisy in the mornings and evenings, flying about from bush to bush, and is so restless that it is very difficult to approach. There is in its disposition evidently that dislike for the presence of man that characterizes all its congeners with which I am acquainted; and it decidedly disapproves of his endeavouring to make acquaintance with its habits by even presuming to watch its movements, for as soon as it observes that it is an object of interest it immediately decamps. It feeds on grasshoppers, which it entraps on the ground, and also preys on Mantidæ and dragonflies.

Nidification.—This bird breeds in the Jaffna district and on the north-west coast from February until May. Mr. Holdsworth found its nest in a thorn-bush about 6 feet high, near the compound of his bungalow, in the beginning of February. He describes it as cup-shaped, made of rather slender twigs, and lined with roots. Unfortunately the young were just fledged at the time he discovered it, and he therefore obtained no information as to the eggs of the species. Layard speaks of the young being fledged in June at Point Pedro, and says that it builds in *Euphorbia*-trees in that district.

Referring to Mr. Hume's 'Nest and Eggs,' I find it recorded that the breeding-season of this Shrike in South India extends from March until July. Concerning its nesting in the Nilghiris, Mr. Wait writes:—

"The nest, cup-shaped and neatly built, is placed in low trees, shrubs, and bushes, generally thorny ones; the outside of the nest is chiefly composed of weed (a white downy species is invariably present), fibres, and hay, and it is lined with grass and hair. There is often a good deal of earth built in with roots and fibres in the foundation of this nest. Four appears to be the usual number of eggs laid." Mr. Davison's account of its nesting is as follows:—"This species builds in bushes or trees at about 6 to 20 feet from the ground. A thorny thick bush is generally preferred, *Berberis asiatica* being a favourite. The nest is a large, deep, cup-shaped structure, rather neatly made of grass mingled with old pieces of rag, paper, &c., and lined with fine grass. The eggs, four or five in number, are white, spotted with blackish brown chiefly at the thicker end, where the spots generally form a zone." Mr. Hume remarks that the eggs are undistinguishable, in many instances, from those of its close ally *L. erythronotus*, though they vary less and average longer. In length they range from 0.93 to 1.0 inch, and in breadth from 0.7 to 0.72 inch; but the average of twenty was 0.95 by 0.7 inch.

PASSERES.

Fam. DICRURIDÆ.

Bill stout, both wide and high at the base, the upper mandible moderately curved, and the tips of both mandibles notched; gape armed with stout bristles. Wings moderately long. Tail of 10 feathers only, forked, and with the lateral feathers occasionally much lengthened. Legs short; feet rather small.

Plumage black. Sternum with a tolerably large foramen in each half of the posterior edge (*Chibia hottentota* and *Bhringa remifer*).

Genus BUCHANGA.

Bill stout, broad at the base, the upper mandible high; the culmen keeled and well curved to the tip, which, as well as that of the under mandible, has a distinct notch. Nostrils oval, small, concealed by the impending plumes. Rictal bristles long and stout. Wings pointed; the 4th quill the longest, the 2nd subequal to the 7th and twice as long as the 1st. Tail long, deeply forked, and expanding at the tip. Tarsus longer than the middle toe, protected with stout transverse scutæ. Feet rather small and stoutly scaled; hind toe and claw large.

BUCHANGA ATRA.

(THE BLACK DRONGO.)

Muscicapa atra, Hermann, Obs. Zool. p. 208 (1804).

Dicrurus macrocercus, Vieill. N. Diet. ix. p. 588 (1817); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 129; Jerdon, B. of Ind. i. p. 427 (1862).

Buchanga albirictus, Hodgs. Ind. Rev. i. p. 326 (1837); Hume, Nests and Eggs, p. 186 (1873); Butler, Str. Feath. 1875, p. 465.

Edolius malabaricus!, Kelaart, Prodrumus, Cat. p. 124 (1852).

Dicrurus minor, Blyth, Cat. B. Mus. A. S. B. p. 22 (1849); id. Ibis, 1867, p. 305.

Dicrurus longus (Temm.), Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 152 (1854).

Buchanga minor (Bl.), Holdsw. P. Z. S. 1872, p. 438; Legge, Str. Feath. 1875, p. 202.

Dicrurus albirictus (Hodgs.), Hume, Str. Feath. 1875, p. 97.

Buchanga atra, Sharpe, Cat. B. iii. p. 246 (1877).

Le Drongolon, Levaill. Ois. d'Afr. iii. pl. 174.

The Drongo-Shrike of some; *King-Crow*, "*Flycatcher*," Europeans in Ceylon.

Kolsa, Hind.; *Finga*, Bengal.; *Japal kalchit*, Punjab; *Kunich* in Sindh; *Thampal*, N.W. Prov.; *Kotwal*, Natives in Deccan; *Yeti-inta*, also *Passala-poli-gadu*, lit. "Cattle Tom-bird," Telugu; *Kurri kurumah*, Tam., Jerdon.

Kari kuruvi, Tamils in Ceylon; *Pastro barbeiro*, Portuguese in North Ceylon.

Adult male and female. Length 10·75 to 11·1 inches; wing 5·0 to 5·45; tail 5·1 to 5·7, depth of fork 2·1; tarsus 0·8 to 0·85; mid toe and claw 0·82 to 0·9; bill to gape 1·05 to 1·15.

Males slightly exceed females in size.

Iris dull red, or brownish red in not fully adult birds; bill black; legs and feet black.

Above and beneath metallic blue-black; quills brown-black, glossed on the tail with green; lower surface of quills brown; a small white spot at the lower corner of the gape, not perceptible in many specimens until the black feathers round it be lifted up; in some it consists of a single feather.

Young. Birds of the year have the wing from 4·8 to 5·0 inches.

Iris reddish brown; bill and feet as in adult.

Above glossed as in the adult; beneath, from the chest, the feathers are fringed with white, coalescing into whitish on the abdomen; under tail-coverts and primary under wing-coverts with white terminal bars; greater under wing-coverts with a white spot at the tips. This plumage is acquired after doffing the nestling dress, which is brownish beneath, with similar white markings. After the next moult the white tips are present in the longer under tail-covert feathers, and sometimes on the under wing, this latter part losing the spots first, as a rule.

Obs. The Ceylon birds form a small race of this widely-spread species, and have been usually separated as *B. minor*; I cannot, however, keep our bird distinct as a subspecies even, for I find an example in good plumage in the British Museum from Behar which is no larger than fine specimens from Jaffna. It measures in the wing 5·5, tail 6·3, and has a small rictal spot. The generality of Indian specimens are, however, larger than this. Several from Nepal measure 6·0, 6·1, and 6·2 in the wing, and about 7·0 in the tail. In Burmah they are similar in size to those in the Himalayan subregions. The Black Drongo of China and Formosa (*B. cathexa*) is united by Mr. Sharpe with *B. atra*; and, I think, justly so too, for I can see no difference whatever between specimens in the British Museum from either of these localities and those from Nepal and Burmah. An example from Formosa measures—wing 5·7, tail 6·5; one from China—wing 6·2, tail 7·0. I find the white rictal spot present in these, although it is very minute, and it likewise exists in all Indian specimens I have examined. South-Indian birds

are usually about the size of the above noticed Behar example. I notice that in some instances the young of continental birds have a great deal of white near the edge of the under wing; but in this respect Ceylonese examples vary too, though apparently not quite to the same extent as the former.

Distribution.—This Drongo has a very singular distribution in Ceylon, which, as in the case of the Red-legged Partridge, leaves the impression that it had found its way, at some remote period, to the island, and, not liking it, had determined not to continue its explorations much beyond the point of its arrival! It is confined to the Jaffna peninsula and the north-west coast, down as far south as Puttalam, perhaps occurring as a straggler about Colombo, though it is certainly not resident there. I never saw it anywhere on the west coast south of the above-mentioned town, though I searched most diligently for it at Chilaw, a locality which I was prepared to find it in, as the conditions of climate and vegetation are those of the more northern parts which it frequents. Layard writes of it:—“*D. minor* is common about Colombo, frequenting natives’ gardens.” This is the habit of *B. leucopygialis*, and there must have therefore been a wrong identification here. Mr. Holdsworth says, “it is also found about Colombo, but by no means commonly within my experience.” No specimens were procured by him there as I understand, and it is possible that the above-mentioned bird may have been mistaken for it. Others have been on the look-out for it for years past, but have not yet seen it in the Colombo district; and this is, therefore, one of the points in the island distribution of this bird which requires settling. There is no reason why it should not stray down the coast to Colombo; and if Mr. Holdsworth’s identification of the bird at large were correct, it was most likely as a wanderer to the district that it made its appearance there. It does not seem to pass down the east coast at all. I have seen it near Elephant’s Pass, but did not meet with it on the sea-board south of that, though it may occur at Mullaitivu. In the island of Manaar, on the open plains near Salavatori and to the north of Mantotte, it is very common, but it does not appear to take to the paddy-lands of the interior.

On the continent, the “Common King-Crow” is found, according to Jerdon, throughout the whole of India, extending through Assam and Burmah into China, and is to be met with in every part of the country, except where there is dense and lofty jungle. Commencing at the north-western limit of this wide range, I find that Mr. Ball observed it on the lower parts of the Suliman hills, and Mr. Hume procured it in Sindh; Captain Pinwill collected it in the N.W. Himalayas; Dr. Hinde at Kamptee; Messrs. Adam and Butler speak of it as common in the Sambhur-Lake district and in Northern Guzerat, though it is scarce, according to the latter gentleman, in the Mount-Aboo range. It is “very abundant in Chota Nagpur” (*Ball*), and also, further south, in the Deccan and the Carnatic. Mr. Fairbank found it common at the base of the Palanis and on the plains, but not at any elevation on the hills themselves. It is spread throughout the country to the south of this district as far as the island of Ramisserum. Turning to the north-east again, we trace it through north-eastern Cachar, where it is “extremely common” (*Inglis*) to Burmah, in which country Mr. Oates says that for many months of the year it is very abundant, being rare, however, from April to September. He did not see it on the Pegu hills. In Tenasserim Mr. Hume writes that it does not occur east of the Sittang. South of Moulmein it is not rare, and it extends to the Pakchan river. Concerning the country which forms the eastern limit of its range, namely China, Mr. Swinhoe writes (P. Z. S. 1871) that it is found throughout it, including the peninsula of Hainan and the island of Formosa; southward it extends into Siam, and thence across to Java, where it is the *Edolius longus* of Temminck.

Habits.—In Ceylon this Drongo frequents open lands, tobacco- and pasture-fields, bushy plains, and scattered thorny jungle on the outskirts of the latter. It is, like the rest of its genus, a tame bird, and is frequently to be seen sitting quietly on the backs of cattle or on the tops of fences near the bungalows in Jaffna, until a passing beetle attracts its notice, and it darts suddenly after it; sometimes a long chase occurs, and when the hapless insect is captured, it is dispatched on the nearest fence or tree, and the watch again commences. It often alights on low eminences on the ground, such as the top of a rut or a similar projection; and when frightened from this flies along close to the earth with a buoyant flight, and generally alights on a fence or low bush. It is usually solitary, or associates, perhaps, with one or two of its fellows in scattered company; but in close company I have not noticed it often. Its principal food consists of Coleoptera, grasshoppers, winged termites, of which it is very fond, and ticks, which latter it takes from cattle. It was the

species referred to by Layard when, in writing of *B. longicaudata*, he remarked that it perched on the backs of cattle to seek for ticks, on which it largely fed. Its flight is undulating and buoyant; and when chasing its prey it is capable of performing very rapid evolutions, darting hither and thither, and rising and falling until it has succeeded in its pursuit. Its note is more melodious than that of the rest of its congeners in Ceylon.

Dr. Jerdon has the following complete account of its habits in India:—"It feeds chiefly on grasshoppers and crickets, which, as Sundevall remarks, appear to be the chief insect-food for birds in India; also now and then on wasps or bees (hence the Bengal name), on dragonflies, and occasionally on moths or butterflies. It generally seizes its insect-prey on the ground, or whips one off a stalk of grain, frequently catching one in the air; now and then, when the grasshopper, having flown off, alights in a thick tuft of grass, the King-Crow soars for a few seconds over the spot like a Kestrel. When it has seized an insect, it generally, but not always, returns to the same perch. On an evening, just about sunset, it may often be observed seated on the top of a tree, taking direct upward flights, and catching some small insects that take wing at the time. Like most other birds, when a flight of winged termites takes place, it assembles in numbers to partake of the feast.

"The King-Crow obtains his familiar name in this country from its habit of pursuing Crows, and also Hawks and Kites, which it does habitually, and at the breeding-season, especially when the female is incubating, with increased vigilance and vigour. If a Crow or Kite approach the tree in which the nest is placed the bold little Drongo flies at them with great spirit and determination, and drives them off to a great distance; but although it makes a great show of striking them, I must say that I have very rarely seen it do so; and certainly I have never seen it fix on the back of a Hawk with claws and beak for some seconds, as Mr. Phillipps asserts that he has seen. Occasionally others will join the original assailant, and assist in driving off their common enemy."

A correspondent in 'Stray Feathers,' Mr. Wender, writing from Sholopoor Deccan, says:—"On the 8th inst. (Jan.) I saw a King-Crow (*B. albirictus*) sitting on a telegraph-wire with a lizard about 6 inches long in its claws, pecking away at it, just as you see a Hawk eating a lizard or a mouse. The lizard, one of those fragile light-coloured little fellows which one sees running about in long grass, was not quite dead, though he had ceased to struggle violently. The bird appeared to be pulling the lizard's intestines out in a most deliberate manner."

Some very interesting details concerning this well-known bird are furnished by Mr. Ball in his excellent paper on the Birds of Chota Nagpur. Referring to Dr. Jerdon's doubt as to its striking other birds, he says:—"On one occasion, however, I saw one actually carried on the back of a large Owl (*Ascalaphia bengalensis*) which flew out of a tree where it was being tormented by these birds and Pies (*Dendrocitta rufa*). In illustration of the somewhat miscellaneous character of the food of these birds I may mention that I remember one day in Calcutta opening a verandah *chick* (curtain) which had not been in use for some time, thus disturbing a colony of Bats that had made the inside coils their home; out they flew into the daylight, when they were immediately seen and hawked up by some King-Crows, who took them to neighbouring trees, where they quietly devoured them Late as they are in going to roost they are generally the first birds to be on the move in the morning. I have frequently heard them calling to one another long before dawn, when I have been travelling in the hot weather."

Nidification.—I was unable while in Ceylon to obtain any information from my correspondents at Jaffna concerning the nesting of this species. A comparison of its eggs with those of the continental form would be extremely interesting, and the matter is one which future workers in the island should pay attention to. In India, May, June, and July are said to be the favourite months for nesting, although eggs are occasionally taken in April and August. Mr. Hume writes that it usually builds pretty high up in tall trees, in some fork not quite at the outside of the foliage, "constructing a broad shallow cup, and lays normally four eggs, although I have found five." The nests "are all composed of tiny twigs and fine grass-stems, and the roots of the *khus-khus* grass, as a rule, neatly and tightly woven together, and exteriorly bound round with a good deal of cobweb, in which a few feathers are sometimes entangled; the cavity is broad and shallow, and at times lined with horsehair or fine grass, but most commonly only with *khus*. The bottom of the nest is

very thin, but the sides, or rim, rather firm and thick The variation in this bird's eggs is remarkable ; out of more than one hundred eggs nearly one third have been pure white ; and between the dead glossless pure white egg and a somewhat glossy, warm, pink-grounded one with numerous spots and specks of maroon colour, dull red, and red-brown, or even dusky, every possible gradation is to be found : each set of eggs, however, seems to be invariably of the same type, and we have never yet found a pure white and a well coloured and marked egg in the same nest." These latter " are a pale salmon-colour, spotted with rich brownish red." The average of 150 eggs was 1.01 by 0.75 inch, the smallest measuring 0.95 by 0.7 inch ; the latter dimensions would be quite equalled, if not exceeded, by those of our Ceylonese birds.

BUCHANGA LONGICAUDATA.

(THE LONG-TAILED DRONGO.)

Dicrurus macrocercus, Jerd. Cat. B. South India, Madr. Journ. 1839, x. p. 240 (*nec* Vieill.).

Dicrurus longicaudatus, "A. Hay," Jerd. Madr. Journ. 1845, xiii. pt. 2, p. 121; Blyth, Cat.

B. Mus. A. S. B. p. 202 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 152 (1854);

Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 129; Bourdillon, Str. Feath. 1876,

p. 394; Jerd. B. of Ind. i. p. 430 (1862); Hume, Str. Feath. 1875, p. 97.

Buchanga longicaudata, Walden, Ibis, 1868, p. 316; Holdsw. P. Z. S. 1872, p. 438; Hume,

Nests and Eggs (Rough Draft), p. 189 (1873); Legge, Str. Feath. 1875, p. 202; Sharpe,

Cat. B. iii. p. 249.

Buchanga waldeni, Beav. Ibis, 1868, p. 497.

King-Crow, Europeans in India and Ceylon.

Nil finga, Beng.; *Sahim* or *Sahem Pha*, Lepchas; *Chéchum*, Bhot.

Erratoo valan kuruvi, Tam., lit. "Double-tailed bird;" *Pastro barbeiro*, Portuguese in Ceylon.

Adult male and female. Length 10·5 inches; wing 5·0 to 5·4, average dimensions of wing in males procured in Ceylon 5·2; tail 5·8 to 6·0, depth of fork about 2·0; tarsus 0·7; mid toe 0·55 to 0·6, claw (straight) 0·3 to 0·33; bill to gape 1·1 to 1·12.

The above dimensions are from examples killed in Ceylon; an immature female shot in Ramisserum Island measures only 4·8 in the wing; one procured by Mr. Bourdillon in Travancore 5·4; a second 5·0. The measurement of a third, of which the sex is not stated, is given at 5·55.

Iris red, in some almost scarlet; bill, legs, and feet black.

Above metallic bluish black with a grey tinge on the back, increasing towards the upper tail-coverts; quills and tail with a strong greenish lustre on the outer webs, the inner being brownish black; beneath dull black pervaded with greyish, which hue is strongest on the breast, flanks, and abdomen; a slight steel-blue gloss on the chest; under wing-coverts greyish black; under surface of quills near the base brownish.

Young. Iris brownish red. The immature or bird of the year has the lower parts greyer than in the adult; the under tail-coverts have deep white tips in the form of terminal bars; beneath the carpal joint the feathers are also tipped with white, and the under wing-coverts have terminal spots of the same. The white markings, as in the case of *B. atra*, leave the under wing-coverts first; they seem to remain on the under tail-coverts until the bird is almost mature, as few specimens which I have seen are entirely without them; immature examples occasionally have one more white spot at the tips of the tail-feathers.

Obs. This is a variable species in size. Probably the birds which visit us in the cool season are bred in the south of India, and are consequently smaller than those from the northern parts of the Empire. A male, however, in the national collection from Darjiling has the wing 5·62 inches, tail 6·4, dimensions not much exceeding those which visit Ceylon.

Allied forms inhabit Burmah and the sub-Himalayan district, and were united by Jerdon with the present. *B. cineracea*, from the former region, is a smaller bird than the present species and much paler, being "ashy grey" above, and the same, but somewhat duskier, beneath; wing 4·9 to 5·2 inches. *B. pyrrhops* is, according to Mr. Sharpe, a good subspecies of the above, being larger than it. Mr. Hume considers it to be merely a grey form of *B. longicaudata*.

Distribution.—This species arrives in the north of Ceylon about the middle or latter part of October. It is decidedly migratory, as no individuals are seen between April and September, and at the season of its appearance it is always first met with on the seashore. At Trincomalie I noticed it in the Fort when it first arrived; it lingered about the neighbourhood and then betook itself to the jungles, through which it is diffused in tolerable numbers as far south as the Seven Korales. It does not appear to be common in the north. I have seen one or two individuals from the Jaffna district, but I did not meet with it on the north-

west coast, nor does Mr. Holdsworth appear to have done so. It is therefore singular that it should be a common species on the opposite side of the island. It is an occasional visitant to the west coast: I once noticed an example in October in the Fort at Colombo, but it quickly disappeared into the interior. Mr. Holdsworth likewise met with it in that district, obtaining a specimen about sixteen miles from Colombo. Further south on this side of the island it is unknown. I have seen it in the Wellaway Korale; and Mr. Bligh writes me of a Black Drongo which frequented his estate in Haputale in the month of November, which must have belonged to this species. Other evidence than this of its ascending the hills I have never obtained.

This Drongo inhabits the whole of the Indian peninsula. Jerdon writes of it:—"The Long-tailed Drongo is found wherever there is lofty forest jungle, from the Himalayas to Travancore . . . I have killed it in Malabar, the Wynaad, Coorg, and the Nilghiris; it is found occasionally about Calcutta and all along the Himalayas up to 8000 feet of elevation. It is tolerably common at Darjiling." Captain Hutton says that it is the only species of Drongo which visits Mussourie, arriving from the Dhoon in the middle of March. Captain C. H. Marshall records it from Murree. In the south of India it appears to be a permanent resident. Mr. Bourdillon remarks that it is common in Travancore, and, as I have remarked, it is probably from there that it visits Ceylon; but why it should arrive so frequently on the east coast is somewhat puzzling.

Mr. Fairbank records it from Khandala, and says that it is rarely found in the Ahmednagar district. Jerdon remarks that Adams found it common in Cashmere, which must be its extreme limit to the north and west.

Habits.—Heavy jungle and forest are the localities principally frequented by this Drongo, the vicinity of open places, banks of rivers, or margins of secluded tanks being usually chosen by it in which to take up its quarters; and there it subsists on the insectivorous diet so rife in the tropical woods. It perches on the tops of tall trees or on some outstanding branch, from which prominent outlook it sallies forth on the beetles and various winged insects which pass it, and then returns to its post to discuss the prey thus captured. It is an inquisitive and somewhat querulous species, chasing Hawks and Crows, and not unfrequently consorting with Bulbuls and other small birds for the purpose of mobbing an unfortunate Owl which has been discovered abroad during the daylight. I have more than once found it pursuing the Devil-bird. On first arriving in the island it is found in avenues and groves of trees near human habitations, but it soon disappears for its sylvan haunts. It is often noticed on the edges of roads leading through the forest, and may easily be recognized from other Drongos by its long tail and generally slender outline. It is one of the last birds to retire in the evening, and often makes a supper off the beetles, termites, bugs, &c. which are abroad during the short twilight of the tropics. Its notes are varied and shrill in tone, and some of them are cleverly imitated by the Common Green Bulbul, *Phyllornis jerdoni*. I have usually met with it in pairs, but once or twice have seen a small party together. Jerdon remarks that it now and then makes a considerable circuit, apparently capturing several insects, before returning to its perch, and then reseating itself on some other tree; he likewise states that three or four are sometimes seen together in scattered company, but that each returns independently to its own perch. Layard's remarks as to this Drongo perching on the backs of cattle apparently apply, as heretofore remarked, to the Black Drongo so common in the open about Jaffna.

Nidification.—This species breeds in India during the months of March, April, and May, building, according to Captain Hutton, a very neat nest, usually placed on the bifurcation of a horizontal branch of some tall tree. "It is constructed of grey lichens gathered from the trees and fine seed-stalks of grasses firmly and neatly interwoven; with the latter it is also usually lined, although sometimes a black fibrous lichen is used; externally the materials are kept together by being plastered over with spiders' webs." There are, says Mr. Hume, two types of this bird's eggs—the one of a pale pinkish salmon-coloured ground, streaked, blotched, and clouded somewhat openly, except at the large end, with reddish pink; the other has a pale pinkish-white ground, blotched boldly, almost exclusively, at the larger end in a broad irregular zone with brownish red. They vary from 0.85 to 1.01 in length by from 0.7 to 0.75 inch in breadth.

BUCHANGA LEUCOPYGIALIS.
(THE CEYLONese WHITE-BELLIED DRONGO.)

(Peculiar to Ceylon.)

Dicrurus leucopygialis, Blyth, J. A. S. B. 1846, xv. p. 298; id. Cat. B. Mus. A. S. B. p. 203 (1849); Kelaart, Prodrumus, Cat. p. 124 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 130; Blyth, Ibis, 1867, p. 306; Legge, ibid. 1874, p. 16.

Dicrurus caerulescens (Linn.), Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 129.

Buchanga leucopygialis (Bl.), Holdsworth, P. Z. S. 1872, p. 439; Hume, Str. Feath. 1873, p. 436; id. Nests and Eggs, i. p. 192 (1873); Legge, Ibis, 1875, p. 288; Sharpe, Cat. B. iii. p. 253 (1877).

Buchanga caerulescens (Linn.), Holdsw. P. Z. S. 1872, p. 439 (in pt.); Legge, Ibis, 1875, p. 288; id. Str. Feath. 1875, p. 202 (in pt.).

Buchanga insularis, Sharpe, Cat. B. iii. p. 253 (1877).

The King-Crow, Europeans in Ceylon. *Pastro barbeiro*, Portuguese in Ceylon.

Kowda or *Kawuda Panika*, Sinhalese.

Ad. niger, chalybeo nitens, abdomine albicante, crisso et subcaudalibus albis: rostro et pedibus nigris: iride rubrà.

Adult male. Length 9.5 to 9.9 inches; wing 4.7 to 4.95; tail 4.7 to 5.1; tarsus 0.75 to 0.8; mid toe 0.7, claw (straight) 0.24; bill to gape 1.0 to 1.1.

Adult female. Length 9.5 to 9.7 inches; wing 4.5 to 4.75; tail 4.5 to 4.75.

Iris varying from reddish brown to brownish red, in some obscure red; bill, legs, and feet black.

Obs. These measurements and the colours of the soft parts are taken from a series of northern and southern examples, the representatives of the two types into which this species apparently divides itself; but in order to the more complete insight into the question, I will in my "descriptions" first deal with one type, and then pass through the intermediate form to the other.

Dark form: BUCHANGA LEUCOPYGIALIS, Blyth.

Adult male (Wellewatta, Colombo). Wing 4.75 inches; tail 4.0; bill to gape 1.0.

Iris dull red.

Head and entire upper surface black, illumined with steel-blue; wings and tail brownish black, with a metallic lustre, slightly greener than that of the back on the outer webs of the feathers; ear-coverts and face black, without the metallic lustre of the head; chin, fore neck, and chest dull black, intensifying somewhat on the chest, and slightly glossed in that part; on the breast the centres of the feathers become gradually brown, with the edges iron-grey, the latter paling to greyish white lower down, and thence into white on the abdomen, giving that part, however, only a whitish appearance on account of the dark centres of the feathers; vent and under tail-coverts white.

Adult male (Mapalagama, South Ceylon). Wing 4.85 inches; tail 4.9; bill to gape 1.0.

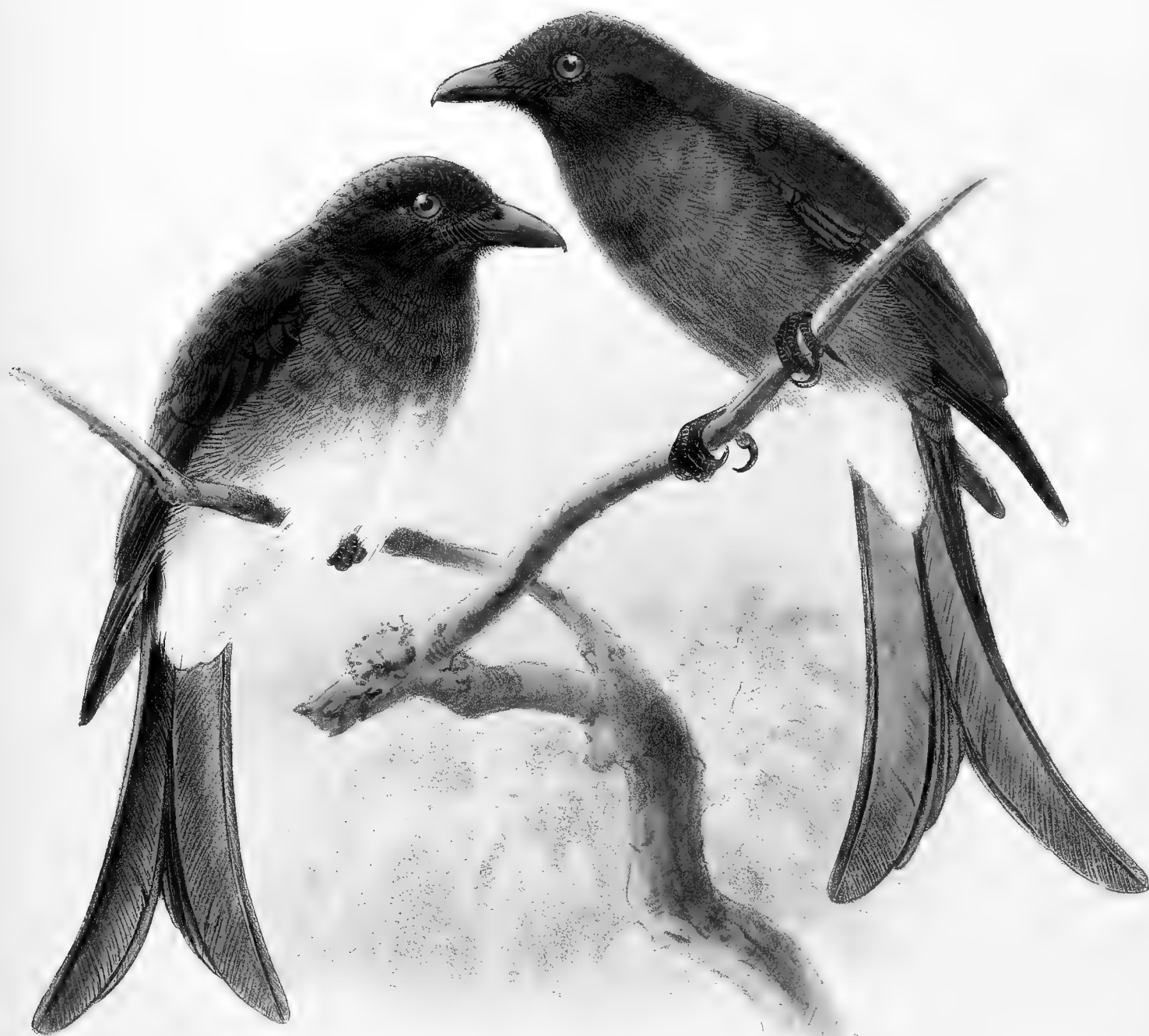
Iris obscure red.

Much darker on the lower breast and belly than the above, as it is in abraded plumage, and the *whitish edgings* are worn off from this cause; the vent is only greyish white, and the under tail-coverts sullied white; gloss on the upper surface duller, or not so green as in the freshly-moulted specimen.

Adult female (Poorie, W. Province). Wing 4.55 inches; tail 4.4; bill to gape 1.0.

Iris dark red-brown.

In more abraded plumage than the last; the entire breast and belly dull brown, the vent greyish, and the under tail-coverts greyish white.



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BUCHANGA LEUCOPYGIALIS.

Adult female (Heneratgoda). Wing 4·7 inches; tail 4·7; bill to gape 1·0.

Iris dull red.

In abraded plumage, but not so dark as the above, owing to some of the feathers not being so much worn as others; the breast is greyish brown; the vent whitish, and the under tail-coverts slightly less albescent than the vent, being so much worn as to show the brownish bases of the feathers.

Female (Colombo). Wing 4·5 inches; tail 4·4.

Iris light reddish. An abnormally pale-breasted example.

Throat and chest brownish black, the sides of the latter glossed with green, the centre of the breast brownish grey, the edges of the feathers whitish, the feathers at the sides of this part still paler, and the sides of the belly whitish; vent and under tail-coverts pure white.

Intermediate form.

Male (Chilaw, 50 miles north of Colombo). Wing 4·8 inches; tail 4·9; bill to gape 1·05.

Back with a somewhat *greener* gloss than in the Colombo specimens; chest and throat black, much glossed with metallic green; the centre of the breast brown, the feathers edged paler, the flanks very dark, and the belly suddenly turning white; vent and under tail-coverts pure white.

Male (Deduru-Oya, N.W. Province). Wing 4·98 inches; tail 4·7; bill to gape 1·05.

Upper surface with a still *greener* gloss than the above, the entire belly and the under tail-coverts white, this colour extending up the breast in the form of a point, and becoming at the uppermost part sullied, that is to say, *whitish*.

Two adults (British-Museum specimens *b*, *c*, "Uva district;" but probably from the *west* of Nuwara Eliya). Wings 4·65 and 4·55 respectively. Resembling the above in plumage both as regards upper surface and lower parts; the whitish hue of the lower part of the breast passing into dark slate on the upper part of it.

Two adults (Kandy district). Wing 4·9 inches. Upper breast very dark; abdomen turning abruptly to white.

Light form: BUCHANGA INSULARIS, Sharpe.

Adult female (Trincomalie). Wing 4·6 inches; tail 4·4; bill to gape 1·0.

Upper surface with a marked *greenish* gloss; throat blackish brown; chest black, glossed with green; upper breast dark slate, rather abruptly changing into white on the lower part of the breast and rest of under surface.

Adult male (British-Museum specimen *a*, "Ceylon," from Badulla district).

Similar to Trincomalie specimen, except that the white colour takes a pointed form on the breast.

Male, not quite adult (Badulla). Wing 4·75 inches; tail 4·9; bill to gape 1·03.

Paler on the chest and tail than any of the foregoing specimens. The upper tail-coverts are tipped with whitish.

Young (dark form on leaving the nest). Blackish brown above, without the black-green gloss of the adult. Chest and throat blackish brown, the breast slaty, the feathers of these parts finely tipped with greyish fulvous; the belly and under tail-coverts sullied whitish, the latter tipped with dusky grey.

A young bird about two months old (Ambepussa, June 29, 1875), shot with the hen bird, which was feeding it, is already acquiring the mature plumage; the black-green feathers on the upper surface predominating over the brown "nestling" ones; the chest nearly all moulted to black feathers, and the centre of the breast whitish as high up as birds from the N.W. Provinces. Wing 4·5 inches. The old bird shot with it was of the true *leucopygialis* type, the breast *much darker* than that of the young bird.

A young bird in a similar stage of change (shot at Deltota, May 29, 1876) is much darker on the breast than the Ambepussa specimen. Wing 4·8 inches.

Young (pale form: Galoya, Trincomalie Road). Similar to the Ambepussa example on the upper surface, being in a state of change from the brown nest-feathers to the glossy black-green; the under surface is paler, inasmuch as the whitish immature plumage extends higher up the breast, and instead of running up towards the chest in a point is distributed right across to the flanks.

Obs. No bird in Ceylon is so puzzling as the present, and there is none to which I have given so much attention with a view to arriving at a satisfactory determination as to whether there are two species in the island or only one. I cannot come to any other conclusion than that there is but one, the opposite types of which are certainly

somewhat distinct from one another, but which grade into each other in such a manner as to forbid their being rightly considered as distinct species; and I will leave it to others who like to take the matter up for investigation to prove whether my conclusions are erroneous or not. I see no reason why, in writing of birds from the north of Ceylon, future collectors should not style them *B. insularis*, inasmuch as these birds form a race of themselves. A perusal of the above-mentioned localities will show that the pale birds inhabit the dry portions of the island, grading into the dark race on a line drawn from Chilaw across the southern part of the N.W. Province, and thence over to the Badulla country and down into the Park districts. Mr. Boate's specimens in the British Museum came from "between Kandy and Nuwara Eliya," which I take to be the Rambodde or Pusselawa districts; they are neither strictly *leucopygialis* nor *insularis*, but resemble Deltota and N.W.-Province birds, which are intermediate, whereas examples from the dry district of Uva are the same as those from Trincomalie. The dark form from the South-west and Western Provinces is extremely variable as regards the pale lower parts, the dusky hue of which depends, as I have shown, on abrasion of plumage; and in some instances, as exemplified in the Ambepussa bird, the offspring are paler than the parents. As the plumage becomes abraded, it darkens, and the whole appearance of the pale belly is changed. Moreover it seems probable that the light form in the north sometimes becomes dark; for I have a specimen shot by Mr. Cotterill, C.E., at Hurullé tank, which is in highly abraded plumage it is true, but which has the lower breast and belly so very dusky that it could scarcely, when in new feather, have been a very light-coloured bird.

Mr. Sharpe rightly discriminated the pale Ceylonese form of the present species from *B. caerulea*, the Indian bird. The latter has a greyer hue on the green gloss of the upper surface, the tail is a rather pale brown, instead of a dark blackish brown, and the throat and chest are dull ashy blackish, *without any green gloss on the latter*. These distinctions are especially noticeable in northern birds, from Nepal, Kattiawar, and Behar; but from further south I have examples which are darker on the chest, but of course not black, glossed with green, as in Ceylonese. South-Indian birds may perhaps be very close to ours; but I regret to say I have not seen any from that region. It is not improbable that an almost unbroken sequence from the Himalayan to the Ceylonese type could be got together, proving that there is but one species of this Drongo, divisible into local races, the darkest of which would be *B. leucopygialis* of Blyth from South Ceylon.

Examples of *B. caerulea* which I have measured vary from 4.9 to 5.1 inches in the wing.

Layard's specimens from Pt. Pedro evidently belonged to the usual pale-bellied bird found in the north of Ceylon, which were not discriminated by Blyth, at the time they were sent to him, as distinct from the Indian birds.

Distribution.—The dark race of this Drongo inhabits the South-western District, the Western Province, and the adjacent slopes of the Kandyan hills, perhaps as far eastward as the valleys in Pusselawa and Kotmalie; while, turning to the south again, we find it spreading into the country lying between Badulla and Hambantota, and inhabiting the dividing valley which is continuous with the Saffragam division. It is generally diffused through the Western Province, being numerous in the Korales surrounding Colombo and along the sea-board generally. In large forest-tracts like those on the Pasdun and Kukkul Korales it is scarce, but even there it will be found in the open country formed by isolated tracts of cultivation. A short distance inland from Colombo it is a very common bird, and is one of the most familiar species to those who enjoy the usual evening drive round the outskirts of the "cinnamon-gardens." It is equally well known in the Galle and Matara districts.

In the Seven Korales, where the country is open in many places, it is tolerably numerous, becoming scarcer (*in the light form*) in the forests as we proceed north. In this part of the island it is not nearly so plentiful as its dark relative is in the south; but the heavy nature of the jungle probably tends much to its concealment; and the spots in which I have chiefly observed it were the outskirts of forest, clumps of jungle in grassy wastes, or the borders of village tanks. Layard seems only to have obtained it at Pt. Pedro, and regarded it as a visitor, an opinion which its scarceness on the peninsula naturally occasioned. It extends down the eastern side of the island to the country between Batticaloa and the Uva ranges, in which it is also found to an elevation of about 4500 feet. On the eastern side of the Badulla valley I frequently observed it on the estates between the capital of Uva and Lunugalla; but I did not see it on the Fort-MacDonald patnas, although I believe it is found in that tract of country.

Habits.—The "King-Crow," one of the best-known Ceylonese birds to European residents in the island, frequents native compounds, openly wooded land, the borders of paddy-fields and tanks, the outskirts of jungle, or the vicinity of grassy forest-glades; and in the coffee-districts it may usually be seen seated on stumps or

perched on the branches of dead trees left standing among the luxuriant sweeps of Ceylon's staple plant. To the admirer of bird life it must always be an interesting species, as its lively manners, familiar habits, and bold onslaughts on its winged prey make it an unfailing subject of observation. Its diet is entirely insectivorous, consisting chiefly of beetles, bugs (*Hemiptera*), termites, and such like, which it catches on the wing, returning again to its perch, on which I have observed it striking its prey before swallowing it. It is occasionally, when there is an abundance of food about, a sociable species, as many as three or four collecting on one tree and carrying on a vigorous warfare on the surrounding insect-world. It is abroad at daybreak, and retires very late at night to roost, appearing to be busy throughout the whole day, and never to be tired of uttering its cheerful whistle. One or more may often be seen chasing an unoffending Crow to a great height in the air; and though their attacks must be comparatively feeble, I have observed that they have the capability of considerably disconcerting their powerful enemy; it is from this singular habit that these and other Drongos have acquired the name of King-Crow. The ordinary note of the dark race is a whistling cry, accompanied by a quick jerk of the tail, a movement which the bird is constantly performing; but in the breeding-season the male has a weak twittering song, somewhat resembling that of the Common Swallow. I have listened to this in the north-country birds; but the ordinary note of the latter always seemed to me to be less powerful than that of the Western-Province form. This species and the Long-tailed Drongo have an inveterate hatred of Owls, and never fail to collect all the small birds in the vicinity when they discover one of these nocturnal offenders, chasing it through the woods until it escapes into some thicket which baffles the pursuit of its persecutors.

Nidification.—The breeding-season of this Drongo is from March until May; and the nest is almost invariably built at the horizontal fork of the branch of a large tree, at a considerable height from the ground, sometimes as much as 40 feet. It is a shallow cup, measuring about $2\frac{1}{4}$ inches in diameter by 1 in depth, and is compactly put together, well finished round the top, but sometimes rather loose on the exterior, which is composed of fine grass-stalks and bark-fibres, the lining being of fine grass or tendrils of creepers. The number of eggs varies from two to four, three being the most common. They vary much in shape, and also in the depth of their ground tint; some are regular ovals, others are stumpy at the small end, while now and then very spherical eggs are laid. They are either reddish white, "fleshy," or pure white, in some cases marked with small and large blotches of faded red, confluent at the obtuse end, and openly dispersed over the rest of the surface, overlying blots of faint lilac-grey; others have a conspicuous zone round the large end, with a few scanty blotches of light red and bluish grey on the remainder; in others, again, the markings are confined to a few very large roundish blotches of the above colours at one end, or, again, several still larger clouds of brick-red at the obtuse end, with a few blotches of the same at the other. Dimensions from 1.0 to 0.86 inch in length, by 0.72 to 0.68 in breadth. I once observed a pair in the north of Ceylon very cleverly forming their nest on a horizontal fork by first constructing the side furthest from the angle, thus forming an arch, which was then joined to the fork by the formation of the bottom of the structure.

The parent birds in this species display great courage, vigorously swooping down on any intruder who may threaten to molest their young.

The figure of the southern bird in the Plate (fig. 1) accompanying this article is that of a female from Heneratgoda, that of the northern bird (fig. 2) is of a female shot near Trincomalie.

Genus DISSEMURUS.

Bill stout, the culmen more acutely keeled than in *Buchanga*, as also higher at the base; forehead furnished with a tuft of frontal plumes, the anterior ones projecting forwards, and the posterior more or less curved back over the forehead. Wings with the 4th and 5th quills the longest, and the 3rd shorter than the 6th. Tail with the outer feathers prolonged more or less, in some species with the web complete and slightly upturned, in others with the shaft denuded of the webs to within a short distance of the tip.

Of large size. Plumage highly glossed above and below; the feathers of the hind neck "hackled."

DISSEMURUS LOPHORHINUS.

(THE CEYLONESE CRESTED DRONGO.)

(Peculiar to Ceylon.)

Dicrurus lophorhinus, Vieill. N. Dict. d'Hist. Nat. ix. p. 587 (1817); Gray, Hand-l. B. i. p. 285 (1869).

Dicrurus edoliiformis, Blyth, J. A. S. B. 1847, xvi. p. 297 (1847); id. Cat. B. Mus. A. S. B. p. 202 (1849); Kelaart, Prodromus, Cat. p. 124 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 129; Blyth, Ibis, 1867, p. 305; Legge, Ibis, 1874, p. 17.

Dicrurus lophorhinus, Gray, Hand-l. B. i. p. 285.

Dissemurus lophorhinus, Holdsworth, P. Z. S. 1872, p. 439.

Dissemuroides edoliiformis, Sharpe, Cat. Birds, iii. p. 256 (1877); Tweeddale, Ibis, 1878, p. 78.

Le Drongup, Levaill. Ois. d'Afr. pl. 173.

Jungle King-Crow, in Ceylon.

Kowda, Sinhalese; *Kaputa-baya*, Sinhalese in Southern Province.

Niger, chalybeo-viridi nitens, caudâ valdè forficatâ, rectricibus nigris chalybeo-viridi marginatis, rectrice extimâ longiore et ad apicem paullo recurvatâ: cristâ frontali densâ, setis nasalibus longis anticè directis et plumis cristæ posticis paullo recurvatis: subtus niger, chalybeo nitens, plumis præpectoralibus chalybeis vix lanceolatis: rostro et pedibus nigris: iride brunnescenti-rubrà.

Adult male. Length 13·4 to 14·1 inches; wing 5·6 to 6·0; tail—outer feathers 7·2 to 7·6, central feathers 2·3 to 2·5 shorter; tarsus 1·0 to 1·1; mid toe 0·75, claw (straight) 0·3; hind toe 0·5, claw (straight) 0·4; bill to gape 1·35 to 1·4; limit of the length of frontal feathers about 0·5.

Adult female. Somewhat smaller than the male. Length 13·25 inches; wing 5·0 to 5·6; tail 7·0.

In this species the tail assumes a constant character, and does not vary at all. It is shaped as in the genus *Buchanga*; the web is the same width throughout, broad and flat, the outer portion *only slightly* upraised, but not sufficiently to be called curved.

The anterior frontal plumes are directed forward, and the posterior ones are erect, but have no tendency to curve back over the forehead as in *D. paradiseus*.

Iris dull brownish red or dark yellowish red; bill, legs, and feet black.

Plumage black, highly glossed with a metallic lustre, which on the head, hind neck, throat, and chest is of a steel-blue tinge, and on the back, wing-coverts, and outer webs of the tail-feathers dark green; quills black, the outer webs glossed; bases of the feathers at the sides of the rump greyish, generally showing on the surface of the plumage; flanks and abdomen brownish black, scarcely glossed; the under tail-coverts glossed at the tips; the frontal plumes in fine specimens reach to within 0·4 of the tip of the culmen; the feathers of the hind neck are pointed and to some extent elongated.



$\frac{1}{2}$

DISSEMURUS PARADISEUS.
(Abnormal Form)

$\frac{3}{4}$

DISSEMURUS LOPHORHINUS.

Young. Iris brown, gradually becoming reddish with age. The nestling is black, with but little of the metallic sheen; the outer tail-feathers not much elongated. Immature birds have the under tail- and under wing-coverts tipped white; the flanks pervaded with grey, and in some examples the lower parts faintly edged with white; the under wing-coverts retain their white markings after they have disappeared from the under tail-coverts, few specimens being found without a few white terminal spots on the under wing. In this feature the genus *Dissemurus* is an exact contrast to *Buchanga*.

Obs. I have placed this species in the genus *Dissemurus*, from which it was removed by Mr. Sharpe, because the crest resembles that of some of the local races of the next bird, and it does not seem advisable to establish a genus for it simply because the outer tail-feathers are different from typical *Dissemurus*. The bird for which Mr. Hume established his genus *Dissemuroides* has a "tuft of hair-like feathers on the forehead, springing from each side of the base of the culmen," and therefore differs materially from the present species. Concerning the specific name of *lophorhinus* used by Vieillot, I have perused carefully Levaillant's description of the Drongup in his 'Oiseaux d'Afrique,' and likewise Vieillot's of the species to which he gave the Latin name in question; and I think that the latter was really referring to the Drongup. Levaillant says that his bird "est de la taille de notre draine, vulgairement nommée hautegrive;" and Vieillot uses words of similar meaning when he writes "à la taille de la grive-draine." The plate of the Drongup is, it is true, as far as the head is concerned, a very grotesque representation of our bird; but it is perhaps as faithful as one could expect of any drawing in the 'Oiseaux d'Afrique.' I may add that Mr. Sharpe now agrees with this view of the question, although he was of opinion, at the time he wrote on this species (Cat. Birds, iii.), that Vieillot's description was that of a Madagascar bird, *D. forficatus*.

Distribution.—The stronghold of this fine Drongo consists of the Western Province and the south-west corner of the island, including the southern hill-ranges, throughout which it is plentifully diffused. Its northerly limit is the Kurunegala district, extending along the base of the Matale hills and including the southern portion of the Seven Korales. It is found in all the forests and heavy jungles of the Western Province, and is common in the Ikkadde-Barawe forest and in the outlying jungles between there and Kotte. From Ambepussa southwards through Ratnapura to the Pasdun and Kukkul Korales it is everywhere found in heavy forest, and ascends the Ambegamoa Peak and Maskeliya jungles to a considerable altitude. It is located in portions of the interior of the Kandyan Province, as Dr. Holden, formerly resident in Deltota, has procured it in Hewahette at 3000 feet elevation. It does not appear to extend eastward beyond the slopes of the southern ranges, for I did not meet with it in the forest-tract at the base of the Haputale hills, in which district the racket-tailed species is so common. It is very abundant in the forests on the south bank of the Gindurah, appearing to thrive more prosperously in these excessively humid jungles than in those further up the west coast. I have seen what I am nearly sure to be this species in the Friars-Hood forests; but I cannot speak with certainty, as the specimen I allude to may have been an immature Racket-tailed Drongo. Nowhere else in the Eastern Province have I met with any thing but this latter species, which likewise monopolizes the whole of the northern forests beyond Dambulla.

Habits.—Damp forests and even their most gloomy recesses are frequented by this fine bird. While tramping through the humid glens of the southern jungles, when not a sound is heard but the sighing of the wind in the lofty trees around him, the naturalist is suddenly startled by the sudden outburst of the lively notes with which the Crested Drongo is wont to indulge in on being disturbed in its native haunts. Its vocal powers are remarkable and are fully brought out in the breeding-season, when the males give out a pleasing warble for the edification of their consorts; this is varied by a number of loud whistlings and calls, the result of the bird's powers of mimicry, which are quite equal to those of the next species. I have heard it imitate cleverly the cry of the Serpent-Eagle and the call of the Koel, and often listened to what were evidently attempts to mock other smaller inhabitants of the woods. It usually associates in pairs, and perches across the upper branches of lofty trees, whence it makes many a sudden dive upon passing beetles and the many larger members of the insect kingdom which affect the Ceylon forests. Its flight is powerful and swift, and it is capable of darting through thick foliage with great ease: on seizing an insect in the air it returns with it, or carries it to another perch and beats it against the branches before devouring it. I have on several occasions in Saffragam found three or four pairs of these birds in scattered company, and once in

the Opaté hills came on a flock which seemed to be moving from one part of the forest to another ; they were making their way along from tree to tree beneath a vast precipice, and uttering a loud whistle, which one bird took up from the other as they disappeared from my gaze through the dense foliage. It has an inveterate dislike of Owls, particularly the "Devil-bird," which is a fellow inhabitant of the gloomy wilds ; and whenever it espies one of these birds which has neglected to seek a proper place of concealment, it attacks it with loud cries, and is soon joined by a host of small birds (Bulbuls, &c.), which soon drive the luckless Ulāna to a distant part of the forest.

Nidification.—This species breeds in the south of Ceylon in the beginning of April. I have seen the young just able to fly in the Opaté forests at the end of this month, but I have not succeeded in getting any information concerning its nest or eggs.

The figure in the Plate accompanying this article is that of a very large male example shot in the Kottowe forest, having an exceptionally fine tail.

DISSEMURUS PARADISEUS.

(THE RACKET-TAILED DRONGO.)

Cuculus paradiseus, Linn. Syst. Nat. i. p. 172 (1766).

Edolius malabaricus, Layard & Kelaart, Prodromus, Cat. Ceylon B. App. p. 58 (1853);
Jerdon (in pt.), B. of Ind. i. p. 437 (1862).

Edolius paradiseus, Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 128.

Dissemurus malabaricus, Holdsw. P. Z. S. 1872, p. 439; Legge, Ibis, 1875, p. 288.

Dissemurus ceylonensis, Sharpe, Cat. B. iii. p. 264 (1877); Tweeddale, Ibis, 1878, p. 82.

Dissemurus paradiseus, Hume, Str. Feath. 1878, p. 222.

Le Coucou vert hupé de Siam, Brisson; *Paradise Cuckoo*, Lath.; *The Paradise Drongo*; *The Long-tailed King-Crow*, Europeans in Ceylon. *Bhimraj*, Hind., lit. "King of the Bees."

Maha-kawuda, Sinhalese; *Erattu valem kuruvi*, lit. "Double-tailed bird," Tamils in North of Ceylon.

Adult male. Length 17.0 to 19.0 inches, according to length of tail; wing 5.8 to 6.2; tail 11.0 to 12.5 to tip of outer feather, the penultimate, in one of the latter measurement, 6.8 shorter; racket never exceeding 2.75; tarsus 0.9 to 1.0; mid toe 0.8, its claw (straight) 0.35; bill to gape 1.45.

Female. Length 15.0 to 16.0 inches; wing 5.6 to 6.1; tail 10.0 to 11.0 to tip of outer tail-feather, which projects not more than 5.5, and in some only 4.0, beyond the penultimate.

The above measurements are taken from an extensive series shot, during a period extending over five years, in the north and south of the island; and I have never met with an example with a longer racket tail-feather than 12.5 inches, extending 6.8 beyond the adjacent or penultimate feather, nor ever obtained one in which, when the bird was fully adult and the shaft *quite bare*, the racket exceeded 2.75 inches in length. In males, the largest of the sexes, the racket-feather seldom reaches 12 inches, and in females seldom exceeds 10.5; the bare portion of the shaft varies from 3.0 to 4.75 inches in length.

Iris varying from brownish red to deep red, mature, but not aged, birds having it of the former hue; bill, legs, and feet black.

Plumage deep black, highly glossed on the head, back, rump, wing-coverts, throat, and chest with dark metallic green; on the breast and lower parts the metallic sheen is of a bluer cast than that of the upper surface; a large frontal crest, the anterior feathers of which are short, very narrow and scantily webbed, and stand erect, while the posterior plumes attain a length, in the finest and oldest specimens, of 1.0 to 1.2 inch and recurve over the forehead touching the crown; feathers of the sides and back of neck "hackled"; bases of the rump and upper tail-coverts and lower flank-feathers greyish; abdomen and under tail-coverts glossless, a few white terminal spots on the under wing-coverts.

The "racket" turns up perpendicular to the horizontal plane of the tail and curves *slightly* inwards.

Young (nestling). Iris brown; bill black; legs and feet bluish black.

Just after quitting the nest (July) the crest is only slightly developed, the posterior feathers scarcely recurved at all and very short; the plumes of the head and hind neck are short and rounded at the tips; back and tail glossed with metallic green; the lateral rectrices are usually about 3 inches longer than the adjacent pair and almost fully webbed, there being a slight indentation, or hollow so to speak, opposite the end of the penultimate; beneath blackish brown; under tail-coverts fluffy and without any terminal white spots; under wing-coverts spotted with white.

In the next stage (January following), probably acquired by moult in September, the crest is tolerably developed, the posterior feathers lengthened and recurved, but rather open-webbed, the racket-feathers are denuded for about 2 inches of most of the inner web, a border next the shaft of about 0.05 inch remaining, the racket about 3.0 in length, and the whole projecting about $4\frac{1}{2}$ to 5.0 inches beyond the penultimate; the feathers of the hind neck

are more lengthened than before and pointed at the tips; under tail-coverts and under wing-coverts both with white terminal spots.

At each succeeding stage the shafts of the racket-feathers become more denuded and the crest lengthens; the spots on the lower tail-coverts finally disappear, but one or two always remain on the under wing-coverts.

Obs. The Ceylonese Racket-tailed Drongo constitutes a race in which the racket-feathers are *almost* constantly smaller than those from any of the localities in the wide range of this species. It may, I think, safely be laid down as a rule that the *maximum* length of these feathers in our adult birds is about equal to the minimum in the same from Malabar, Burmah, Tenasserim, and Siam. This, at least, is the result of an examination of all the material at my disposal in England. In adult examples in the British Museum from Travancore, Malabar, Moalmaza, and Shenogah, the length by which the racket-feathers exceed the penultimate varies from 7.0 to 9.0; and I notice that Mr. Hume gives the measurement of the entire feather of a Travancore specimen collected by Mr. Bourdillon at 18.75 inches. The racket in these birds is of different shape from the Ceylonese; it is of greater length in the first place, and again longer in proportion to the breadth of the web; as a rule, likewise, the basal part of the web slopes off to the shaft beyond the tip of the penultimate. The wings also attain a greater length than in the island forms, 6.3, 6.4, 6.6 inches being some of the measurements recorded by Mr. Hume in his exhaustive article contained in the 'Birds of Tenasserim.' In fully adult specimens from South India, the crest resembles that of our old birds; but in the different stages of immaturity I observe that it bears a different character. The crest in the young bird is less developed: an example in the British Museum with the racket well formed, and a bare shaft of 2 inches in length, has no more crest than a Ceylonese *D. lophorhinus*; in another bird from Travancore the anterior portion of the crest is *bushy* and erect; in another, still older, from Moalmaza, the whole crest projects forward in a long tuft (this is not from the making-up of the skin), the posterior portion of which stands up to a height of 0.9 inch above the culmen. In all immature birds that I have examined, the prevailing characteristic is that the anterior feathers of the crest are longer than the posterior ones.

I find, on examination of the Tenasserim examples in the British Museum, and in the collection lately sent home by Mr. Hume, that the length of the racket-feathers averages the same as in the South-Indian, exceeding the penultimate from 7.0 to 9.5 inches; the racket is likewise of the same character, recurving more* inwards than in our bird. The Siamese birds vary much in length of the racket-feather. One in the British Museum exceeds the penultimate by nearly 10 inches; another, however, in the Swinhoe collection, approaches nearest of all that I have examined to the Ceylonese form. Its measurements are:—wing 6.1 inches; outer tail-feather 12.75, exceeding the penultimate by 6.9; racket 3.0; bill to gape 1.3 (shorter than Ceylonese examples as a rule); crest precisely the same. It is on the evidence of this specimen, coming from the opposite extreme of this bird's wide range, coupled with the fact of the species being so variable, that I do not keep the Ceylonese form distinct as a sub-species under Mr. Sharpe's title *ceylonensis*. More extended observations than I have been able to make, and a greater series of examples, are both necessary in order to prove whether the extreme limit of the length of the racket-feather and the size of the racket itself as given above are correct.

In the north of the island there are sometimes to be found very singular and abnormal examples of this bird with the crest tolerably well developed and recurving over the forehead, but with the outer tail-feather intermediate between that of *D. lophorhinus* and a mere nestling *D. paradiseus*. I obtained a specimen in the depths of the forest between Kanthelai and Hurullé tanks, and another in some magnificent timber-jungle at Umeragolla, on the Dambulla and Kurunegala Road; a third exists in the Layard collection at Poole. The web is entire, recurving quite inwards at the tip, whereas that of a young nestling even, of the ordinary form, has a recess or gap, as shown in the woodcut, p. 402; furthermore, one of the specimens is quite adult, having no spots on the under tail-coverts. Having met with but these examples, I feel inclined to look upon them as an abnormal form of *D. paradiseus*. If, however, additional specimens come to hand, eventually it may prove to be a distinct species; and for it I would then propose the name of *D. intermedius*.

Distribution.—This showy bird is chiefly an inhabitant of the dry region of Ceylon, from the Vanni to Puttalam on the west side, extending through all the eastern portion of the island and flat jungle-clad country between Haputale and the south-east coast up to the slopes of the Morowak-Korale ranges. In the latter region, particularly in forest on the banks of rivers, and in most of the northern forests, it is very numerous, approaching

* This is, of course, when the bare portion of the shaft near the racket is pressed down into a horizontal position, which always gives the racket the normal twist, provided it be not injured.

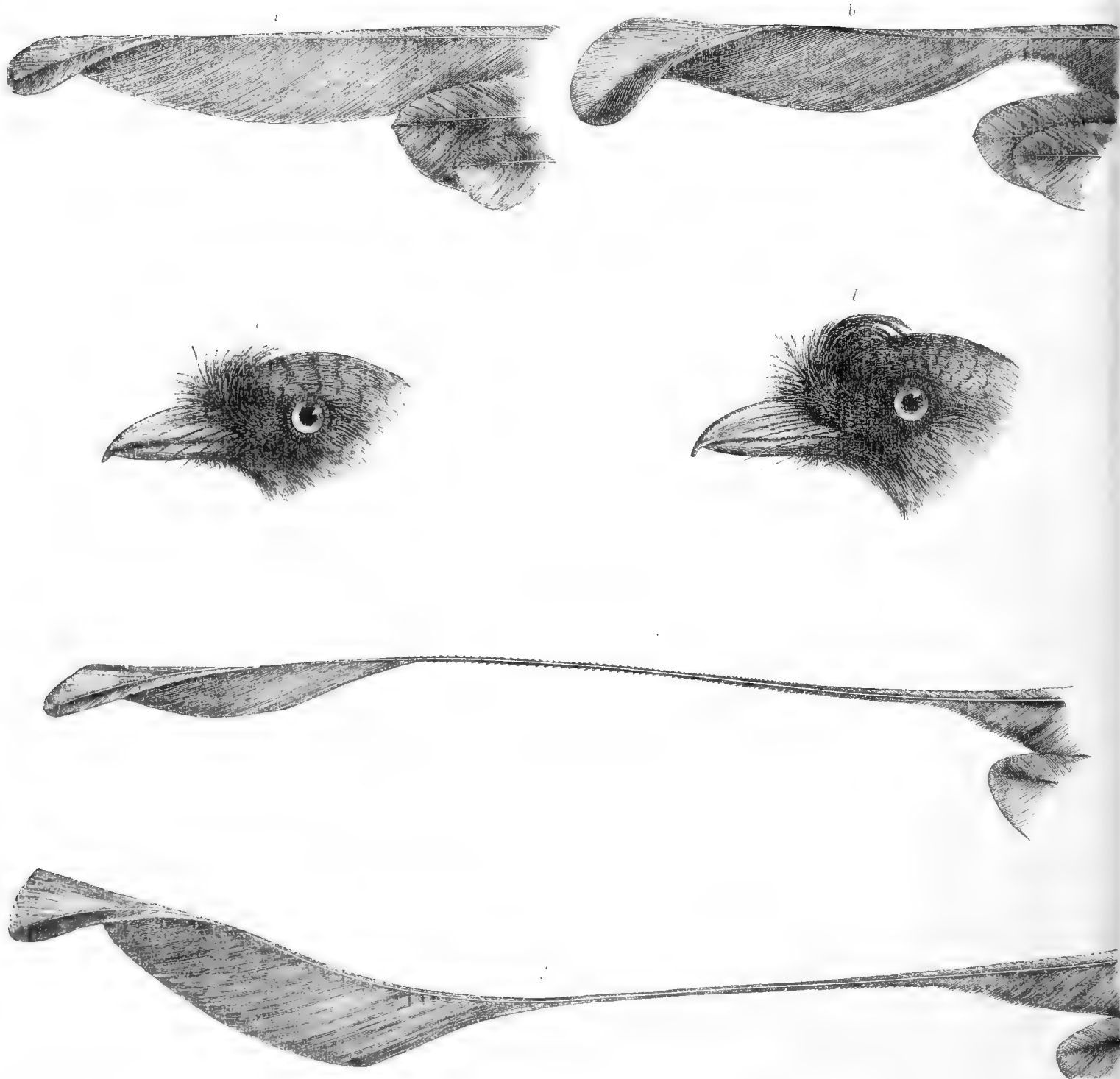
close to the sea-coast in places where the jungle is heavy. I have found it on the Lunugalla pass up to 2000 feet, and it doubtless ranges to the same elevation on the entire eastern and northern slopes of the central zone. In the Western Province I never met with it; but in 1872 I obtained an example in the forest of Kottowe, near Galle, a remarkably isolated position, some 50 miles distant from the limits of its general range. It is therefore possible that it may still be found in some of the lower forests between that point and Kurunegala, thus extending its range throughout all the low country. I have no certain evidence of its occurrence in the higher jungles of the coffee-districts; but it may possibly ascend the Haputale ranges to a considerable altitude in the dry season, and in the neighbourhood of Kandy it has been procured by Mr. Whyte's collectors. Layard procured it first at Anaradjapura, and wrote of it as being confined to the Vanni; it was also in the northern forests that Mr. Holdsworth met with it.

On the continent this fine bird ranges through India* into Burmah and Tenasserim, and spreads eastwards through Siam, whence many specimens have found their way into European collections; on going south through the peninsula of Malacca we lose it in its typical form, and find this region inhabited by the smaller race (*D. platyurus*). It has a peculiar range as far as the peninsula of India is concerned; and this is defined by Mr. Hume as the "whole of Southern India and the Western Ghâts as far north as Kandeish;" beyond this it is replaced by the large crested ally (*D. malabaroides*), again to appear in most of Burmah and Tenasserim. Jerdon says that it is found in all jungles of the west coast, from Travancore up to Goa, especially in the Wynaad and other elevated districts. In the Travancore hills themselves, Mr. Bourdillon found it common, both at the foot of the hills and up to 3000 feet elevation, and Mr. Fairbank observed it in the Palani hills. In the Deccan it is, of course, wanting; and in Chota Nagpur we find, in accordance with Mr. Hume's outline above noticed, the larger crested race, while further west no racket-tailed Drongo is found at all. In Tenasserim, Messrs. Hume and Davison say that it is common alike on hills and plains, frequenting chiefly the forests, but occurring also in gardens and scrub-jungle. With regard to Siam, I am unable to give particulars of its local distribution in that kingdom; but I have seen specimens from Bangkok and other localities, and I have no doubt it has been met with in whatever forest-districts Europeans have been able to collect.

Habits.—Wherever the forest is luxuriant in the north and east of the island, this splendid bird delights to reign; he is a petty monarch among the numerous feathered denizens of the woods—now exercising his varied talents in closely mocking their notes, now dashing at some diligent Woodpecker who has ventured to "fix" himself for a moment on a trunk too near the swarthy tyrant; and while he thus amuses himself, he does not miss a chance of capturing a passing beetle or locust by the exercise of a few strokes of his powerful wings. It is consequently on the banks of the romantic forest-lined rivers, or the sylvan borders of the lonely village tanks, which are both features of the wilds of Ceylon, that the Racket-tailed Drongo is met with; or it may, with equal certainty, be found on the sides of the low hills, clothed with tall timber-trees, which everywhere intersect the low-country jungles not far from the base of the mountain system. When seen flying about from limb to limb of the lofty monarchs of the forest, it gives one the impression of spending a very happy existence, displaying its long tail-feathers as it launches itself into the air and sweeps down with a graceful flight on its insect prey. When seated, it is constantly jerking up its tail, and jumping to and fro on its perch, while it calls to its companion, who is performing doubtless the like antics in some neighbouring tree. Its notes are wonderfully varied; and at one time or another I have heard it mock almost every bird in the forest. Mr. Parker writes me that its favourite note in the jungles near Uswewa is that of the Crested Eagle (*Spizaetus ceylonensis*). It has a metallic-sounding call, somewhat similar to that of the last species, which it utters in the early morning, usually from the top of a tall tree; and this is so different from its general notes that it is difficult to identify it with the bird, which is not easily caught sight of at the time. With regard to its antipathy for Woodpeckers, I may remark that I have not unfrequently seen it following about both species of our Red Woodpeckers, and darting at them while they were searching for food on the trunks of the trees.

The imitative powers of this species are matter of comment with nearly every writer who has observed it in its native wilds. Mr. Bourdillon writes, "I have often been amused to hear it imitate the cry of the Harrier-

* Although I consider that ultimately the Ceylon bird will probably stand as a distinct and small-tailed race or subspecies, I will here treat of its range as appertaining to the Indian form.



a. Racket-feather of nestling *D. paradiseus*.

b. Racket-feather of adult abnormal form of *D. paradiseus*.

c. Head of adult abnormal form.

d. Full-crested head of adult Ceylon *D. paradiseus*.

e. Racket-feather of Ceylon *D. paradiseus*, maximum size.

f. A small racket-feather of Malabar *D. paradiseus*.

Eagle, and see it make a sudden charge down on some smaller bird, either in sheer mischief, or to secure some insect which the latter has captured. I have also heard one imitate exactly the evening note of the Ground-Thrush (*Brachyurus coronata*). During the breeding-season they are very bold, and a pair think nothing of attacking and driving off from the neighbourhood of their nest the Harrier- or Black Kite-Eagle. I once had an adult bird brought to me which had been captured with limed twigs. Within a few hours of capture it would take cockroaches and other insect food from the hand, and soon got very tame." Mr. Davison, who remarks that its powers of imitation are perfectly marvellous, writes, "I have heard it take off *Garrulax belangeri* so that I am sure the birds themselves would not have detected the imposture. These Babbling Thrushes, by the way, always associate with other kindred species in large flocks, and hunt, straight on end, through the forest; and you will invariably find two or more of the Drongos following or accompanying each such flock."

It is noteworthy that this bird always sweeps *down* from its perch at its prey; I never saw it fly up at it, although it generally mounts again with the impetus imparted by its first onset.

Concerning the nidification of either the Ceylonese or Indian races of this species, I am, I regret to say, unable to give any information. As I have shot the young in nestling plumage in July, it is patent that the breeding-season is at the commencement of the S.W. monsoon rains. The northern form of this Drongo, *D. malabaroides*, builds, according to Jerdon, who had the nest brought to him at Darjiling, "a large structure of twigs and roots." Doubtless our bird has a similar habit, and its eggs are very probably three in number.

The accompanying woodcuts are explanatory of the various points treated of in this article, and are carefully drawn to life-size.

On the Plate accompanying the preceding article will be found a figure of the abnormal form of this species referred to above. As the subject is in the background, the full development of the crest, as it appears on the opposite page, cannot be shown in the drawing.

P A S S E R E S.

Fam. MUSCICAPIDÆ.

Bill straight, wide, depressed; tip decurved and distinctly notched; gape furnished with bristles directed forwards. Wings more or less pointed, the 1st quill fairly developed. Tail variable. Legs and feet small and feeble. Tarsus shielded with smooth broad scales.

Genus TERPSIPHONE*.

Bill large, compressed suddenly near the tip; culmen well keeled; rictal bristles very long. Nostrils protected by a few rather long bristles. Wings pointed, the 1st quill about half the length of the 2nd; the 4th and 5th longest, and the 3rd shorter than the 6th. Tail long, with the two central feathers greatly elongated in the adult males. Tarsus longer than the middle toe, which is nearly equalled by the outer.

* The generic term *Terpsiphone*, Gloger, has precedence of *Tchitrea*, Lesson, by four years. The older term *Muscivora* is restricted by Mr. Sharpe to New-World Flycatchers—the Crested Tyrants.

TERPSIPHONE PARADISI.

(THE PARADISE FLYCATCHER.)

Muscicapa paradisi, Linn. Syst. Nat. i. p. 324 (*ex* Briss.); Sykes, P. Z. S. 1852, p. 84; Jerdon, Ill. Ind. Orn. pl. 7 (1847); Gould, B. of Asia, pt. 5 (1853).

Muscipeta castanea, Temm. Pl. Col. iii. text to pl. 584.

Tchitrea paradisi, Less. Traité, p. 386 (1831); Blyth, Cat. B. Mus. A. S. B. p. 203 (1849); Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 126; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 133 (1854); Jerdon, B. of Ind. i. p. 445 (1862); Holdsw. P. Z. S. 1872, p. 440; Hume, Nests and Eggs, i. p. 196 (1873); Ball, Str. Feath. 1874, p. 403; Hume, *ibid.* 1875, p. 102; Butler, *t. c.* p. 466; Ball, *ibid.* 1877, p. 415.

Terpsiphone paradisi, Cab. Mus. Hein. i. p. 38 (1850); Sharpe, Cat. B. iv. p. 346 (1879).

The Pyed Bird of Paradise, Edwards, Nat. Hist. Birds, iii. pl. 113; *Paradise Flycatcher*, Latham; *Bird of Paradise*, Europeans in Ceylon. *Shah bulbul*, Hind. (White Bird); *Sultana bulbul*, Hind. (Red Bird); *Taklah*, Hind., N.W. Provinces; *Tonka pigli pitta*, Tel.; *Wāl-kondalati*, Tam., lit. "Long-tailed Bulbul."

Ginni hora (Red Bird), lit. "Fire-thief," *Radde hora* (White Bird), lit. "Rag- or Cotton-thief," Sinhalese; *Wāl-kururi*, Ceylonese Tamils; *Ladram de fogo* (Red Bird), Portuguese in Ceylon.

Old male (with long tail). Length 17·75 to 21·0 inches, according to the length of the tail, which, on the average, varies from 13·0 to 15·0, but sometimes attains a length of 17·0; centre tail-feathers 9·0 to 13·0 longer than the adjacent pair; wing 3·7 to 3·8; tarsus 0·7; mid toe and claw 0·6; bill to gape 1·0 to 1·1.

Old male (with short tail). Central tail-feathers, *fully grown*, exceeding the rest by only 0·5 inch.

Iris dark brown; eyelid cobalt-blue; bill fine cobalt-blue; legs and feet paler blue than the bill; claws bluish brown. Entire head and neck, with a long coronal crest of lanceolate feathers, shining blue-black, which colour terminates in an abrupt edge round the throat and hind neck; rest of the body above and beneath, with the wing-coverts and tail, white; quills and primary-coverts black, with white edges, increasing in width towards the innermost secondaries, and not reaching to the tips of the outer primaries; two innermost secondaries all white but a black shaft-streak; edges of all but the centre tail-feathers, and the shafts of all except the terminal portion of the centre pair, black. In some specimens the shafts of the dorsal and wing-covert feathers, and those of the plumes at the sides of the breast, are black.

Adult male. At an age in which the male breeds, probably in the second year, the back, wings, upper tail-coverts, and tail are cinnamon-red; the head and throat blue-black, as in the older bird; the chest, just beneath the black boundary, slate-grey, fading off into white on the lower breast and rest of the underparts; under wing-coverts white, with the bases of the feathers cinnamon.

Birds at this stage have, for the most part, long tails, the centre feathers varying from 9 to 11 inches in length beyond the remainder; but some have these feathers only slightly elongated, as in the female noticed below.

Adult female. Like the short-tailed males, with the same parts of the plumage red: wing 3·5 to 3·6 inches; central tail-feathers 4·5 to 5·0.

Young. Nestling, scarcely fledged (in National collection). Head and hind neck brownish, tinged with chestnut-reddish; back, wings, rump, and tail paler chestnut than the adult; inner webs of quills brown; fore neck and chest greyish, tinged with chestnut, passing into fulvous on the flanks; remainder of under surface whitish, blending into the above-named colours.

When fully fledged the back, wings, and tail are chestnut-red, the inner webs of the quills dusky, the head, crest, and hind neck glossy black, and the chin and throat dark iron-grey, almost black on the chin, and blending into the paler grey of the chest and breast, which changes into greyish white on the lower parts. The female has the throat paler than the male.

Change of plumage. At a certain age, and at a season of the year varying in Ceylon from November until May, the male birds change by an alteration in the colour of the feathers from chestnut-red to white. The red colour on the quills, scapulars, and rectrices changes or fades into white, and the shaft-streaks of black simultaneously appear. The scapulars and primaries usually change first, and then the tail-feathers; and of the body-feathers, I have generally noticed that the upper tail-coverts are the first to fade. While this is going on (and, in fact, from what I have been able to gather from all the specimens that I have examined, almost before any of the upper-surface feathers have changed) *the grey breast just beneath the black throat turns white.* I have a short-tailed example with a pure white chest and only one white feather (in the scapulars) on the upper surface. There are a series of long-tailed chestnut examples in the national collection with various white feathers among the primaries, secondaries, scapulars, and rectrices, and all with chests pure white.

Obs. Mr. Sharpe remarks, in his Catalogue, that South-Indian and Ceylonese red birds have the chest greyish, and those from Northern India white. I observe, however, that these white-chested examples are all in a state of change on the upper surface to the white plumage; and at this period the chest is always white in Ceylon birds. inasmuch as it seems to be the first part to change.

The nearest ally to this species is *T. affinis*, which inhabits Burmah, Malacca, and portions of the Malayan archipelago. It is distinguished from *T. paradisi* by having the feathers of the crest all of the same length, giving it a broad and "bushy" appearance, and also by the white bird having the feathers of the hind neck and back with black shafts, and the adjacent edges of the web grey, which imparts a streaky appearance to the upper surface. Red birds which I have examined in the national collection have nearly all the under surface dark iron-grey, the abdomen and under tail-coverts only being white. Young birds have the back *yellowish* chestnut, changing into a darker hue on the rump, and the under surface yellowish or fulvous grey. The measurements of a red bird from Burmah are—wing 3·5 inches, tail 13·5; a white example (Sumatra)—wing 3·5, tail 10·5; another (Flores)—wing 3·55, tail 13·4.

Distribution.—The Paradise Flycatcher is a partial migrant to Ceylon, and its movements are perhaps the most singular and the most difficult to study of any Ceylonese bird. The adults, in red and white plumage, arrive in the island about the last week in October, spreading over the whole country, and not finally leaving again until the latter end of May. In the damp districts on the western side lying between Negombo and Tangalla it remains no longer than March. An inland movement then takes place north and east, many birds, however, at the same time (according to my observations) quitting the island entirely. Others remain in the last-named quarters to breed, and do not leave until the end of May, or even the first week in June. By this time the whole of the white birds have disappeared, and I believe also the adult red ones. I have never seen a long-tailed red bird between the months of May and October, nor can I find any one who is certain of the contrary. Should I be correct, therefore, in this hypothesis, the fact of a total migration of the adults is established. The young birds remain in the island, inhabiting the northern half and the eastern side as far as Hambantota; and on the arrival of the adults in the following season many of these yearlings follow them into the west. It appears, however, probable that with the general inflow in October many yearling birds arrive from abroad, as the numbers to be met with in all parts of the low country preclude the possibility of their all being recruited from inland-bred birds. Here, then, we have the extraordinary fact of the disappearance of all old birds in the island, whereas their progeny are left behind to await their return in the following season, and likewise the arrival, with these latter, of many more young from the mainland, who partake in the general stream of migration throughout the country. As regards the mountainous districts of the island, Dumbara and other parts of corresponding altitude in the Kandyan Province, and also portions of the southern ranges, are visited for the same period as the west coast, the birds quitting the hills in March. I am not aware of its occurrence anywhere above an altitude of 2000 feet, at which Mr. Bligh has seen it in the Kandy district. It inhabits the northern and eastern portions of the island in greater numbers than the west coast, there appearing to be an appreciable diminution of the species south of the Maha-Oya, north of which,

in the Kurunegala district, it is extremely abundant. As regards the young birds during the south-west monsoon, I have found them more abundant in the low-lying forests between Haputale and the sea than anywhere else.

I would add here that in my conclusions concerning the migration of the old birds I am supported by my friend and correspondent, Mr. Parker, who has paid particular attention to the subject during his residence at Madewatchiya, where the species was very numerous and bred in April and May. Mr. Holdsworth observed many immature birds at Aripu during the south-west monsoon; but I am not aware that he met with any adult red birds. As regards the earlier migration of the adults, and the arrival with them of many young birds, it can be explained on the assumption that most birds leave the island to breed on the mainland, bringing their young back with them, while a few that have paired as early as April are constrained to remain behind for a period and breed in the island, departing soon afterwards *without their young*.

On the continent the Paradise Flycatcher is found from the extreme south of the peninsula to the Himalayas. To the westward it extends to the province of Guzerat and the vicinity of Kattiawar; it is, says Capt. Butler, not uncommon at Mount Aboo, and it likewise occurs at Sambhur and Ajmere. Mr. Brooks has observed it in the valley of the Bhagirati, even above Mussoori, but it does not seem to ascend the Himalayas to any considerable altitude. In Travancore, Mr. Bourdillon writes that it ascends the hills in March and April when the weather is hot; but in the Palanis Mr. Fairbank only observed it at the base of the ranges. Messrs. Davidson and Wender say that it is "freely scattered all over the Deccan," and they believe that it breeds at Satara. Mr. Ball writes that it is a remarkable fact that it does not visit the Chota-Nagpur and Sambalpur jungles until March and April. In 1875 he observed no birds until the latter month, and saw them after that daily during the month of May, "while marching through the Orissa tributary mehals."

It is worthy of remark that this bird has been called the Paradise-bird from the earliest times. Edwards, who figured it as the "Black-and-white crested Bird of Paradise," says that it had been described formerly by Mr. Petever in Ray's 'Synopsis Methodica Avium,' published in the 17th century, and he likewise speaks of having seen three skins of it in London.

Habits.—This remarkable bird is very fond of the neighbourhood of water, and is always found in shady trees surrounding tanks, swamps, and wet paddy-fields, or bordering rivers and streams in the forests. The fine bamboos on the western and southern rivers are a favourite resort. It is, however, not confined to aqueous spots, but is found in jungle of all descriptions and in the densest forests. It is a very tame bird, exhibiting not the slightest fear of man, and often takes up its abode in jack, bread-fruit, and other cultivated trees adjacent to native cottages, about which it darts, whisking its long tail to and fro, and when in the white plumage forms a conspicuous and beautiful object as contrasted to the surrounding dark-green foliage. It is very lively in the evenings before roosting, uttering its harsh note, *tchreēt*, and darting actively on passing insects. It is capable of much longer flights than most Flycatchers, frequently compassing the distance across some wide paddy-field with ease and celerity. Its peculiar appearance when thus flying, with its long tail extended like a piece of rag or cotton, has acquired for it the curious native appellations by which it is known. It does not return to its perch after taking its prey, but darts off to another, and so moves about more than is usual with other Flycatchers. I have once or twice disturbed it from the ground, which proves that its habits are to a slight extent terrestrial—a remarkable feature in a Flycatcher. Mr. Ball has seen it alight on the ground, and writes that Captain Gray and Mr. Levin confirm his statement that it does do so; the former mentions three of the chestnut birds hopping round his chair, and the latter saw young birds settling on the ground in his garden and hopping about after insects.

Nidification.—Mr. Parker writes me that the Paradise Flycatcher breeds about Madewatchiya in April and May. Layard mentions having found a nest at Tangalla, in the fork of a satin-wood tree, and that the nest was "a neat well-built cup-shaped structure, composed externally of mosses and lichens, and lined with hair and wool."

Mr. Hume writes that "the nest is commonly a delicate little cup, never very deep, often rather shallow, composed, according to locality, of moss, moss-roots, vegetable fibres, and fine grass, which latter generally constitutes the greater portion of the framework, bound round exteriorly with cobwebs, in which little silky-

white cocoons are often intermixed ! The exterior depth is about 2 inches, and the cavity varies in diameter from 2·0 to 2·75, and in depth from 1·0 to 1·6. There is not uncommonly a good deal of horsehair woven in the exterior surface of the cavity, and this, with the fine grass, forms a sort of lining." The structure is usually placed on a horizontal branch, often where three or four twigs spring from it, which, Captain Hutton remarks, are incorporated into its sides, the materials entirely enveloping them. It is sometimes fixed to the branch by means of grass and spiders' webs. In Cashmere Dr. Henderson found the nests of these birds in apple- and mulberry-trees, placed high up in small branches, and made of fine hair-like strips of bark. The number of eggs usually laid is four ; the ground-colour is pinkish white or salmon-pink, more or less thickly speckled, chiefly at the large end, with rather bright brownish-red spots. They average in size 0·81 by 0·6 inch.

Genus HYPOTHYMIS.

Bill very broad and not compressed until near the tip ; upper mandible flattened, and the lower inflated beneath ; rictal bristles long and directed forward. Wings with the 5th quill the longest, the 2nd shorter than the secondaries, and the 3rd and 7th subequal. Tail equal to the wing, even at the tip. Legs and feet slender ; the tarsus much longer than the middle toe, protected with well-developed scutæ ; outer toe longer than the inner ; claws well curved.

HYPOTHYMIS CEYLONENSIS.

(THE CEYLONESE AZURE FLYCATCHER.)

(Peculiar to Ceylon.)

Myiagra caerulea (Vieill.), Layard & Kelaart, Prodrömus, App. p. 58 (1853); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 126.

Myiagra azurea (Bodd.), Jerdon, B. of Ind. i. p. 450 (1862), in pt.; Legge, J. A. S. (Ceylon B.) 1870-71, p. 36; Holdsworth, P. Z. S. 1872, p. 440; Legge, Ibis, 1874, p. 18, et 1875, p. 275.

Hypothymis ceylonensis, Sharpe, Cat. B. iv. p. 277 (1879).

The Blue Flycatcher, Europeans in Ceylon.

Marawa, Sinhalese (applied to small Flycatchers).

Similis *H. azurea*, sed maculâ nuchali nigrâ parvissimâ et fasciâ nigrâ jugulari nullâ distinguenda.

Adult male and female. Length 6.0 to 6.2 inches; wing 2.6 to 2.8; tail 2.75; tarsus 0.6; mid toe and claw 0.5; bill to gape 0.6 to 0.7.

Male. Iris dark brown; bill dull cobalt-blue; legs and feet dusky blue or bluish plumbeous.

Head, neck, back, wing-coverts, throat, and chest azure-blue, the head and throat of a brighter though paler hue than the rest; a spot above the nostril and a small patch on the nape velvety black; wings brown, edged with the hue of the back; tail the same, the lateral feathers tipped pale; breast, abdomen, and under tail-coverts white; thighs bluish; under wing-coverts bluish, edged and tipped with white.

Female. Bill duller blue than male; legs and feet paler.

Head, hind neck, and throat carulean blue, less brilliant than the male, and shading on the chest and back into brownish ashy, the feathers margined there with dull blue; wings and tail brown, edged with bluish; lower underparts as in male. The black nuchal patch wanting.

Young. In first plumage the iris is brown; bill blackish, the tip of the under mandible lightish; tarsi bluish, feet dusky. The male has the head and throat dull blue; chest bluish grey; back and wings glossy brown, the tertials with a fulvous tinge; tail dark brown, obscurely washed with bluish; thighs dark grey. Nuchal patch and throat-stripe wanting.

Obs. Mr. Sharpe has separated the Ceylon Azure Flycatcher from its Indian relative (*H. azurea*) on account of the absence of the black throat-bar and its much smaller nape-patch. The specimens he had to assist him in this determination were mine, and, so far as my small series proves, the insular bird certainly differs from the continental. I have minutely examined the chest-feathers of several males, and can find no trace whatever of any black tippings, although, singularly enough, their undersides are *blackish brown*, and, further, the tips of the feathers, where the black bar should be, form a regular, slightly upturned, transverse line, and contrast in their brighter blue with the slightly duller tint of the underlying ones, so that at first sight it would seem as if a fine dark line really did exist. Specimens of *H. azurea* which I have examined from various parts of India, China, Formosa, Sumatra, Borneo, &c., all exhibit a more or less well-developed jugular streak; in some it is nearly $\frac{1}{8}$ inch wide. A Formosan specimen measures in the wing 2.8, an "Indian" 2.75, one from Nepal 2.9, and one from Bintulu 2.75. *H. occipitalis* is a closely allied species from the Philippines, Flores, and other islands, differing in having the abdomen and under tail-coverts washed with bluish instead of being pure white, as in *H. azurea* and *H. ceylonensis*. The throat-bar is present in all examples I have examined.

Distribution.—This pretty blue Flycatcher is generally dispersed throughout the jungles and forests of the interior, not ranging much above the lower hill-districts, except, perhaps, in Uva and in the ranges to the

north-east of Kandy, where I have seen it between 2000 and 3000 feet. It is common enough in its sylvan haunts; but I doubt if it is a familiar bird to any but those who frequent the jungle. In the low thorny scrubs bounding the sea-board on the dry portions of the island it is not found, nor did I observe it anywhere in the Jaffna peninsula. In the Western Province it may be seen close to the shore, frequenting the woods at the back of the cocoanut-plantations which border the sea, while further inland, as well as in the south-west hill-region, it is tolerably numerous.

Habits.—This species is found, either singly or in pairs, affecting forest, shady jungle, and bamboo-thickets, and is also met with in small groves or detached woods in cultivated districts. It usually keeps to underwood, or dwells in the lower branches of forest trees, generally selecting those spots which are enlivened with a gleam of sunshine, where it may be seen actively darting on small flies and insects, while it utters its sharp little note, resembling the word *tchreēt*. After the breeding-season young birds associate in small troops; and at such times I have noticed them following each other about among the upper branches of tall trees.

Nidification.—In the Western Province this Flycatcher breeds from April to July, or during the south-west monsoon rains, building a beautiful little nest in the fork of a sapling or shrub at about 4 feet from the ground; it is constructed of moss and fine strips of bark, very neatly finished off at the edge, decorated with cobwebs on the exterior, and lined with very fine creeper-tendrils, the interior forming a deep cup of about $1\frac{3}{4}$ inch in diameter. The eggs are either two or three, round in form, of a buff-white ground-colour, spotted openly, chiefly at the obtuse end, with light sienna-red, mingled with darker specks of red. They measure 0.66 by 0.55 inch.

The centre figure in the Plate accompanying my article on *Alseonax muttui* (p. 417) represents a male bird of the present species from Ackmimina, near Galle.

Genus CULICICAPA.

Bill more compressed towards the tip and the culmen more raised than in the last; rictal bristles very long. Wings long, the 4th quill the longest, and the 2nd equal to the 8th. Tail even. Legs and feet very small. Tarsus feathered at the top.

CULICICAPA CEYLONENSIS.

(THE GREY-HEADED FLYCATCHER.)

Platyrrhynchus ceylonensis, Swains. Zool. Illust. ser. 1, pl. 13 (1820-21).

Cryptolopha cinereocapilla, Blyth, Cat. B. Mus. A. S. B. p. 205 (1849); Kelaart, Prodromus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 127; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 147 (1854); Jerd. B. of Ind. i. p. 455 (1862).

Culicicapa cinereocapilla, Swinhoe, P. Z. S. 1871, p. 381.

Myiolestes cinereocapilla, Holdsw. P. Z. S. 1872, p. 441; Hume, Nests and Eggs, i. p. 205 (1873); Legge, Ibis, 1874, p. 18.

Culicicapa ceylonensis, Fairbank, Str. Feath. 1877, p. 401; Hume, B. of Tenass., Str. Feath. 1878, p. 226; Sharpe, Cat. Birds, iv. p. 369 (1879).

The Ceylonese Flatbill, Swainson; *Zird phutki*, Beng.

Adult male and female. Length 4.9 to 5.2 inches; wing 2.4 to 2.6; tail 1.9 to 2.2; tarsus 0.55 to 0.6; mid toe and claw 0.45 to 0.5; bill to gape 0.55.

Iris brown; bill, upper mandible blackish, lower fleshy at base, with the tip dark; legs and feet brownish yellow, yellowish brown, or greyish yellow; soles yellow, claws pale brownish.

Lores, head, hind neck, and cheeks cinereous grey, the centres of the feathers on the head blackish slate-colour; on the hind neck the grey blends into the greenish yellow of the back, scapulars, wing-coverts, and rump, the latter being more yellow than the back; wings and tail dark brown, edged with the hue of the rump, except on the two outer primaries and the lateral rectrices; orbital fringe greyish; throat, chest, and sides of neck pale ashy grey, blending into the grey of the upper parts; beneath, from the chest, saffron-yellow, shaded with greenish on the sides of the breast and flanks; under wing-coverts greenish yellow.

Young. Immature birds in their first plumage almost resemble adults; the lores are greyish, and the colouring of the breast more overcast with greenish; the wing-coverts are tipped with yellowish, and the lower parts not so yellow as in the adult.

Obs. I have compared an extensive series of this species with Ceylonese examples, with the following results:—A Cashmere, a Pegu, a West-Javan, and a N.W.-Himalayan example are all slightly yellower on the back than the majority of Ceylonese birds, and vary in the wing from 2.25 to 2.5, the latter measurement being that of the Pegu example. Another specimen, from the N.W. Himalayas, is paler than all, and has the rump yellower and the quills more conspicuously edged than in the rest of the series. A Sarawak example is an exact match with those in my collection from Ceylon. It therefore appears that this species is spread over a very large geographical area, with but little variation in the character of its plumage.

Distribution.—In Ceylon the present species is essentially a hill-bird, and is, within its own limits, the most abundant of its family in the island. It inhabits the Kandyan Province from the Horton Plains and the tops of the highest ranges down to a general elevation of about 1800 feet; in the wilderness of the Peak, however, I have met with it at an altitude of only 1000 feet, a little above the pretty elevated plain of Gillymally. In the southern coffee-districts it is quite as numerous as in the Central Province, and it is also found in the more elevated parts of the Kukul Korale, as well as in the great Singha-Rajah forest. In large tracts of mountain-forest, such as those covering much of the Nuwara-Elliya plateau and its great outlying spurs and the upper portion of the Knuckles range, it is more abundant than in the lower-lying coffee-districts which have been denuded of forest.

Jerdon writes that the Grey-headed Flycatcher is dispersed throughout all India, from the Himalayas to the Nilghiris, the only locality in the south of India where it is common being the summits of the latter hills. In Central India it is occasionally met with, and is not rare in Lower Bengal. As it is so common in Ceylon

it is singular that it is not found in all the elevated forests in the south. I observe that it is not recorded from the Travancore hills, though Mr. Fairbank says it is common on the *top* of the Palanis and in "groves lower down." It does not seem to extend towards the north-west frontier beyond the Sambhur Lake, where Mr. Adam remarks that it is very rare. Turning to the east, however, it is diffused throughout the sub-Himalayan region, breeding up to 7000 feet, and stretches into Assam, Burmah, and Tenasserim, in which latter province Mr. Hume says it is found sparingly, extending the whole way down the Malayan peninsula to Singapore island. Further south than this it is found in Java and Borneo; and returning again to the continent we find Swinhoe recording it from the Szechuen Province.

In common with not a few other widely-distributed species, this little Flycatcher was first made known from Ceylon, the specimen figured by Swainson in his 'Zoological Illustrations,' and called by him the Ceylonese Flatbill, having been sent to him by that diligent naturalist Governor Loten.

Habits.—This is a charmingly tame and fearless little bird, whose merry little whistle is one of the characteristic sounds of the cool up-country forests of Ceylon. It frequents the lower branches of forest trees, the edges of clearings in the jungle, patna-woods, &c., and is particularly fond of trees at the sides of roads and on the borders of mountain-streams. It is exceedingly active, and for the most part lives in pairs, carrying on its insect-trapping vocation in perfect disregard to any thing going on around it. I have known it swoop at an insect and alight on a fallen log or low stump within a few feet of a bystander. It accompanies its occupations by the exercise of its vocal powers, frequently giving vent to its cheerful note, while it snaps up its prey with an audible sound of its mandibles. The whistle of the male is a more than usually loud note for a bird of such small size, and resembles the syllables *tit-titu-whēēē*, and in the morning is very frequently repeated. Birds of the year congregate in little troops unaccompanied by adults, and keep up a constant twittering note.

Jerdon writes of its habits as follows:—"It is tolerably active and lively, making frequent sallies after small insects, and not always returning to the same perch, but flitting about a good deal, though it usually remains in the same tree or clump of trees for some time."

Nidification.—I have not had the good fortune to obtain any information concerning the nesting of the present species in Ceylon; but on consulting Mr. Hume's admirable work on the nests and eggs of Indian birds, we find that in India the Grey-headed Flycatcher lays during the months of April, May, and June, and constructs its nest, according to Indian observers, amidst the growing moss on some perpendicular rock or old trunk of a tree; it is composed of moss, cobwebs, and lichens, sometimes lined with moss-roots or with fine grass-stalks. The nests resemble little watch-pockets of moss, the interior of which is about 1 inch in diameter by about 2 inches in depth, and, fixed as they are to the moss-grown trunks, are very difficult to discover. Capt. Hutton speaks of one which had depended beneath it "a long bunch of mosses, fastened to the tree with spiders' webs, and serving as a support or cushion on which the nest rested." The number of eggs is usually four; Mr. Hume describes them as moderately broad ovals, scarcely compressed towards the small end; they are dingy yellowish white, and they have a broad conspicuous confluent zone of spots and blotches towards the large end, the colour of which is a mottled combination of dingy yellowish brown and dingy purplish grey; the rest of the egg is more or less thickly spotted with very pale dingy brown. They are almost glossless, and average 0.62 inch in length by 0.48 inch in breadth.

Genus RHIPIDURA.

Bill compressed suddenly near the tip, culmen raised; rictal bristles very long; nasal bristles well developed. Wings with the 1st quill about half the length of the 2nd; 4th the longest. Tail exceeding the wing, and expanding towards the tip; lateral feathers graduated. Tarsus longer than the middle toe.

RHIPIDURA ALBIFRONTATA.

(THE WHITE-FRONTED FANTAIL.)

Rhipidura albofrontata, Frankl. P. Z. S. 1831, p. 116; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 145 (1854).

Leucocerca albofrontata, Jerd. Madr. Journ. 1840, xi. p. 12; id. Ill. Ind. Orn. pl. 2 (1847); Blyth, Cat. B. Mus. A. S. B. p. 206 (1849); Hume, Nests and Eggs, i. p. 201 (1873); Ball, Str. Feath. 1874, p. 404.

Leucocerca compressirostris, Blyth, J. A. S. B. 1849, xviii. p. 815; Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 126; Jerdon, B. of Ind. i. p. 483 (1862).

Leucocerca aureola, Blyth, Ibis, 1866, p. 370; Holdsw. P. Z. S. 1872, p. 440; Hume, Str. Feath. 1873, pp. 178, 436, et 1875, p. 104.

Rhipidura albifrontata, Sharpe, Cat. B. iv. p. 338 (1879).

The White-browed Fantail, Jerdon; *Fantail*, Europeans in Ceylon *Shamchiri*, Hind. in North-west; *Macharya*, lit. "Mosquito-catcher," Hind. in South; *Manati*, lit. "Washerman," Malabar.

Marawa, Sinhalese.

Adult male and female. Length 6·8 to 7·1 inches; wing 3·0 to 3·25; tail 3·2 to 3·4; tarsus 0·7 to 0·8; mid toe and claw 0·55; bill to gape 0·65 to 0·7.

Iris brown; bill black, pale at base beneath; legs and feet blackish brown or black, in some wood-brown.

Crown, nape, lores, throat, and face black, blending on the hind nape into the cinereous blackish brown of the upper surface; wings and tail brown; forehead and a very broad band over the eye to the nape, under surface from the throat down, and terminal portion of all but the centre tail-feathers pure white; the white of the lateral rectrices occupies its major portion, varying from 1·4 to 1·6 inch on the inner web, and running up the outer web to the base; wing-coverts with terminal white spots; chin and gorge edged white, which varies much in extent, occupying in some individuals the lower part of the cheeks; quills blackish brown; wing-lining black, edged or barred with white.

The hue of the upper plumage fades with time, and scarcely any two specimens appear to be exactly alike; in such abraded plumage the head is blackish brown, and the back dark cinereous brown, with the *wing-covert tips much reduced in size*. In some specimens the white supercilium meets, though imperfectly, round the nape.

Young (India). A specimen in nestling plumage has the eye-stripe narrower than the adult, the feathers, as well as the adjacent blackish ones on the occiput, slightly tipped with rufous; scapulars, back-feathers, tertials, and wing-coverts tipped with rufous; the white on the tail-feathers reduced; the throat blackish, but not so dark as in the adult, and less tipped with white; under surface white, tinged with buff.

Obs. Blyth separated the Ceylonese bird from the Indian, alleging that its bill was more compressed and that it had less white on the tail. I imagine he was led to these conclusions by an examination of immature specimens, for I

have not been able to verify their distinctness on comparing the insular specimens with Indian. Some of the latter have more white, perhaps, on the lateral tail-feathers than the generality of Ceylon birds, but others have less; and as to the bills, I find that three specimens from N.W. Himalayas, Gondul, and Dehra Doon, in the national collection, are smaller in the bill than ours; they vary from 0.55 to 0.63 from gape to tip. A North-west Province example measures in the wing 3.35 inches, and has the white of the lateral tail-feather extending up it 1.8 inch; one from Rawul Pindi measures 2.9 in the wing, and two from Dehra Doon 3.15 and 3.2 inches respectively; and these last three have the greater wing-coverts very deeply tipped with white; but this, I think, is an individual peculiarity. Mr. Nevill, of the Ceylon Civil Service, in a communication made to the 'Journal of the Asiatic Society,' Ceylon Branch, 1867-70, p. 138, writes of seeing a Fantailed Flycatcher in the Nuwara jungles, which he describes (from seeing the bird on the wing, I conclude) as having the "breast broadly banded with mingled black and white." It is possible, as Mr. Holdsworth suggests, that it may have been *R. pectoralis*, although I consider it more probable that it was the young of the present species.

An adult *R. pectoralis* (Godaveri valley) measures:—Wing 2.7 inches; tail 4.1; tarsus 0.75; bill to gape 0.61.

Head and face blackish, paling into brown on the back, and into brown tinged with rusty on the rump; supercilium white; throat white; fore neck and sides black; centre of the chest, breast, and lower parts buff, darkening into rufescent on the abdomen and under tail-coverts; sides of the chest blackish brown; wings and tail pale brown, the tail-feathers gradually paling towards the tips into dull whitish.

Distribution.—The "Fantail" is chiefly an inhabitant of the dry jungle-region between the Haputale mountains and the south-east coast, the eastern portion of the low country as far as the delta of the Mahawelliganga and the district of Uva, including the patna-basin at the foot of the main range. In the first-named tract of country, including the "Park," it is more common than elsewhere, frequenting the jungle on the borders of tanks and also detached clumps of wood. From the Bintenne country it ranges up into Dumbara and the valleys in the Hewahette and Maturata districts, where it is by no means rare. In Uva it is found chiefly on tree-dotted patnas, and in the glens intersecting the great basin between Udu Pusselawa and Haputale. It would appear that it is found occasionally on the plateau, the only evidence to this effect being that of the bird seen near Nuwara Eliya by Mr. Nevill. It is rare to the west of Tangalla, but is occasionally seen during the north-east monsoon in the Galle district, as I have met with it at that season at Baddegama. I have never seen it in the neighbourhood of Trincomalie nor to the north of that place; but there is no reason to suppose that it does not inhabit this quarter of the island.

Jerdon writes, "The White-browed Fantail is found all over India, except Lower Bengal, extending to the foot of the Himalayas, only not towards the south-east. It is most common in Malabar and the Deccan, and is not rare in the North-west Provinces and in Sindh." Concerning its north-western limit, Mr. Hume says that it is common throughout the whole region, including Sindh, Mount Aboo, and Guzerat. He remarks that it breeds as high up as 4000 feet on the Himalayas. Extending to the east, I find that Mr. Inglis does not record it from Cachar. In Upper Pegu it appears to be not uncommon, and Blyth recorded it from Tonghoo, although Messrs. Hume and Davison have not found it in Tenasserim. Mr. Fairbank met with it up to 4000 feet in the Palanis.

Habits.—This showy little bird is one of the most interesting of our Flycatchers; it frequents little groves of trees, or those standing isolated on patnas and semicultivated ground, jungle on the borders of tanks, and open grassy glades, and in the Eastern Province cocoanut-topes in the vicinity of villages. It is a fearless species, and when not paired for breeding is usually of solitary habit. At this time its manners are most amusing; for the male, in his endeavours to attract the attention of his consort, displays a nature much akin to that of the Peacock, and seems to delight in displaying his prowess to mankind as well as to his own order. He will sometimes alight on a tree close to a bystander, and proceed with a measured little pace either along a horizontal trunk or up a slanting branch, with an outspreading movement of its wings and a gentle oscillation to and fro of its body, combined with an expanding and contracting of its long tail, the whole reminding one of the balance-step in a hornpipe! Not less singular is its remarkably human-like whistle, uttered in an ascending scale for the edification of its mate; and when this proceeds, as it sometimes does, from a thickly foliated tree, completely hiding the performer from view, it is difficult to persuade one's self that it is made by a bird. It is very active in catching its prey, and, as Jerdon remarks, does not fly far after it, but snaps it up with a sudden dart. I have seen it on the ground, stalking about in the manner above described; and

Jerdon says that he has seen it alight on the back of a cow ; he states that its chief food consists of "mosquitos and other small dipterous insects, as also the small *Cicadella*" which are abundant in India.

Nidification.—This Flycatcher breeds in Ceylon during the early part of the year. I have not had the good fortune to see its cleverly-constructed little nest myself; but Mr. Jefferies, of Gangaroowa estate, described to me one, which was constructed in an orange-tree in his compound at Hindugalla, as being a beautiful little cup-shaped structure, placed on a thin branch, which oscillated to and fro with the wind, and which the architect, with wonderful skill, had tied to an adjacent branch with a "stay" consisting of a fine creeper-tendril. This is so extraordinary, that had not my friend been a well-known observer of bird life and very fond of natural history, I could scarcely have credited the statement. The nest is described by various writers quoted in 'Nests and Eggs' as being a hemispherical or elegant oval little cup, composed of fine grass-stems coated with cobwebs, or fine plant-stalks plastered with "cotton" and seed-down, the internal diameter being about 2 inches and the depth 1 inch. Mr. Hume speaks of one he found at Bareilly as being a "delicate tumbler-like affair, scarcely $\frac{1}{4}$ inch thick anywhere, closely woven of fine grass, and thickly coated over its whole exterior with cobwebs." The eggs are usually three in number, the ground-colour varying from pure white to yellowish brown or dingy cream-colour, spotted and speckled in a broad irregular zone near the large end with greyish brown, "at times intermingled with spots or tiny clouds of faint inky purple." Average size 0.66 by 0.51 inch.

Genus ALSEONAX.

Bill wide at the base, stout, triangular, the under mandible rounded beneath and *pale at the base*; rictal bristles long. Wings with the 2nd quill longer than the 6th, and the 3rd and 4th the longest. Tail shorter than the wings and even at the tip. Legs and feet small.

ALSEONAX LATIROSTRIS.

(THE BROWN FLYCATCHER.)

Muscicapa latirostris, Raffl. Tr. Linn. Soc. xiii. p. 312 (1821).

Muscicapa grisola, var. *daurica*, Pall. Zoogr. Rosso-Asiat. i. p. 461 (1831).

Hemichelidon latirostris, Gray, Gen. B. i. p. 262 (1845); Blyth, Cat. B. Mus. A. S. B. p. 175 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 137 (1856).

Butalis latirostris, Blyth, J. A. S. B. 1847, xvi. p. 121; Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 127; Kelaart, Prodromus, Cat. p. 123 (1852).

Alseonax latirostris, Cab. Mus. Hein. i. p. 53 (1850); Jerdon, B. of Ind. i. p. 459; Holdsw. P. Z. S. 1872, p. 441; Hume & Henderson, Lahore to Yark. p. 185, pl. v.; Walden, Ibis, 1873, p. 308; Hume, Str. Feath. 1874, p. 219; Bourdillon, ibid. 1876, p. 396; Hume (B. of Tenass.), Str. Feath. 1878, p. 227; Sharpe, Cat. B. iv. p. 127 (1879).

Alseonax terricolor, Brooks, Str. Feath. 1877, p. 470.

Zukki, Hind. (Jerdon); *Shima-modzu*, Japan (Blakiston).

Adult male and female. Length 5.1 to 5.3 inches; wing 2.7 to 2.95; tail 2.2; tarsus 0.55; mid toe and claw 0.6; bill to gape 0.6.

Iris brown; bill, upper mandible blackish, lower fleshy with dark tip; legs and feet dark grey or wood-brown.

Lores mingled grey and white; an orbital fringe of fulvous; head and upper surface light cinereous brown, slightly darker on the head; wings and tail hair-brown; wing-coverts pale-margined, inner secondaries and tertials with broad fulvous-grey edgings; tail tipped pale; chin albescent, darkening on the fore neck and chest into cinereous grey; breast and lower parts white; flanks cinereous grey.

The amount of pale edging on the wing-coverts and secondaries varies considerably. Mr. Hume, too, notices this character in 'Stray Feathers.'

Young (nestling: Nepal). Above brown, slightly tinged with rusty on the upper tail-coverts, and each feather of the upper surface with an elongated central spot of greyish near the tip, which becomes fulvous on the rump and upper tail-coverts; wing-coverts with deep terminal edgings of fulvous; inner secondaries the same; quills margined internally with rufescent; ear-coverts tipped with dark brown; under surface whitish, the fore-neck feathers tipped with dusky; flanks dusky.

Obs. I have examined a large series of this Flycatcher from Japan, China, India, the Andamans, Java, Sumatra, Borneo, and Saigon, and am of opinion that there is but the one species, with perhaps a local race, which is rusty-coloured on the upper surface, but similar beneath to our bird, in Cochin China and Borneo. Examples from Japan, nine of which I have examined, are identical to all intents with those which visit Ceylon; they are perhaps greyer on the back and not quite so brown on the chest and flanks; they vary in the wing from 2.6 to 2.85 inches, and in the bill are the same as ours. A Tenasserim example (w. 2.6) is slightly more "earthy" than Ceylonese examples on the rump, and one from N.W. Himalayas still more so; two from Port Blair are positively identical with specimens killed in Ceylon. A Javan bird is very rusty-coloured on the nape and edges of the wing-coverts, therein approaching a Sarawak bird, which measures in the wing 2.55 inches only, and which is very "rusty" on the upper surface, the ferruginous tint increasing towards the rump; the wing-coverts are margined and tipped with ferruginous; and, in fact, were it not for the under surface, which is almost exactly the same as specimens from India and elsewhere, the bird would have the appearance of *Hemichelidon ferrugineus*. An example from Saigon is much the same as the last. These birds might well form a subspecies, I think; but I see that Mr. Sharpe, in the 4th vol. of his great 'Catalogue of Birds,' unites the races from all parts in one and the same species. Mr. Hodgson's specimens of *A. terricolor* in the British Museum are in bad order; but they are clearly nothing but the present species.

Distribution.—This modest little bird is a cold-weather visitant to Ceylon, coming to us from South

India in October and departing again in the following April. It spreads over the whole low country, but is nowhere very plentiful, and liable to be passed over, as it is of solitary habits. From the low lands it ascends into the coffee-districts to an altitude of about 3500 feet. About Colombo and on the west coast generally it is fairly common, inhabiting trees in the vicinity of houses or even in the town itself, and it is liable to be met with anywhere in the interior.

It was described from Sumatra by Raffles, but does not appear to have been procured there of late years, although it is not uncommonly met with in Java, Borneo, and Malacca; it is of course a winter visitor to all this region and also to the Andamans, where Lieut. Wardlaw Ramsay procured it in December, January, and February. According to Swinhoe it summers in China, and does the same in Japan and Eastern Siberia, in which regions it no doubt chiefly breeds, and from which it migrates at the latter end of the year to India, Tenasserim, and Malasia. In Tenasserim, singularly enough, Mr. Hume says that it has only been observed in the southern half of the province. It does not appear to be found in Burmah, and is not recorded by Mr. Inglis from Cachar; it is therefore somewhat difficult to follow its line of migration to India from China and North-eastern Siberia; and it may be that the birds which visit the plains of India, the southern part of the peninsula, and Ceylon breed in the Himalayas. Jerdon writes that *A. terricolor* of Hodgson inhabits the Himalayas at no great elevation, and visits the plains in the cool season, which implies, of course, that it summers in the mountains; it will be observed also that the young bird which I have described above is from Nepal. It does not extend into North-western India, keeping quite to the east until it gets to the Deccan, where Messrs. Davidson and Wender obtained it at Sholapoor and Mr. Fairbank at Khandala. In the Travancore hills Mr. Bourdillon says it is common during the winter months.

Habits.—This Flycatcher resembles in its economy the common species of Europe (*Muscicapa grisola*), and reminds one much of this latter species. It takes up its abode in shady trees, often in the middle of towns and villages, or on the borders of streams, in native gardens, and even in the recesses of the dry forests of the north. It chooses in the latter localities a spot which is cheered by the rays of the sun, and quietly perches on the low branch of a tree, every now and then making an active dart on a passing insect and returning with it to its perch. It is very silent and exceedingly tame, sitting fearlessly in the most public situations, entirely regardless of the busy hum of human life. It now and then utters a weak note after catching an insect, and will then sit perfectly motionless until it espies some other object of pursuit.



ALSEONAX MUTTUI.

(THE RUSTY FLYCATCHER.)

(Peculiar to Ceylon.)

Butalis muttui, Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 127; Legge, Ibis, 1878, p. 203.

Alseonax ferrugineus, Jerdon, B. of Ind. i. p. 460, in part (1862).

Alseonax terricolor (*nec* Hodgs.), Holdsw. P. Z. S. 1872, p. 441; Layard, P. Z. S. 1873, p. 204; Legge, Str. Feath. 1875, p. 366.

Alseonax flavipes, Legge, Str. Feath. 1875, p. 367.

Alseonax muttui, Sharpe, Cat. B. iv. p. 132 (1879).

Suprà brunneus, pileo saturatiore, supracaudalibus magis rufescentibus: tectricibus alarum minimis et medianis dorso concoloribus, majoribus brunneis, fulvescenti-rufo marginatis: tectricibus primariorum primariisque brunneis, secundariis fulvescenti-rufo marginatis: rectricibus brunneis, pallidiore brunneo limbatis: loris et annulo ophthalmico albidis: regione parotica brunnea: gutture albo: genis cum pectore et corporis lateribus pallidè brunneis fulvescenti lavato: pectore medio et abdomine purè albis: subcaudalibus fulvescenti-albidis: subalaribus et axillaribus cervinis: remigibus infrà brunneis, intùs cervino marginatis: rostro nigricanti-brunneo, mandibulà flavicante ad apicem brunnea: pedibus pallidè flavis: iride rufescenti-brunnea.

Adult male and female. Length 5·3 to 5·5 inches; wing 2·7 to 2·9; tail 2·1 to 2·2; tarsus 0·55; mid toe and claw 0·57; bill to gape 0·7 to 0·75. The legs and feet are exceedingly delicate in this species.

Iris hazel-brown; bill, upper mandible dark brown with pale tip, under mandible fleshy yellow; legs and feet pale yellow; eyelid dark plumbeous. In one female the tip of the upper mandible is pale.

Lores, orbital fringe, and a spot beneath the gape whitish; head and upper part of hind neck dark olive-brown, changing into rusty olivaceous on the back, which deepens to ferruginous on the rump and upper tail-coverts; wings dark brown, the primaries with a fine pale edging, and the coverts and tertials conspicuously edged with yellowish ferruginous; tail slightly lighter brown than the wings, margined with rufous-brown; chin and throat white, bounded on each side by a dark cheek-patch; chest brownish, the feathers margined with fulvous; breast and under tail-coverts white, flanks light yellowish brown; wing-lining brownish, paling off into fulvous.

Obs. This Flycatcher was united by Mr. Holdsworth, in his 'Catalogue,' with *Alseonax terricolor*, Hodgson; but this species is identical with the last. There is no doubt that Layard's bird was the same as the subject of the present article; he makes, it is true, no mention of the yellow legs and feet which are so characteristic of it; but his description, though somewhat scanty, is sufficient to preclude my keeping my specimens as distinct under the title of *A. flavipes*. He writes as follows:—"General resemblance of *B. latirostris*, but of a far more rufous colour; this colour most prevalent on the outer webs of the wing-primaries, the outer tail-coverts, and the sides of the breast and belly; throat, belly, and vent whitish; breast rufous ashy; back of the head dark brown. Length 5·0 inches, wing 3·0." This is, I think, near enough to identify his bird with the specimens I have procured in the island.

Cyornis mandellii (Hume, Str. Feath. 1874, p. 510) turns out to be a very closely allied representative of this species, inhabiting Sikhim and the hill-region of Southern India. Since this article was penned, the British Museum has acquired a specimen of this species from the collection sent home lately by Mr. Hume. It was labelled, in error, as a female *Cyornis magnirostris*, but it corresponded with Mr. Hume's description of *C. mandellii*. On Mr. Sharpe and myself comparing it with the Ceylon bird, it proved to be closely allied to it, and a member of the genus *Alseonax*, having the pale lower mandible which does not exist in *Cyornis*, and likewise the wing-formula of the first-named genus. It is almost identical on the upper surface with the insular bird, the head being only slightly darker; but the under surface is very much darker, the flanks are much browner, and the whole breast instead of being white is tawny brown, the vent and under tail-coverts only being white; the chest is much browner than in *A. muttui*, and the white throat-patch smaller. In Mr. Hume's original description he says, "the breast, sides, and flanks are pale brown." The dimensions of this specimen are—wing 3·0 inches, tail 2·5; the legs are in the dried skin dusky yellow, and they are more robust than those of the insular form. *Alseonax ferrugineus*, now placed by Mr. Sharpe in the genus *Hemichelidon*, is in its coloration not far distant from these two species;

but it is much more rufous, particularly on the back, rump, upper tail-coverts, and edgings of the wing-coverts, and the lower parts are also much more rufescent.

Distribution.—This rare Flycatcher was discovered by Layard at Pt. Pedro, the extreme north of the island; he writes thus of it, after describing the specimen brought to him:—"I name this new species after my old and attached servant Muttu, to whose patient perseverance and hunting skill I owe so many of my best birds. This one he brought to me one morning at Pt. Pedro during the month of June." I am not aware that it was again met with until rediscovered by myself in January 1875, when I obtained one of two specimens seen in forest a few miles from Trincomalie. After that date I did not notice it until February 1877, when I met with several individuals in the forest of Ikkade Barawe, in the Hewagam Korale, and procured three or four of them. It is not improbable that it may inhabit other forests in the south and east of the island; for after I had obtained the above examples I came to the conclusion that Flycatchers which I had not unfrequently seen in heavy forest in the last-named district and taken for the foregoing species, which really does not *commonly* affect such localities, may possibly have been no other than this interesting and little-known bird. I therefore commend the subject of a further acquaintance with it to such of my readers who have the opportunity of ornithologically examining the low-country forests of the island. It is singular that I have only met with it in the north-east monsoon, which would lead to the idea that it was migratory; and the late discovery by Mr. Bourdillon of *A. mandelli* in Travancore would tend to strengthen this suspicion did Mr. Hume make any mention of these southern specimens being white on the breast; he, however, appears to consider them identical with the dark Sikkim examples, as he does not speak of any difference in the under surface. I must add that Layard procured his specimen in June, which goes far to prove that the species is resident in, and peculiar to, Ceylon.

Habits.—This little bird has all the modest and retiring habits of its ally already noticed in the last article. I have always noticed it frequenting the lateral and rather low outspreading branches of forest trees by the sides of tracks, paths, or little open glades. It leads a sedentary life, sitting upright and motionless, and now and then waking into action by darting out at some passing fly. In the stomach of one example I found much larger insects (moderately sized Coleoptera) than I expected to find captured by so small a bird. It is the reverse of shy, not objecting to a close scrutiny, under which I found it would sit motionless until roused into flight by the sight of its prey, which to it was evidently much more worthy of attention than myself and the fatal weapon which was destined to put an end to its quiet existence.

The upper figure in the Plate accompanying the present article represents a male of this species shot in the Ikkade-Barawe forest, near Hanwella.

Genus STOPAROLA.

Bill very similar to *Alseonax*, equally broad, but slightly more robust, and the nostrils more basal; rictal bristles long and fine. Wings with the 2nd quill much shorter than in the last genus, about equal to the 8th; the 4th and 5th the longest. Tail shorter than the wings, even at the tip. Legs and feet rather stout. Tarsus as long as the middle toe and claw.

STOPAROLA SORDIDA.
(THE CEYLONESE BLUE FLYCATCHER.)

(Peculiar to Ceylon.)

Stoparola melanops (nec V.), Kelaart, Prodrömus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 127.

Niltava ceylonensis, Gray, Hand-l. B. i. p. 326. no. 4897 (1869).

Glaucomyias sordida, Wald. Ann. & Mag. Nat. Hist. 1870, v. p. 218.

Eumyias sordida, Sharpe, Tr. Linn. Soc. new series, i. p. 326; Holdsw. P. Z. S. 1872, p. 441; Legge, Ibis, 1874, p. 18; Hume, Stray Feath. 1875, p. 401.

Stoparola sordida, Sharpe, Cat. B. iv. p. 440 (1879).

The Bluish Flycatcher, Kelaart.

Suprà sordidè viridi-cinerascens: tectricibus alarum minimis dorso concoloribus, medianis majoribusque cum remigibus rectricibusque fuscis, dorsi colore marginatis: fronte et supercilio anteo latè cyaneis: loris et plumis subocularibus nigris: facie laterali et corpore subtùs toto viridi-cinerascentibus: abdomine imò et subcaudalibus albicantibus maculà ad basin mandibulæ et mento summo nigris: gulà cyaneo lavatà: tibiis cinerascenti-brunneis.

Adult male and female. Length 5·8 to 6·2 inches; wing 2·85 to 3·1; tail 2·3 to 2·5; tarsus 0·7 to 0·8; mid toe and claw 0·65 to 0·7; bill to gape 0·67 to 0·75.

Iris varying from reddish brown to brown; bill black; legs and feet dark plumbeous, the feet sometimes blackish, much darker than tarsus; claws black.

Head, hind neck, back, and wings sombre verditer-blue; the edge of the forehead and an ill-defined superciliary stripe lazuline blue; chin washed with the same; lores and extreme point of chin black; wings and tail blackish brown, edged with the blue of the back, the latter mostly towards the base; throat and chest bluish cinereous, blending with the brighter blue of the chin and paling on the breast, the lower part of which, with the under tail-coverts, is white. The amount of white on the lower parts and depth of blue of the upper surface vary, being perhaps dependent on age. In some examples the under tail-coverts alone are unsullied white. The greyish bases of the rump-feathers show in imperfectly-plumaged birds, imparting a pale appearance to that part.

Young. Iris brown; legs and feet dusker than in the adult. In the first plumage the head, back, and wing-coverts are brown, each feather with a fulvous centre, edged off with blackish; feathers of the chin and forehead entirely fulvous; throat and breast fulvescent grey, with dark edges. This dress is doffed a few months after fledging, and specimens in the mixed blue and spotted plumage to be met with in August and September have a curious appearance.

Obs. This species was identified by Layard as *Stoparola melanops*, the Himalayan representative of our bird, but which is a bright verditer-blue instead of the dull colour characteristic of the latter. Gray, in drawing up his 'Hand-list of the Birds in the British Museum,' evidently distinguished the two birds from one another, for he gave the Ceylonese form the name of *Stoparola ceylonensis*; but as he inserted this name in his list with a query as to the species being new, and gave no description, it is not accepted. It was not until 1870 that the late Lord Tweeddale, who states that he received four specimens from Ceylon, bestowed the present title on it. *Stoparola sordida* is more nearly allied to the South-Indian *S. albicaudata* than to the above-mentioned Himalayan species; the Nilghiri bird has the head, back, hind and fore neck a dull indigo-blue, the forehead and chin hyacinth-blue; wings and tail brown, edged with blue; the underparts pale bluish; bases of all but the central tail-feathers white, but they are quite concealed by these latter, which overlie them: an example in the national collection measures 3·1 in the wing. *S. melanops* is a larger bird; examples which I have examined from Darjiling, Murree, and Nepal measure from 3·3 to 3·45 in the wing.

Distribution.—This Flycatcher is entirely a hill-bird, inhabiting both the Kandyan and the southern mountains down to an elevation of somewhat under 2000 feet. It is not common at the Horton plains,

according to my observation ; but it is abundant slightly lower down, at Nuwara Eliya, and throughout the main range. It is numerous in jungles throughout all the coffee-districts, particularly in the Knuckles and in Uva. Lower down it is less frequent, except in the secluded woods through which the affluents of the Mahawelliganga flow. It is found in the Singha-Rajah and other forests bordering the Kukkul Korale, and at a similarly low elevation on the south-eastern slopes of the Uva ranges.

Habits.—This is a quiet bird, of less active movements than most Flycatchers, and is usually found frequenting the outskirts of forest, the edges of clearings, the borders of mountain-streams, or the sides of roads and paths, in preference to the depths of the jungle. On a few occasions I have observed it in small flocks of half a dozen or more on the banks of broad, sunny torrents ; but this is not usual. The male has a sweet little warble, which it patiently whistles all day long, particularly in the breeding-season, seated near its mate ; and the note is so low and clear that it seems to come from a distance, whereas the bird is actually sitting close at hand.

It frequently perches on fallen trees and low stumps, on which it will sit in perfect silence until disturbed, when it does not take the trouble to fly far, but simply flits to the nearest inviting twig. It evinces little or no fear of man. Mr. Bligh, who has had much opportunity of observing its habits during a long residence in the coffee-districts, informs me that it is not sociably inclined, that the males are very pugnacious, and that when two meet they utter their song in a high key and in “a passionate hurried manner.” He further writes :—“Its sweet plaintive notes are heard during many months of the year ; it affects low perches from which to pour forth its contentment in song, such as the stump of a tree, a log or rock in the coffee, or an exposed branch by the jungle-side. Its song has a certain charm, possessing no small resemblance to the plaintive whistling of the Blackbird. It is a very silent bird except when singing ; indeed I have never heard it utter a call-note beyond a scarcely audible ‘sip’ when it is near its nest.”

Nidification.—From the pen of the same observant naturalist, Mr. Bligh, I gather the following information concerning the nesting of this interesting little bird. He says, “The nest is generally concealed in various suitable places, such as a shallow hole in a rotten stump or in the trunk of a forest tree ; and I once found it in a felled tree, well protected by a thick branch of a coffee-bush which grew over it ; it is composed of moss, lichens, and grasses lined with fine fibrous materials, and is like a Blackbird’s in miniature. The eggs are dull white, thickly sprinkled and blotched with dark reddish.”

The breeding-season would appear to be in April and May ; for I have shot the young in mixed nestling and blue plumage in the month of August, both in the Peak and Kukkul-Korale forests.

The lower figure in the Plate accompanying my article on *Alseonax muttui* represents a male of the present species, shot at Debedde Gap in Uva.

Genus SIPHIA.

Bill not so wide as in *Stoparola*, compressed towards the tip ; rectal bristles not so long ; 1st primary very short, 2nd slightly exceeding the 8th ; the 4th and 5th the longest, considerably exceeding the 3rd. Tail shorter than the wings. Tarsus shorter than in the last genus, but exceeding the middle toe without its claw.

SIPHIA TICKELLIÆ.

(THE BLUE REDBREAST.)

Muscicapa hyacintha, Tickell, J. A. S. B. 1833, ii. p. 574.

Cyornis banyumas (nec Horsf.), Blyth, J. A. S. B. 1843, xii. p. 941; id. Cat. B. Mus. A. S. B. p. 173 (1849); Jerdon, B. of Ind. i. p. 446 (1862).

Cyornis tickelliæ, Blyth, J. A. S. B. 1843, xii. p. 941; Jerdon, B. of Ind. i. p. 467; Hayes Lloyd, Ibis, 1872, p. 197; Hume, Str. Feath. 1873, p. 436; Ball, ibid. 1874, p. 405; Butler & Hume, ibid. 1875, p. 468.

Cyornis jerdoni, Gray, Hand-l. B. i. p. 325 (1869); Jerdon, Ibis, 1872, p. 125; Holdsw. P. Z. S. 1872, p. 442; Legge, Ibis, 1874, p. 18.

Siphia tickelliæ, Sharpe, Cat. B. iv. p. 447 (1879).

Marawa, Sinhalese.

Adult male and female. Length 5·6 to 5·9 inches; wing 2·7 to 2·95; tail 2·3 to 2·6; tarsus 0·65 to 0·7; mid toe and claw 0·65; bill to gape 0·7 to 0·77.

Male. Iris brown; bill blackish; legs and feet bluish brown, dusky bluish, or bluish grey.

Head and entire upper surface (including the sides of the neck), wings, and tail dull blue, brightening at the forehead, above the eye, and on the point of wing into shining cerulean blue; inner webs of the rectrices and quills and the outer primaries wholly blackish brown; lores, face, and along the base of the under mandible to the chin bluish black; throat (commencing at a point between the dark blue sides), neck, and chest fine fulvous rufescent, paling off on the sides of the breast and flanks to light fulvous, and leaving the centre of breast and abdomen with the under tail-coverts white.

Obs. In the damp southern forests are to be found dark rufous-chested examples of this species with a broad maxillary stripe exceeding that of specimens from other parts of the island by 0·1 inch, and with the abdomen and under tail-coverts very faintly washed with rufous, forming, in fact, a link between the present species and the Javan bird (*C. banyumas*). I possess such a specimen from the timber-jungles of Opaté.

Female. Bill less black; legs and feet bluish, paler than in the male.

Above a lighter or faded blue, with a less brilliant frontal stripe and shoulder-patch; *lores fulvous grey*; cheeks bluish, without the chin-stripe; chin whitish, deepening to light rufescent fulvous on the chest, and paling on the flanks as in the male.

Young male. Legs and feet light bluish. Head and hind neck brown, with fulvous-yellow mesial lines; back brown, suffused with fulvescent, and each feather with a terminal spot of the same; wing-coverts with deep tips of a brighter hue than the markings of the back; quills and tail as in the adult; beneath, the throat and chest fulvescent, with a faint indication of a stripe along the edge of the lower mandible, and the feathers of the chest edged dusky. The clothing-feathers are doffed at a very early age, and the blue of the back, together with the rufous hues of the underparts, soon assumed.

Young female. Legs and feet fleshy; upper parts duller brown than the male, with central stripes and terminal spots of fulvous; chest pale buff-white, darkly edged.

Obs. This is the species styled by Jerdon in his 'Birds of India' *Cyornis banyumas*, and afterwards named *C. jerdoni* by Gray in his 'Hand-list.' Blyth, however, had (*loc. cit.*) previously named a pale-chested Blue Redbreast *C. tickelliæ*; and this was afterwards found by Major Hayes Lloyd to be nothing but the female of Jerdon's bird. In 'The Ibis' for 1872, p. 197, he gives the history of this discovery in an interesting letter dated from Kattiawar; and subsequently, as Blyth's name had priority over Gray's, the species has been, as a matter of course, styled *C. tickelliæ*. Ceylon specimens do not differ from examples from various parts of India, although some individuals I have

examined from the latter present slight points of dissimilarity. Two males from Kattiawar (wings 2·8 and 2·9 inches), and another labelled "India" (wing 2·8), in the British Museum, have the breasts somewhat deeper rufous. An example from Yunnan has the lower parts tinged faintly with rufous, like my Opaté bird; and another, a female from the peninsula of India, is paler than insular females on the back, and has the abdomen and vent faintly tinged with rufous-buff. These instances tend to show that the Indian and Javan birds almost run into one another. In regard to the latter, *C. banyumas*, with which our species was formerly confounded, its only distinctive character lies in the belly and under tail-coverts being more or less washed with the rufous hue of the breast, instead of being white. I say, *more or less*, because some examples are much paler in this respect than others. A male from Bintulu, W. Borneo (wing 2·75), has the belly and under tail-coverts quite rufous; while two others from Labuan have these parts only slightly tinged with it, being very little deeper-coloured than the above-mentioned Southern-Ceylon example.

Distribution.—This Flycatcher is widely dispersed through the whole island, being an inhabitant of all forest and tracts of jungle, and is very numerous, being equally at home in the vast jungles of the north and east, and in the tall timber-forests of Safragam and the south-western hill-district. In the Central Province it ranges up to 4000 feet, commonly in Uva, and more rarely in the western portions of Dimbulla, Maskeliya, &c. In the great forest-districts of the island its favourite habitat are the borders of rivers and tanks; but it is so common there, that it may be met with in any part of the jungle, and was in the Trincomalee district even an inhabitant of the isolated Ostenburgh woods between the harbour and the sea. In the south-west it is more abundant in the timber-forests on the banks of the Gindurah than elsewhere; but in parts of the Western Province (at Kaduwella and other places between Colombo and Safragam, for instance) I have found it occupying the compounds and gardens of the natives, as well as the jungles surrounding the villages.

It is singular that a bird so common was not noticed by Layard during his travels through the island.

On the mainland this species extends from South India to the north-west of the peninsula, where it is found in the hilly tracts of Kattiawar, but nowhere else, according to Mr. Hume, in the circumjacent region, except at Mount Aboo, where Captain Butler procured it. Mr. Hume records it from Kumaon; and it doubtless occurs further east along the base of the Himalayas, as it has been got near Calcutta. It is not mentioned in 'Stray Feathers' as inhabiting Burmah or Tenasserim, although the late Marquis of Tweeddale says that it was obtained by Lieutenant Ramsay in Karennee. I am also unable to separate the example above cited, in Dr. Anderson's "Yunnan" collection, from Indian examples of the species. In Central India it is not uncommon; Mr. Ball procured it in the Satpura hills, and remarks that it is rare in Chota Nagpur. Mr. Fairbank writes that it is found everywhere in the Khandala district in suitable localities; and Messrs. Davidson and Wender record it from Sholapoor, in the Deccan. Jerdon writes that it inhabits the Carnatic and the Malabar coast, and Mr. Fairbank procured it in the Palani hills.

Habits.—This pretty bird frequents a variety of situations in jungle and forest, avoiding, however, the thorny scrubs in the dry coast-districts; it is very partial to tall underwood beneath the gigantic trees which line and overhang the river-banks in the Northern and Eastern Provinces, or rear their majestic heads in the shade of the lofty precipices which scarp the rocky ranges of the Park country. In such spots, which foster the life of myriads of tropical insects, these little birds ply their busy vocation, the male constantly piping out its sweet quick little whistle, resembling somewhat the syllables *tec-titi-wit-titu-weee*, which is answered by the female with a monosyllabic "chit" note. In the dusk of the evening it is a most restless bird, the male resorting to some overshadowed thicket, and flying from branch to branch, repeatedly uttering its whistle, which is continued long after the dense surrounding forest has shut out the last rays of departing daylight. It is at these times very difficult to catch sight of, its dark blue plumage assimilating with the gloomy aspect of the jungle. It is unsociable towards its fellows, the males strictly keeping at a distance from one another, even when there are several in the same glen or grove. During most part of the day it does not display any great activity, but rests, after the morning meal, on slender horizontal branches, now and then making a sally at a passing insect.

Nidification.—In the Western Province I have shot the young in nestling-plumage at the end of June,

and in the Northern Province in the middle of July, so that the breeding-season of this Flycatcher may be said to be May and June throughout the island. I obtained no information concerning its nest and eggs while in Ceylon; but on reference to 'Nests and Eggs of Indian Birds,' I find that it nests in a niche in a wall or in a hole between branches of a tree at no great height from the ground. A nest taken by Miss Cockburn is recorded by Mr. Hume as being made of "moss and moss-roots, the latter forming the lining, a good many dead leaves being incorporated in the exterior surface; it was between 3 and 4 inches in diameter externally, and the egg-cavity was very shallow." In shape the eggs are said to be moderately long ovals, somewhat obtuse at the small end; the ground-colour is dingy greyish white, very finely freckled and mottled with dingy reddish brown, the markings being everywhere indistinct and feeble, but concentrated and nearly confluent towards the large end, forming a zone or irregularly defined cap. In some specimens the markings are very closely set, so that the eggs appear to be of a pale brownish-rufous colour. The average dimensions of five eggs are 0.76 inch in length by 0.56 inch in breadth; they have, as a rule, a faint gloss.

SIPHIA RUBECULOIDES.
(THE BLUE-THROATED REDBREAST.)

Phænicura rubeculoides, Vigors, P. Z. S. 1831, p. 35; Gould, Cent. Him. Birds, pl. 25. fig. 1 (1832).

Muscicapa rubecula, Swains. Monogr. Flyc. p. 221, pl. 27.

Cyornis rubeculoides, Blyth, J. A. S. B. 1843, xii. p. 941; id. Cat. B. Mus. A. S. B. p. 173 (1849); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 125; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 289 (1854); Jerdon, B. of Ind. i. p. 466 (1862); Holdsw. P. Z. S. 1872, p. 442; Hume, Nests and Eggs, 1873, p. 211; id. Str. Feath. 1875, p. 104; Brooks, t. c. p. 235; Hume, Str. Feath. 1878, p. 227.

Niltava rubeculoides, Gray, Gen. B. i. p. 264.

Siphia rubeculoides, Sharpe, Cat. B. iv. p. 445 (1879).

Chatki, Beng.; *Manzhil-pho*, Lepchas (Jerdon).

Adult male. Length 5·6 to 5·8 inches; wing 2·7 to 2·8; tail 2·0 to 2·2; tarsus 0·7; mid toe and claw 0·6; bill to gape 0·7.

Female. Length 5·3 to 5·5 inches; wing 2·7 to 2·8.

Male. Iris deep brown; bill black; legs and feet dusky bluish, claws dusky.

Head, hind neck, back, and wing-coverts dark shining blue; forehead and point of wing glistening cærulean blue, extending more above the eyes than in the last species; inner webs of the quills and tail-feathers blackish brown, the outer webs margined with blue, much brighter on the tail than the wing; upper tail-coverts brighter blue than the back; the lores, ear-coverts, and the extreme point of the chin black; throat and sides of chest deep obscure indigo-blue, descending further down to the chest in some specimens than in others; chest and upper part of the breast rich rufous, fading into white on the lower breast, abdomen, lower flanks, and under tail-coverts; under wing-coverts white.

The coloration of the throat is variable; in the majority of specimens from Ceylon the dark blue colour ends in a line across the lower part of the throat; but in some it extends considerably upon the sides of the chest, confining the rufous of the chest to a smaller space, while in others the rufous runs up in a point towards the chin, dividing the blue of the throat. This exists in an example in my collection, and Mr. Holdsworth noticed it in specimens from Ceylon in the late Lord Tweeddale's collection.

Female. Bill dark brown; legs and feet greyish blue.

Above uniform brownish olive, with the margins of the quills pale, and the upper tail-coverts and tail suffused with rusty brown; lores pale; orbital fringe rufescent; ear-coverts with pale striæ; throat and chest dull rufous, paling on the flanks; the breast, abdomen, and under tail-coverts pure white; wing-lining yellowish buff.

Young male. Iris light brown; bill blackish, pale at the base; legs and feet bluish.

Above bluish, with fulvous tips to the feathers of the head and neck, and terminal spots of the same on the wing-coverts; chin, throat, and breast rufescent buff, darkest on the chest, and changing into white on the lower parts. The above is the plumage in which I shot a Flycatcher changing from nest-plumage to the blue dress, in January 1875, in the forests near Kanthelai tank. There is an indication of a dark line across the throat, just where the lower border of the blue would be in the adult. It was in company with what appeared to be, as well as I could gather at a momentary glance in the thick jungle, an adult *C. rubeculoides*; and near at hand I obtained a glimpse of what I took for a brown *Cyornis*, which would be the colour of the female parent, provided my identification were correct.

Obs. I observe, on examining a continental series of this bird, the same variation in the marking of the throat

which I have alluded to in the case of Ceylon birds. Mr. Hume especially dwells on this point in connexion with the Tenasserim individuals referred to in his exhaustive treatise on the birds of that province, and says that in twelve out of fifteen adult males the rufous of the chest runs up in a stripe towards the chin, and in one the entire chin and throat are concolorous with the breast. It is difficult to see how this latter specimen can be *C. rubeculoides*; it would appear more likely to be *C. tickelliae*. In three examples from the North-west Himalayas, which have the wings 2.95, 2.8, and 3.0 inches respectively, I find that the blue runs straight across the throat at a distance of 0.7 inch from the chin in two, and in the third the rufous runs up in a point towards the chin. In a Darjiling specimen the blue of the throat is very deep in colour, and descends down upon the sides of the chest; wing 2.7. In a Pegu example the rufous runs up the blue throat to within 0.4 of the chin; wing 2.6: in one from Madras the same is the case; wing 2.8. In no specimen in the British Museum does the rufous extend higher than within 0.4 of the chin; but I observe that Mr. Hume says it does so in rare instances. A presumed female in the national collection from the Bhootan Doars is much paler rufous on the chest than a Ceylon example; and I notice that Mr. Blanford observes this character (Str. Feath. 1877, p. 484) in a series procured in the same district by Mr. Mandelli, in which also the throat is always whitish. A doubt is expressed whether all the specimens referred to were really females, as they were not sexed; it is possible, therefore, that these birds may represent a distinct species.

Cyornis elegans, from Malacca, Borneo, and Sumatra, is described as having the throat bright cobalt-blue, as well as the forehead and shoulders of the wing, and must be regarded as a brighter-coloured ally of the present species.

Distribution.—I take this Flycatcher to be migratory to Ceylon. I have met with it in various parts of the northern forests, but only between the months of October and April. Layard was of the same opinion, and writes as follows:—"I obtained a few specimens of this elegant little Flycatcher during their migration from the mainland. I first shot them on the 14th of October 1851, and a few subsequently at Pt. Pedro; they then disappeared, and I saw no more of them." I never met with it in the western, southern, or eastern districts

SIPHIA NIGRORUFA.

(THE BLACK-AND-ORANGE FLYCATCHER.)

Saxicola nigrorufa, Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 266.

Ochromela nigrorufa, Blyth, J. A. S. B. 1847, xvi. p. 129; id. Cat. B. Mus. A. S. B. p. 173 (1849); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 126; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 289 (1854); Jerdon, B. of Ind. i. p. 462 (1862); Holdsw. P. Z. S. 1872, p. 441; Hume, Nests and Eggs, i. p. 207 (1873); Bourdillon, Str. Feath. 1876, p. 396; Fairbank, ibid. 1877, p. 401.

Siphia nigrorufa, Sharpe, Cat. B. iv. p. 455 (1879).

Orange Robin, Jerdon.

Adult male and female. Length about 5.0 inches (Jerdon); wing 2.3; tail 1.9 to 2.0; tarsus 0.7; middle toe and claw 0.6; bill to gape 0.55. The above measurements, with the exception of the length, are from a series of four skins in the British Museum.

"Iris hazel-brown; bill black; legs and feet dirty reddish" (Jerdon).

Male. Head, face, ear-coverts, hind neck, and a line along the under mandible to the chin blackish brown, tinged with an olive hue; wings very dark brown, the coverts blacker than the quills; rest of the plumage orange-rufous, darkest on the back and sides of the neck, and paling into rufescent fulvous on the abdomen.

Female. Head, face, and hind neck olive-brown, the frontal feathers with rufous centres; ear-coverts striated with whitish; remainder of the plumage as in the male, but with the abdomen white; orbital fringe rufous.

Distribution.—The evidence on which this curiously-coloured Flycatcher has hitherto been included in our lists rests on a drawing of a bird, asserted by Layard to represent it, made by Mr. E. L. Mitford, of the Ceylon Civil Service.

of the island, although I shot many examples of the foregoing on the chance of their proving to be the present species. It is evidently a rare bird. Mr. Holdsworth mentions having seen examples in Lord Tweeddale's collection which were collected, I believe, by Mr. Chapman; but besides these, Layard's and my own specimens are in all probability the only ones procured in the island. If I am right in my identification of the young of this bird alluded to in the above "description," it is a remarkable fact that it should breed as a visitor to Ceylon, and at such a time of the year.

Its chief home appears to be the sub-Himalayan region, whence it migrates to the plains of India in the cool season. In Burmah, however, and likewise in Tenasserim (if the bird inhabiting the latter province really be this species) it appears to be resident. Mr. Oates says, as regards Pegu, "this species is common all over the hills, and I have lately received it from Arracan." Blyth remarks that it is not rare in the vicinity of Calcutta during the cold weather. Mr. Brooks says it is common in the lower parts of the valley of the Bhagirati river above Mussoori in May; and Captain Hutton writes, in the 'Journal of the Asiatic Society of Bengal' for 1848, that it arrives there in April to breed, from which it appears that it is not resident in all

This gentleman was devoted to the study of natural history, and collected many birds, particularly in the Ratnapura district, in which he is said to have procured the present species. It is not improbable that the drawing was a faithful one, and that Layard rightly identified the species which it was intended to represent; but, on the whole, I do not consider the testimony quite sufficient to warrant my giving it a well-established position in the Ceylonese avifauna, and I therefore include it as a doubtful species in my list. Mr. Mitford asserts that it was migratory, *appearing in June*: in this he doubtless was mistaken, as no South-Indian species migrates to Ceylon at that season of the year; and were it merely a local migrant to that district from other parts, it would have been observed elsewhere in the island. No evidence, however, other than the above is forthcoming of this Flycatcher ever having been procured or seen in Ceylon: and it is a bird which it would be impossible to overlook, on account of its remarkable colouring.

The haunts of this species are the ranges of mountains in the south of the peninsula. Jerdon, who named and discovered it, writes of it, "This prettily-plumaged bird I have only met with on the summit of the Nilghiris, in the dense woods of which it may occasionally be seen;" he also states that it has been found on the highest mountains of Ceylon. This is a reference to Mr. Mitford's supposed discovery; but the Ratnapura district lies at the *foot* of Adam's Peak. Recently Mr. Bourdillon observed it in the Travancore hills, remarking that it frequents "dense wood-thickets, from 2500 feet elevation upwards;" and Dr. Fairbank likewise met with it "in groves at the top of the Palanis, as well as at Shemiganur, 5500 feet elevation."

Habits.—Jerdon writes concerning this Flycatcher, "It frequents the dense woods, preferring the most retired shady and damp swampy spots. Here it may be seen seated motionless on the low branch of a tree or a fallen stump, or some thick tangled dead branches, every now and then making a short swoop at an insect in the air, or descending to the ground for a second to pick one up. It is a very silent bird, and I never heard its note." Dr. Fairbank, who found it affecting similar situations, says, "It is difficult to see this little bird in the dense thickets it inhabits at a distance sufficient to shoot it without tearing it to bits." With regard to its habits in Ceylon, I am only able to quote Layard's notes, in which he says that Mr. Mitford found it feeding much on spiders, which is a singular practice for a Flycatcher.

Nidification.—In the Nilghiris this Flycatcher breeds at elevations of 5000 to 7000 feet, and lays from March until May. The nest is an extraordinary structure, being of a large globular form, made of dry sedge-flags and very coarse marsh-grass on a foundation of dead leaves. It is usually built at a height of 1 to 3 feet from the ground, and sometimes actually on the ground, as recorded by Mr. Darling in Hume's 'Nests and Eggs.' This gentleman writes:—"The nest is globular, higher than it is wide, with a small entrance-hole at one side, below which the nest is a little drawn in, and above which the dome projects somewhat. The foundation of the nest is almost always composed of dry leaves or fern, and the rest of it is woven of reed-leaves and flags; there is no lining, the eggs resting on the soft reed-leaves; it is exteriorly about 6 or 7 inches high and 4 broad, and the diameter of the central spherical cavity is about 3 inches." The experience of Mr. Davison is similar; a nest he found was made of the dry leaves of a kind of reed common on the Nilghiris. The eggs are two or three in number, of a pale brownish salmon-colour, indistinctly mottled with a darker colour, the markings coalescing to form a zone or cap at the larger end; some are pale greyish white, thickly and very finely speckled all over with very faint brownish red, forming a pale brownish-red cap. They measure 0.7 by 0.53 inch.

parts of its Himalayan habitat. It does not appear to have been procured in the south of India by Messrs. Bourdillon and Fairbank ; but Jerdon obtained it both on the eastern and western coasts of that part.

Habits.—This species is exceedingly active and restless ; it delights in dense low jungle growing beneath lofty trees, and appears to remain much in the same spot throughout the day. I have more than once found it in the low tangled wood which always grows on the upper or yearly inundated side of village tanks in the Northern Province. It perches on low branches, and darts very quickly on its prey, constantly changing its position. It has a very lively whistle, more varied and continued longer than that of the last species ; and I have seen it flying in an excited manner backwards and forwards in a thicket, repeatedly uttering its song. Mr. Brooks styles its note “sweet and Robin-like ;” and Hutton remarks that the male has a “very pleasing song, which it warbles forth from the midst of some thick bush, seldom exposing himself to view.” I have found small caterpillars, as well as flies and minute insects, in its stomach.

Nidification.—From what has been said above, it will be seen that this Flycatcher may perhaps occasionally breed in Ceylon during the north-east monsoon ; but it cannot be its habit to nest at that season. In the Himalayan districts it was observed by Capt. Hutton to breed in June, while Hodgson affirms that it begins to nest in April. It builds in a cavity in the trunk of a decayed tree or in the side of a rock, constructing its nest of moss, moss-roots, grass, and dry leaves, and lines it with black, fibrous moss-roots or hair-like lichens. The eggs are said to be dull pale olive-green, faintly or indistinctly clouded with dull rufous or clay-colour. Mr. Hume says the average size of the eggs he has seen is 0·73 by 0·62 inch.

Genus MUSCICAPA.

Bill small, not very wide at the base, and compressed towards the tip, which is scarcely decurved. Nostrils concealed by their plumes. Wings with the 1st primary shorter than in *Siphia*, the 2nd equal to the 7th, and the 4th the longest, slightly exceeding the 3rd. Tail rather broad, emarginate or even at the tip. Tarsus moderately long, exceeding the middle toe with its claw.

MUSCICAPA HYPERYTHRA.

(NIETNER'S ROBIN FLYCATCHER.)

Siphia hyperythra, Cabanis, Journ. für Orn. 1866, p. 391; Walden, Ibis, 1872, p. 472.

Menetica hyperythra, Cabanis, Journ. für Orn. 1866, p. 401.

Niltava hyperythra, Gray, Hand-l. B. i. p. 326. no. 4901 (1869).

Erythrosterina hyperythra, Holdsw. P. Z. S. 1872, p. 442, pl. 17; Hume, Nests and Eggs, p. 217 (1873); Brooks, Str. Feath. 1875, p. 236.

Muscicapa hyperythra, Sharpe, Cat. B. iv. p. 163 (1879).

The Robin, Planters in Ceylon.

Adult male. Length 4·6 to 5·1 inches; wing 2·6 to 2·7; tail 2·0; tarsus 0·7 to 0·8; mid toe and claw 0·6 to 0·65; bill to gape 0·6.

Female. Slightly smaller; wing 2·5 to 2·6 inches.

Iris hazel-brown; bill above brown, pale next the forehead; gape and lower mandible fleshy yellow, with the tip dusky; inside of mouth yellow; legs and feet deep brown; soles yellowish.

Male. Head and upper surface dusky cinereous brown, changing to ashen on the face and sides of neck; wings brown, edged with cinereous, the margins of the greater coverts being slightly ochraceous; upper tail-coverts, four centre tail-feathers, and terminal portion of the rest with all but the base of the outer web of the lateral feather black; these latter, the two next pairs, and the outer web of the adjacent are white for two thirds of the length from the base; lores ashen; orbital fringe dusky grey; chin, throat, breast, and sides of belly rich rufous, changing to white on the belly and vent, and bounded on the fore neck by a bold black border from the gape to the upper flanks; under tail-coverts yellowish buff and concolorous with the lower flanks; under wing-coverts the same.

Female. Upper surface with a more earthy tint than the male; the black of the tail not quite so intense; lores pale, orbital fringe greyish; ear-coverts pale-shafted; chin, throat, and upper breast less bright than in the male, and not divided from the hue of the hind neck by a black border.

Young. Bill paler than in the adult; legs and feet plumbeous brown.

Males in first plumage have the chin, throat, and lower breast white, with a rufous wash across the chest; this afterwards deepens and spreads up the throat, in which stage the black border begins to appear, and *distinguishes it from the young female*; from this to the adult stage all gradations of rufous colouring in the chest exist.

Females in nestling plumage are paler brown above than adults; the lores, cheeks, and orbits the same; chin and chest greyish, with a slight ochraceous tint on the latter; flanks and under tail-coverts faintly tinged with fulvous.

Obs. This Robin Flycatcher is the Indian representative of the European species *M. parva*, to which it is closely allied, differing from it in the presence of the black border which separates the rufous throat from the ashen sides of the neck. A male example of *M. parva* from Etawah measures 2·7 inches in the wing, and has the throat and fore neck, but not the chest, paler rufous-orange than in *M. hyperythra*; and the back is of a more earthy hue than that of the latter species; the three outer pairs of tail-feathers are marked similarly, but the fourth has some white on the inner web, as well as the outer.

Distribution.—Interesting as are the movements of migratory birds, there are one or two of our Ceylonese visitants which, for the ornithologist, possess a more than ordinary amount of attraction, inasmuch as they mysteriously appear in the island from well-known distant summer quarters without having left any trace of their presence in the regions through which they would naturally be disposed to pass, thereby rendering their line of migration a matter of conjecture. Of these the present species forms one of the most remarkable instances in our list. It is migratory to Ceylon, and yet was *first discovered* there so recently as 1860 by

Mr. Nietner, a German gentleman residing in the Pundooloya coffee-district ; it appears, moreover, to be more plentiful in the island than in any other part of the mainland in which it has been observed. Previous to its being discovered it must therefore have been passed over by naturalists working in the Central Province ; it is every season more or less common in that part, and now that its existence in the island has been made known it is frequently shot in the Nuwara-Elliya and surrounding districts. Mr. Holdsworth, however, was the second naturalist to procure it in Ceylon, obtaining specimens near Nuwara Elliya in 1870 ; and on the publication of his catalogue in the 'Proceedings of the Zoological Society' for 1872 he added the species to the Ceylonese avifauna. It arrives in October, and does not even appear to have been noticed in the northern province during transit ; it is in the upper hills that it is first observed, and it takes up its quarters in no locality that I am aware of under an elevation of 2500 feet. It inhabits the Horton Plains, the whole of the main range, the Haputale and other Uva ranges, the upper parts of the Peak forest, and all the surrounding coffee-districts above the altitude I have named. Its appearance in the coffee-districts is, notwithstanding, somewhat irregular, being plentiful during one season in certain places, from which, in the following year, it may be totally absent. Mr. Bligh has noticed this fact in the Kotmalie and Haputale districts, and I myself found it common on the Rambodde pass in 1876-77, a locality where it has rarely been previously observed. It was described by Cabanis (*loc. cit.*) from the specimen sent to him by Mr. Nietner.

On the continent it has only been observed in the sub-Himalayan region. The first specimen sent home from India was, Mr. Holdsworth writes, obtained at Goona, in Cashmere ; Mr. Brooks records, in 'Stray Feathers,' 1875, the procuring of an example near Mussoori in the beginning of May, and adds that "it is not an alpine bird." If this be the case it is difficult to conjecture where it breeds, as it has not been observed in Bengal. The same writer, however, makes a subsequent contrary statement, and says (Str. Feath. 1877, p. 471), "*Erythrostera hyperythra* appears to be a resident hill-species." The singular fact of its not having been seen in any of the hill-districts of Southern India can only be accounted for on the supposition that it follows the line of the east coast of the peninsula in migrating to Ceylon ; but how it contrives to reach that island unobserved throughout its long route of migration is indeed a mystery !

Habits.—This little bird frequents forest, more particularly its edges, and also trees at the sides of paths cut through the jungle ; it is likewise to be found about the rhododendrons and other stunted trees lining the streams which flow through the patnas and "plains" in the main range. It betrays its presence by a monosyllabic whistle, followed by a sharp little trill, recalling somewhat the note of the Wheatear. It is a restless species and active in its movements, quickly darting on its prey, on seizing which it will often glide to a prominent perch, such as a branch overhanging the road, or a stump in the coffee close to the pathway, and there giving out its lively whistle, will again dart off to another post of observation. Adult males are usually found alone, but not far from each other ; and I have noticed that the young birds, of which numbers visit us, pass a solitary existence entirely away from the companionship of their fellows.

PASSERES.

Fam. SAXICOLIDÆ*.

Bill straight, compressed towards the tip. Nostrils oval or rounded and somewhat exposed; rictal bristles generally small, in some well developed. Wings variable—in some pointed, with the 1st quill much reduced; in others moderately rounded, with the 1st quill rather lengthened. Tail of twelve feathers. Tarsus lengthened, in some smooth, in others scutellated.

Of small size. Nesting on the ground or in holes or niches, and of *gesticulating habit with the wings and tail*.

Genus PRATINCOLA.

Bill wide at the base, the culmen moderately curved; gape beset with well-developed rictal bristles. Nostrils protected by a few impending bristles. Wings rather rounded, the secondaries long; 1st quill slightly less than the innermost secondary, the 3rd to the 6th nearly equal, the 4th being the longest. Tarsus smooth, exceeding the middle toe with its claw; lateral toes short.

PRATINCOLA BICOLOR†.

(THE HILL BUSH-CHAT.)

Pratincola bicolor, Sykes, P. Z. S. 1832, p. 92; Hume, Str. Feath. 1873, p. 183; id. Nests and Eggs (Rough Draft), ii. p. 314 (1874); Fairbank, Str. Feath. 1876, p. 406.

Pratincola atrata (Kelaart), Blyth, J. A. S. B. 1837, xx. p. 177; Kelaart, Prodrum, p. 101, et Cat. B. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 266; Jerdon, B. of Ind. ii. p. 124 (1863); Holdsworth, P. Z. S. 1872, p. 454.

Pratincola caprata, in pt. (Linn.), Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 284 (1854); Sharpe, Cat. B. iv. p. 195 (1879).

The Nilgherry Black Robin, Jerdon; *The Nuwara-Elliya Robin*, Europeans in Ceylon.

Adult male. Length 5·9 to 6·2 inches; wing 3·0 to 3·25; tail 2·25 to 2·4; tarsus 0·9; middle toe, with its claw, 0·85 to 0·9; bill to gape 0·8 to 0·82.

Iris hazel-brown; bill, legs, and feet black.

* In this *family* I have placed together the Ceylonese members of that large and interesting group of birds which are normally of small size, and possess that peculiar spasmodic habit of the wings and tail which is highly characteristic of their typical representatives, the true Chats, and which, combined with their non-sylvan habits, tend to form a bond of unity, in spite of perplexing external differences, such as a smooth and a scaled tarsus, or a bare and a bristled gape. Many of them possess Muscipine affinities, and not a few Turdine; and it therefore appears to me that the family forms a well-marked connecting-link between the Flycatchers and the true Thrushes.

The *Saxicolinæ* are placed by Jerdon among the Sylviidæ; but I shall reserve for this family Warblers which possess certain well-marked characters of structure and economy, which have been lately pointed out by Mr. Seebohm.

† The North-Indian race *P. caprata* is said by Layard to have been procured at Ambegamoa, a hill-district; it is, however, a resident species in northern parts, and does not migrate southwards, so that, probably, specimens of the present species were mistaken for it.

Above and beneath coal-black, slightly brownish on the lower part of the breast; tips of the rump-feathers, and all but the terminal portions of the tail-coverts, the median and innermost feathers of the greater wing-coverts, together with the centre of the abdomen and the under tail-coverts, white. Not unfrequently one or two white feathers about the nape exist, and the amount of this colour on the rump and lower parts varies somewhat.

Female. Length 5·6 to 5·9 inches; wing 2·9 to 3·05; bill, legs, and feet not so black as in the male.

Above, with the throat and neck dusky brown, the feathers edged brownish fulvous; wing-coverts with broad margins of the same; rump and upper tail-coverts pale rufous, the under coverts slightly lighter, and the lower breast and abdomen brownish fulvous, slightly albescent about the centre of the abdominal region.

Young. The nestling male is blackish brown above, with mesial fulvous spots to the clothing-feathers and broad margins to the wing-coverts and quills; throat and fore neck fulvous, with black edgings, and the lower breast and abdomen pale fulvescent; rump, upper and under tail-coverts faded rufous.

When the black plumage is assumed it is edged with brown; the quills are blackish brown, and the white of the abdomen extends up to the lower breast; the white rump is also tinged with rufous-buff.

Obs. This singular form, in the matter of its spotted immature plumage and the bristles which arm the gape, makes a connecting-link between the Flycatchers and the Chats. Mr. Sharpe places it, along with the rest of the "Chats," among his Muscicapidæ, which comprise, in his 4th volume of the 'Catalogue of Birds,' an immense number of species having strong rictal bristles and exceedingly diverse habits. In this species the rictal bristles do not project beyond the nasal membrane; and I therefore deem it more expedient, in a local work like this, to keep it in its original position, reserving as Flycatchers only those species which, by reason of their habits, are entitled to the name. As an inhabitant of the hills of Ceylon and South India, and of constantly larger size than its widely-spread North-Indian, Malayan, and Philippine representative, *P. caprata*, it appears to be worthy of being considered a good subspecies or local race of the latter; were it a smaller bird than *P. caprata*, thus following the rule observable in nearly all species inhabiting both Ceylon and the mainland, the question of size would not entitle it to subspecific rank; but in its case this rule is exactly reversed, and we find it an inhabitant only of elevated regions, with larger proportions than are anywhere displayed by its northern lowland representative.

I have examined a large series of *P. caprata* in the British Museum with a view of ascertaining whether it ever attained to the size of the Ceylonese and Nilghiri race, and I find that males from Nepal, Behar, N.W. Himalayas, Saugor, Burmah, Macassar, Timor, Philippines, E. Java, Celebes, and Lombok vary in the wing from 2·6 to 2·9 inches, and females from 2·4 to 2·7; throughout the whole series examined the smallness of the bills was particularly noticeable, the average length, from tip to gape, being 0·62, and in only one specimen did it reach 0·7. The black of the upper surface and breast is more glossy and intense than in *P. bicolor*, and there is generally, more especially in Malayan specimens, more white on the rump.

Mr. Hume remarks that examples of *P. bicolor* from the Western Ghâts, the Nilghiris, Palanis, and other Southern-Indian ranges are absolutely identical with others from the hilly portions of Ceylon. He considers that Sykes's name was given to a Mahabaleshwar (Western Ghâts) specimen, in which case it would apply to our bird, which was subsequently described from Ceylon by Blyth under Kelaart's MS. name *atrata*. It is highly probable that Sykes's bird belonged to the larger race, as his measurements (*P. Z. S.* 1832, p. 92) are "longitudo corporis 5·8 unc., caudæ 2·4;" and these correspond with those of our race. Mr. Hume says that the Nilghiri birds "average in length 5·5 to 5·7; wing 3; tail from vent 2·0 to 2·2." I have examined several in the national collection, and though they equal Ceylonese examples in the wing, they are not so large in the bill.

Distribution.—The Hill-Chat is only an inhabitant of the upper mountains, and even there its limit is markedly defined. Commencing with the Horton Plains, to the lonely solitudes of which its sprightly little form lends a charm, it radiates over the Nuwara-Elliya plateau, being very numerous at the sanatorium itself, and extends through Kandapolla down to the Elephant Plains and the upper parts of Udu Pusselawa, where its numbers at once decrease, its occurrence even in Maturata being not at all frequent. On the Uva side it ranges through the patna-basin to Haputale, on the southern slopes of which, as well as on those of the adjacent high ridges above Haldamulla and Bilhuloya, it is found as low as 3500 feet. Beyond Badulla it is rare; and in the upper parts of the Knuckles I am not aware that it is located at all.

In Dimbulla and Dickoya it is almost replaced by the Black Robin (*Thamnobia fulicata*). I did not observe it at all in the former region, and I understand that it is not very common in either.

In the south of India it is found commonly on the Nilghiris and the adjacent high ranges. Dr. Fairbank procured it at Kodoikanal, at the top of the Palanis. From the Nilghiris northwards it extends along the Western Ghâts to their termination, I conclude, as it appears to be found at Mahabaleshwar, which is at an elevation of 4700 feet above the sea.

Habits.—The “Nuwara-Elliya Robin” frequents the “plains” or open downs of the main range, gardens round the sanatorium, patnas in Uva, and bare or rocky localities in the districts above mentioned. It is usually found in pairs, and is a sprightly bird in its actions, with all the habits, flight, and note of a true Chat. It is constantly flitting from bush to bush or rock to rock, or perching on stakes, fences, and such like; and while thus seated, raises and depresses its tail and darts out its wings in precisely the same manner as the Stonechat, and when so doing utters a quick Chat-like note. It is far from shy, flying only from bush to bush when pursued. In the early morning it is abroad almost before any other bird; and the male, perched on the top of a low bush, sends forth a sweet little warble, which, sounding out from the thick mists which at daybreak often envelop these lonely upland plains, falls on the ear of the traveller with an effect, perhaps, more pleasing than that produced by any other bird-sound which he hears in such elevated regions. In the evenings, shortly before sunset, these Chats display much restless activity, perching on elevated stones and rocks, and darting from one to another with much chirping and jerking of the tail and wings; and I have even noticed them sitting on the telegraph-wires between “Wilson’s Bungalow” and Nuwara Elliya. Their food consists of insects and larvæ of various kinds, which they take chiefly on the ground, flying down suddenly at them from their perch, and after devouring them realighting on adjacent bushes. The small rhododendrons growing about Nuwara Elliya and on all the surrounding plains form a favourite perch for this bird.

Nidification.—The breeding-season of this species is during April, May, and June. I have not found the nest myself; but it is said to be placed in holes of banks or old walls, and mention is made, in ‘Nests and Eggs,’ of a pair that built in an old up-turned basket. The structure is described by Mr. Hume as “a large loose saucer-shaped pad, composed of grass and vegetable fibre;” this is mixed with “dead leaves, a little wool, or a piece or two of rag;” it appears to have little or no lining, and sometimes the egg-cavity is very slight. The number of eggs varies from three to five. In shape they are broad ovals, slightly pointed towards the small end; the ground-colour is delicate bluish green, thickly freckled, speckled, and streaked with brownish red; these markings sometimes form an ill-defined mottled cap at the large end, and a faint purple mottling often underlies the cap or zone. Dimensions from 0·72 to 0·82 by 0·53 to 0·63 inch.

The young leave the nest almost before they can fly; and I have found them hiding in the long grass on the Elephant Plains.

Genus COPSYPHUS.

Bill rather long, somewhat straight; culmen decurved from the middle, tip notched and well bent. Nostrils exposed, basal, oval, the membrane bordered by the nasal tufts; a few bristles at the edge of the lores. Wings with the 1st quill rather short, and the 2nd considerably shorter than the 3rd; the 4th and 5th the longest. Tail rather long, graduated and round. Tarsus smooth, longer than the middle toe and claw.

COPSYCHUS SAULARIS.

(THE MAGPIE ROBIN.)

Gracula saularis, Linn. Syst. Nat. i. p. 165 (1766).

Copsychus saularis, Blyth, Cat. B. Mus. A. S. B. p. 166 (1849); Kelaart, Prodromus, Cat. p. 120 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 263; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 275 (1854); Jerdon, B. of Ind. ii. p. 114 (1863); Blyth, Ibis, 1867, p. 11; Swinhoe, P. Z. S. 1871, p. 359; Holdsw. P. Z. S. 1872, p. 453; Walden, Ibis, 1873, p. 307; Hume, Nests and Eggs, ii. p. 303 (1874); id. Str. Feath. 1874, p. 230; Ball, *t. c.* p. 412; Hume, *ibid.* 1875, p. 133; Hume & Armstrong, *ibid.* 1876, p. 327; Hume, *t. c.* p. 458; Oates, *ibid.* 1877, p. 157; Butler, *t. c.* p. 322; Fairbank, *t. c.* p. 406.

Turdus saularis, Sykes, P. Z. S. 1832, p. 87.

Copsychus ceylonensis, Slater, P. Z. S. 1861, p. 186; Legge, J. A. S. (Ceylon Branch) p. 44 (1870-71).

The Dial-bird, Latham; *Dyal-bird* in India; *Dayal* in Bengal; *Dayyur*, Hind. (Jerdon); *Thabeitgyee*, in Arracan; *Pedda nalanchi*, Telugu; *Sa-ka*, Siam.

Pollichcha, Sinhalese; *Pega*, Portuguese in Ceylon; *Karavi-kuruvi*, lit. "Charcoal-bird," Tamuls in Ceylon, also *Manathee* in Jaffna district (Layard).

Adult male. Length 8.0 to 8.5 inches; wing 4.0 to 4.1; tail 3.5; tarsus 1.15 to 1.2; mid toe and claw 1.0; bill to gape 1.15.

Iris dark brown; eyelid neutral brown; bill black; legs and feet plumbeous brown or blackish leaden, claws black.

Head, neck, chest, and upper surface with the scapulars glossy blue-black; quills and tail black; secondary wing-coverts, outer webs of tertials, under surface from the chest, under wing-coverts, three outer tail-feathers entirely and the next pair, except on the inner margin, pure white; thighs white, black posteriorly. The white wing-coverts and outer webs of the tertials form a broad longitudinal band on the wing when closed.

Female. Length 7.8 to 8.2 inches; wing 3.8. Bill not so deep a black, and paling slightly at the base; legs and feet neutral brown.

Above blue-black, but pervaded with a greyish hue about the hind neck, and blending on the sides of the neck into the slate-colour of the throat, fore neck, and chest; the white of the wings, underparts, and external tail-feathers as in the male; posterior part of thighs blackish.

Young male. Bill blackish brown; legs and feet dark plumbeous. Head and back brownish black, the feathers of the rump edged rufous-brown; wings blackish, the feathers edged with rufous; the margins of the outer primaries paler than the rest, least and median wing-coverts with terminal rufescent spots; throat greyish white, the cheek-feathers tipped with fulvous; the lower neck and chest ochraceous, the feathers with dark edges, and those at the lower part next the white breast dark slaty; the white feathers of the breast finely edged with slaty.

This is a description of a single example; but the young vary somewhat in the extent and depth of the fulvous markings; *females* are slaty on the hind neck and back, and they have the chest paler.

Obs. The females of this species in Ceylon have, as a rule, the back of a darker shade than those from North India; hence the separation by Dr. Slater of the Ceylonese from the continental race. Examples from South India, however, correspond in this respect with ours; and I have examined a Kattiawar example quite as pale as any Ceylonese one. The pale back is a character which increases as this species ranges northwards, where it exists also in the male bird. The white of the outer tail-feathers varies with age. In very old birds from Ceylon there is, as far as I have examined them, always a certain amount of black at the inner edge of the fourth feather from the side, but it varies sometimes in the same individual as regards the two sides of the tail; for instance, a specimen before me has this feather on one side with a black inner margin near the base, on the other with a broad

black margin all along and the outer edge as well black. In specimens not fully aged there is a good deal of black on this feather, though not so much apparently as in those from the eastern side of the Bay of Bengal, where this nigrescent character seems to increase. Mr. Hume remarks that Thayetmyo birds have more black "on the fourth feather than is usually seen in typical *saularis*." In the Andamans the black augments still more, although specimens there vary *inter se*. The same writer remarks that "the third pair always have a certain amount of dusky on the inner margin, and the fourth has so much black that the white is reduced to a triangle, whose base is at the tip." Lord Tweeddale speaks of specimens with the fourth pair almost entirely black. This character, therefore, is not one on which any dependence can be placed; and I mention this, as the contrary idea has obtained with some writers. The Andaman bird has, however, the flanks tinged with rufescent, and may, perhaps, be distinct, in which case it stands as *C. andamanensis*, Hume. The Malaccan, Javan, and Sumatran birds belong to a different species, *C. musicus*, Raffles, differing, as Lord Tweeddale shows (*Ibis*, 1876, p. 309), in having the under wing-coverts white, centred with black, and the three pairs of outer tail-feathers only white, the fourth pair being black. A third species is that from the Philippines (*C. mindanensis*), which has the under wing-coverts all black, and the tail the same.

As regards the relative size of Ceylonese and continental birds, I find that a Travancore male example measures 3·8, one from Behar 3·85, and two from Nepal 4·0 inches respectively in the wing; the three outer tail-feathers in all are wholly white, and the fourth has a black inner edge as in insular specimens.

Distribution.—The Magpie Robin is universally distributed throughout the whole island up to an altitude of 5500 feet; there is no spot in the low country, save the solitudes of the damp southern and western forests, where it may not from time to time be observed; for it is as much at home in the unfrequented groves of the Park country, or along the lonely tracks through the eastern jungles, as it is in the gardens of Colombo. I found it scarcer in the scrubs of the south-east than in any other part of the low country; for, though it is very common between Batticaloa and Madulsima, and also in barren country from that part to Trincomalie, it does not seem to accommodate itself to the similar climate and vegetation of the Kattregama plains. In Dumbura and in other coffee-districts of medium altitude on the Kandy side it is a common bird, and throughout Uva, including the Elephant Plains and upper parts of Udu Pusselawa, it is not unfrequent; but it does not, I believe, range so high on the western side of the Nuwara-Elliya plateau. It is likewise a scarce bird in the higher parts of Morowak Korale, which district has a colder and damper climate than the same altitude in the Kandy country. It is very common in the Jaffna peninsula.

The Dayal is spread throughout India, becoming scarcer towards the north-west, but not diminishing in numbers in the north-east sub-Himalayan region, Cachar, Burmah, and Tenasserim. In the Andamans it is likewise common. Mr. Davison remarks that it is abundant all about Port Blair. Eastward of the kingdom of Burmah it extends into Siam and China. Of its range in the latter country Swinhoe says, "Southern China, westwards to Szechuen, and in Hainan." Returning to India to take a more complete view of its localization, we find it to be very common in the lowlands of the Madras Presidency, occurring, of course, in the intermediate island of Ramisserum. In the Palanis it is found from the base up to about 5000 feet, a similar condition to that in Ceylon; but it is not noticed by Mr. Bourdillon in the more western hills of Travancore; here, however, it has most likely been overlooked. In the Deccan it is said to be rare (Fairbank, *Str. Feath.* 1876, p. 259), but common along the hills. It occurs throughout Chota Nagpur, and is common northwards from that to the base of the Himalayas. At Murree it breeds, says Capt. Marshall; and between Mussoori and Gangaotri it is seen at moderate elevations (*Brooks*). Further west, Mr. Hume remarks that the climate is too arid for it in the regions bordering Sindh; it is not common about Mount Aboo and on the adjacent plains, and the same is true of the Sambhur district; it is, however, found in Kattiawar; and Captain Butler has noticed it near Kurrachee in Sindh. From all this district, however, it departs, according to the latter writer, in April, some few pairs, perhaps, remaining to breed.

Habits.—This handsome showy bird is a universal favourite in Ceylon, frequenting alike the gardens and compounds of the poor, and the grounds and lawns of the rich, in both of which its attractive black and white plumage and its lively interesting habits combine to render it a pleasing ornament to the verdant face of tropical nature. It does not, however, restrict itself to the society of man, for it is found in all open cultivated lands, as well as sparsely-timbered forest, in the scrubby wastes of the northern and eastern parts, and the grassy wilds of the "Park" country. Its chief attraction lies in its lively actions, and the great amount of

animation displayed by the males; these consort together when not breeding, and meet continually towards evening in little troops, which perform a sort of tournament on the grassy swards; this consists in a series of prodigious hops towards and away from each other, accompanied by a jerking completely over the back of the tail, and a corresponding spasmodic down-strutting of the wings, which movements are enlivened with loud, cheerful whistles; at a given signal the meeting suddenly disperses, and darting off in opposite directions, all will alight on adjacent branches or roofs, except, perhaps, one, who appears, by common consent, to be left master of the field. These displays are said to be for the entertainment of some coveted female. I have at times observed one looking on, but just as often not; and I believe the habit to be merely an inherent one in all males. During the breeding-season, the cocks are very pugnacious, furiously assaulting any rival that may approach their nests.

The Dayal is very fond of locality, taking up its abode in particular spots, and there remaining throughout life, breeding and rearing its young. Its song in Ceylon is considered, and justly so, one of the finest of any bird in the island; its notes are most varied and very sweet, and are all the more attractive from the late and early hours which this pretty songster keeps. Its clear voice is heard the first thing in the morning and the last at night, sometimes from the green lawn in front of the bungalow verandah, and as often from the top of a *Casuarina* or cotton-tree overshadowing the roof; its powers of imitation are considerable, tempting it to mock the voice of fowls and other birds in the vicinity of its domicile. In the breeding-season so continued is its song that it will mount to the top of a tree and warble forth its love-notes in a pour of rain. Layard relates the following anecdote, which serves to illustrate its elocutionary powers:—"On the top of a towering cotton-tree, opposite my last residence in Colombo, a Magpie Robin daily for some weeks charmed me with his song, whilst his mate sat brooding her eggs or callow nestlings in the roof of a native hut beneath him. One morning, after the young had left their cradle and betaken themselves to the neighbouring compounds, I was attracted by cries of distress from various birds and squirrels, and above all I heard the seemingly plaintive mewling of a cat. I had no *living* specimen of the last in my museum, so wondering what could be the matter, went into the garden to see. I found the mewling proceeded from my friends the Robins, who were furiously attacking something in a bush, whilst the birds and squirrels screamed in concert. There I found one of the young robins . . . caught, as I thought, in the tendrils of a creeper. I put out my hand to release it, when, to my surprise, I saw the glittering eyes of the green whip-snake (*Trimesurus viridis*), in whose fangs the bird was struggling. I seized the reptile by the neck and rescued the bird, but too late; it lay panting in my hand for a few moments, then fluttered and died. On skinning it I found no wound, except on the outer joint of the wing by which it had been seized, and am confident that fear alone deprived it of life."

In India its pugnacious disposition assists the bird-catchers in capturing it. Hodgson, in writing on this subject, says that the professional bird-keeper, availing himself of the propensity the male birds have of calling each other in the breeding-season, "takes out his tame male on his fist, and proceeds to the nearest grove or garden; the bird at his bidding presently challenges, and a desperate contest ensues between the two, during which the fowler readily secures the wild bird with the tame one's assistance; for the latter will deliberately aid his owner's purpose, seizing the wild bird at the critical moment with both claws and bill, and retaining it until his master comes up, in case it has not been so exhausted by the previous contest as to be disabled from flying away at the man's approach. Fighting the tame birds is a favourite amusement of the rich; nor can any race of game-cocks contend with more energy and resolution than do these birds."

The diet of this Robin consists of insects of all sorts; but when tame it will come into verandahs of bungalows and pick up crumbs or any thing that may be thrown out to it.

Nidification.—In the west and south of Ceylon this Robin breeds between the months of February and July, having apparently more than one brood in the season. In the north it nests as early as November, and continues breeding throughout the north-east monsoon. In towns and about houses the nest is placed in holes in walls, under roofs, in decaying cocoanut- or jack-trees, and in the jungle in stumps and hollow trees, &c. The nest is usually an ample, shallow, loosely made cup of grass, dry roots, and fine twigs, measuring about 3 inches in diameter; sometimes, however, when placed in a niche in an old wall, it is a flat, pad-shaped structure, and is often lined with hair, pieces of rag, cotton, or other substance gathered about human habitations. A nest I found, built in the ordinary plaited cocoanut-leaf basket, used by the natives to protect their

ripening plaintains, was a shapeless structure of grass and dried weeds. The eggs are from two to four in number, and are broad short ovals in shape, of a pale bluish-green or very light greenish ground-colour, profusely speckled and blotched throughout, but most thickly at the large end, with bluish grey and two shades of umber-brown, with a few blackish blots and occasionally short streaks of deep sepia at the latter part. Some eggs are freckled uniformly all over with light brown, and others are very sparingly spotted. They measure from 0.91 to 0.96 inch in length, and from 0.65 to 0.75 in breadth. In Burmah, Mr. Oates writes, "This bird almost invariably selects a large hollow bamboo, many of which are generally to be found lying about the verandahs and cucumber-framings of the native houses, and places its nest about 2 feet inside the entrance."

Genus CITTOCINCLA.

Bill slenderer and more compressed than in *Copsychus*. Tail with the central feathers elongated and the laterals much graduated. Legs and feet somewhat slenderer than in *Copsychus*.

CITTOCINCLA MACRURA.

(THE LONG-TAILED ROBIN.)

Turdus macrourus, Gm. Syst. Nat. i. p. 820 (1788).

Kittacincla macroura, Gould, P. Z. S. 1836, p. 7; Blyth, Cat. B. Mus. A. S. B. p. 165 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 279 (1854); Jerdon, B. of Ind. ii. p. 116 (1863); Holdsw. P. Z. S. 1872, p. 453; Legge, Ibis, 1874, p. 21.

Copsychus macrourus, Hodgson, Cat. B. Nepal, p. 67 (1844); Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 264.

Cercotrichas macrourus, Hume, Nests and Eggs, ii. p. 306 (1874); Ball, Str. Feath. 1874, p. 412; Hume, *ibid.* 1875, p. 134; Ball, *t. c.* p. 293; Oates, *ibid.* 1877, p. 157; Hume & Davison, B. of Tenass., Str. Feath. 1878, p. 333.

Cittocincla macrura, Legge, Ibis, 1875, p. 396.

The Long-tailed Thrush, Latham; *The Indian Nightingale*, Jerdon; *The Shāma* (from its native name), Europeans generally in India and Ceylon; *Burmese Nightingale*, Davison; *Shāma*, in Bengal; *Abbeka*, Hind.; *Murabuta*, Malay; *Changchooi*, Sumatra.

Wal-pollichcha, Sinhalese.

Adult male. Length 10·5 to 11·3 inches (the centre tail-feathers varying much); wing 3·7 to 3·85; tail 6·5 to 7·0, centre tail-feathers exceeding the next pair by 1·75 to 2·2; tarsus 1·0 to 1·1; mid toe and claw 0·85 to 0·9; bill to gape 0·95 to 1·0.

The measurements of the tail-feathers are those of perfectly-plumaged birds.

Female. Wing 3·5 inches; centre tail-feathers shorter than in the male.

Iris brown; bill black; legs and feet fleshy, with a brownish wash on the toes; claws blackish.

Head, neck, back, wing-coverts, throat, and chest glossy blue-black; tail coal-black; wings brownish black; rump, upper tail-coverts, and terminal $1\frac{1}{2}$ inch of the four outer tail-feathers on each side white; beneath, from the chest, including under tail-coverts, light ferruginous; under wing-coverts paler than the breast; thighs white above, changing to black at the knee.

In some examples the 5th tail-feather from the exterior has some white at the tip.

Young. Iris brown; bill blackish, pale at the base beneath; legs and feet fleshy. The nestling has the head, back, sides of neck, and wing-coverts dark brown, with fulvous centres to the feathers of the body, and roundish terminal spots of the same on the wing-coverts; rump white, crossed by a brownish band; upper tail-coverts mixed black and fulvous; quills edged yellowish fulvous; throat and upper breast fulvous tawny, the upper parts with blackish-brown edgings.

Obs. As will be observed, the tail-feathers in Ceylonese examples of this species vary considerably in length, old or fully matured birds having them, no doubt, the longest. This same variation occurs in Indian specimens. Mr. Oates gives the dimensions of males from Thayetmyo as—length 10·35 to 10·8, wing 3·7, tail from vent 5·9 to 6·2; and of females—length 9·25, wing 3·65, tail from vent 5·0. These measurements are somewhat smaller than those of our birds. In Tenasserim its measurements, as recorded by Mr. Hume, are:—Males 11·0 to 11·75, tail from vent 6·5 to 7·2, wing 3·65 to 3·9; females—length 8·12 to 8·5, tail from vent 4·0 to 4·35, wing 3·25 to 3·4. I find a Nepal specimen with the breast very deep chestnut (wing 3·7, tail 6·4); a Travancore example is similar to it, and a Tenasserim and Malaccan (wing 3·5, tail 6·8, and wing 3·75, tail 6·5, respectively) very pale in that part. Two skins from Travancore are very long in the tail, measuring 7·3 and 7·5, and have a good deal of black at the base of the three lateral feathers.

C. suavis, Sclater, from Borneo is a very closely allied Malaccan race of this species, differing in the coloration of the outer tail-feathers, which want the black bases. In one or two specimens, however, which I have examined there is a

trace of the black, which demonstrates that this is merely a local race, and somewhat uncertain in its distinctive character.

Distribution.—In the west of the island the Sháma is very common from the Maha and Deduru oyas northward, and throughout the whole of the low country to the east and south-east of the hill-zone. Its charming notes are everywhere to be heard in the forests round Trincomalie, and it is nowhere more plentiful than on the Fort-Ostenburgh hills. In the jungles of the south-west it is much less common; but is, notwithstanding, found close to Galle; the same may be said of the Western Province generally, in which part it is chiefly located in the ranges stretching from the Three and Four Korales northward to Kurunegala; but here it frequents the densest underwood in the forests and impenetrable bamboo-jungle, and thus almost entirely escapes notice. From the low country it ranges through the sub-alpine forests to an altitude of about 3500 feet, being tolerably common in Dumbara, Hewahette, Maturata, and Uva generally, affecting chiefly the patna-woods which line the many streams and rivulets flowing into the tributaries of the Mahawelliganga. In the latter district and in Haputale it is found up to 4000 feet elevation. Layard first met with it in Lady Horton's walk at Kandy.

Of the distribution of the "Nightingale" in India, Jerdon writes:—"It is common in all Malabar, especially in the upland districts, as in the Wynaad, more rare in the Eastern Ghâts, and not unfrequent in all the jungles of Central India to Midnapore and Cuttock. It also frequents all the sub-Himalayan forests, and extends to the hill-tracts of Assam, Sylhet, Burmah, and Malacca." Mr. Hume more clearly defines its northern range when he says it is a permanent resident of the warm and well-watered jungles of the "sub-Himalayan region as far west as the Ganges, Southern and Eastern Bengal, Assam, Cachar, and Burmah." In all these regions it is evidently local, occupying those districts only which are well covered with jungle. Referring to the observations of late writers in 'Stray Feathers,' we find that in the Palanis it is recorded from the eastern base of the range, and from the Travancore hills is not mentioned at all by Mr. Bourdillon; in Khandala it is said to inhabit the thick woods along the hills. From the jungles of Central India it extends through Chota Nagpur to Eastern Bengal and the base of the Himalayas; but Mr. Ball observes that it is extremely rare in the first-named locality, and occurs sparingly in the Rajmehal hills. It appears to be resident in this part of India, for Capt. Beavan records that it breeds in Manbhum. To the east of the Bay of Bengal it is more common than in the district last under consideration; in Cachar it appears, however, to be only a winter visitor. In Pegu it is, says Mr. Oates, very common on the hills, but in the more southern province of Tenasserim, though found throughout its wooded portions, does not ascend the hills; beyond this limit it extends through Malacca to the islands of Java and Sumatra. Its range, however, is continued equally far towards the east, for it is an inhabitant of China, Swinhoe (P. Z. S. 1871, p. 359) recording it from Hainan.

Habits.—This showy bird is perhaps the best songster in Ceylon, its fine notes acquiring for it, with those who have made its acquaintance in the forests, a reputation equal to that which it has obtained in India. It frequents thick jungle, underwood in forest, and bamboo-scrub in portions of the island where this tree grows; it passes its time near the ground, seldom mounting to any height, but perching on some low branch or stick, and there warbling forth its song. There is no doubt that in such localities as these the notes of the Sháma, swelling forth from the impenetrable thickets, while the bird is hidden from view, naturally tend to inspire the listener with a stronger idea of their perfection than they perhaps really deserve. Far be it from me to wish to detract from its merits as a songster; for though the power of its notes may perhaps be exaggerated, nevertheless their absence from the wilds of Ceylon would be much missed, by the naturalist at any rate. Among those who have descanted on its melodious voice, none, perhaps, have paid the Sháma a greater tribute of praise than Tickell. He writes, in the 'Journal of the Asiatic Society':—"In the mornings and evenings the notes are heard through the valleys, ceasing with twilight. The strains sweep with a gush of sweetness through the enchanting solitudes which this bird makes its favourite resort, at times when other birds are silent in rest; and in unison with the surrounding scenery, in which nature seems to have lavished every fantastic invention of beauty, the effect produced on the mind and ear can alone be appreciated by those who have witnessed the magnificence of a tropical forest." Besides the notes which make up its song, described again by Jerdon as "a most gushing melody, of great power," this bird has others of a most varied character, among them being

one resembling a low *churr*, followed by a spitting sound, generally uttered when it is disturbed in its sylvan haunts. It is very shy, flying away at the least sound of a cracking twig; but its retreat is but short, and on realighting it commences to sing immediately. It has a habit of uttering a singular clicking sound, jerking up its tail at the same time; and this is usually performed when it is disturbed or hears any sound in the forest to which it is not accustomed. Mr. Davison speaks of the male performing a similar sound, as he supposes, with its wings, while flying across any open space at sunset; it may be that this is similar to that which I refer to.

In India it is, of course, highly prized as a songster; but in Ceylon it is scarcely ever met with as a caged bird, as the natives are very indifferent bird-nesters, and seldom or never find its young. Concerning its habits when in confinement, Blyth writes, "It has a considerable propensity to imitation; and one in my own possession learned to give the crow of a cock to perfection, also the notes of the Koel, the chatter of a troop of Saat Bhyes (*Malacocercus canorus*), &c. Many thousands of these elegant birds are kept in Calcutta; and the universal absurd practice is to darken their cages by wrapping them with several folds of cloth, enough to stifle the luckless captives in this climate, though it must be confessed that they sing most vigorously while thus circumstanced, but certainly not more so than mine, which were exposed to the light and air. It is a practice of the rich natives to employ servants to carry about their Shámas and other birds; and the number which are thus borne about the streets of Calcutta is astonishing; the poor birds are shut out from all light and air, like Mahomedan ladies enjoying (!) their evening drive; but they (the birds) nevertheless sing forth most lustily and melodiously." I have found the diet of those shot in Ceylon to be entirely insectivorous, consisting of small beetles, ants, flies, &c. It lives in pairs, the female usually keeping at some little distance from her companion; and, from what I have observed, it appears to attach itself to one particular spot, for in the northern parts of Ceylon it may often be found frequenting the scorched-up wood bordering newly-burnt clearings, as if it were loath to be driven from the haunt which the flames had devastated; it is possible, however, that it may find an abundance of food in these localities, uninviting as they may seem to human eyes. In his notes relative to the discovery of this bird in the woods near Kandy, Layard graphically describes the magnificent aspect presented by the beautiful vale of Dumbara, as at early dawn the dense fog which had mantled it during the night was lifted by the gentle breeze, suddenly unfolding all the beauties of the rocky Mahawelliganga and its wooded banks.

Nidification.—I have never received any information concerning this bird's nesting in Ceylon; in the north the young are about in August and September, proving that it lays in June and July. Mr. Davison found its nest in Tenasserim. One situated on the road to Meeta Myo, at 4000 feet above the sea, was obtained in April; it was built in a hole in an old stump growing on the side of a mountain-torrent, and was made of dry leaves and twigs, the egg-cavity being lined with finer twigs. Another was situated in a deep hole in a stump, the cavity having been filled up by the bird for more than 12 inches; the materials were the same. Both these nests had contained three eggs. Mr. Hume describes them as "being moderately broad ovals, a good deal compressed towards the small end." They have a slight gloss, and are "dull greenish stone-colour, everywhere densely freckled with a rich almost raw-sienna brown, in amongst which dull purplish markings are, when the egg is closely looked into, found to be thickly intermingled." They vary from 0·87 to 0·9 inch in length, and from 0·6 to 0·62 in breadth.

Genus THAMNOBIA.

Bill moderate, slender, curved throughout, wide at the base, compressed towards the tip, which is not notched. Nostrils oval, apert; rictal bristles wanting. Wings rounded; the 1st quill short, the 2nd equal to the 8th, and the 4th and 5th the longest. Tail broad and rounded. Tarsus long, exceeding the middle toe and claw, and covered in front by well-defined but smooth scutæ; toes strong, with the claws moderately straight.

THAMNOBIA FULICATA.

(THE BLACK ROBIN.)

Motacilla fulicata, Linn. Syst. Nat. i. p. 336 (1766).

Sylvia fulicata, Lath. Hist. vii. pp. 111 (♂), 112 (♀) (1821).

Iros fulicatus, Sykes, P. Z. S. 1832, p. 89.

Thamnobia fulicata, Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 264; Blyth, Cat. B. Mus. A. S. B. p. 165 (1849); Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 256; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 281 (1854); Jerdon, B. of Ind. ii. p. 121 (1863); Holdsw. P. Z. S. 1872, p. 454; Hume, Nests and Eggs, ii. p. 307 (1874); Legge, Ibis, 1874, p. 21, et 1875, p. 396; Davidson & Wender, Str. Feath. 1877, p. 83.

Rusty-vented Thrush and *Sooty Warbler*, Latham; *Sooty Warbler*, Kelaart; *Indian Robin*, Jerdon.

Kalchuri, Hind.; *Nalanchi*, Telugu; *Wannati-kuravi*, Tamul, lit. "Washerman's bird" (Jerdon).

Kalu-pollichcha, Sinhalese; *Kari-kuruvi*, Tamil, lit. "Blackbird."

Adult male. Length 6·2 to 6·4 inches; wing 3·0; tail 2·5; tarsus 1·0; mid toe and claw 0·8; bill to gape 0·7.

Iris brown; bill, legs, and feet black.

Entire body, except the abdomen, glossy blue-black, this, with the under tail-coverts, is fine chestnut; wings and tail coal-black; a large patch on the wing, formed by the lesser and median coverts, white.

Female. Length 6·2 inches; wing 2·8.

Bill and legs not so black as those of the male.

Above blackish brown, with a brownish hue caused by the palish margins of the feathers; quills slightly paler than back; secondary coverts edged with greyish; upper tail-coverts and tail black; beneath slaty black, under tail-coverts and tips of the abdominal feathers dark chestnut.

Young. Blackish brown; upper tail-coverts and tail black; beneath dark brown, with a dusky fulvous stripe down the throat, the feathers of the head and fore neck faintly tipped with rufescent greyish; ear-coverts striped with fulvous; under tail-coverts rufous.

Obs. This singular form is a difficult bird to deal with; its peculiar shaped bill and wings, its smooth gape and scutellated tarsus show it to possess Timaline affinities; and yet it has not in any way the habits of a Babbler, but is thoroughly Saxicoline in its economy.

Ceylonese specimens correspond in size with those from South India: males in the British Museum and in my own collection measure from 2·8 to 2·95 inches in the wing; a female is somewhat browner above, with a more sandy

hue on the head, throat, and chest than in most insular specimens of this sex. It is replaced in North India by the "Brown-backed Robin;" and between the two forms there are in Sindh, Guzerat, and Kattiawar, according to Mr. Hume, intermediate birds; he writes, "the backs of the males are much too dark for the one and not dark enough for the other." He further remarks that between the two types every possible intermediate link is to be found, and that it appears advisable to include both as local races of one species. Typical specimens of both forms, however, are very distinct from one another; and each appears to me to be a good *race* in itself, notwithstanding that the two extremes have a tendency, in particular districts, to unite. The females of *T. cambaiensis* are very distinct; they have the under surface uniform brownish grey, presenting the opposite character to that of the male; specimens of this sex from Nepal measure 2·6 to 2·7 inches in the wing.

Distribution.—The Black Robin is very numerous in the dry parts of Ceylon, and affects, by choice, the maritime districts of them, viz. from Chilaw northward to Jaffna and the adjacent islands, and thence down the whole east coast round to Tangalla on the south. In the Western Province and south-western districts it is less common, but is nevertheless in these parts a familiar bird, as it locates itself, to a great extent, in the vicinity of human habitations. As regards the latter part, I noted, in the 'Ibis,' 1874, that it was more numerous in the Galle district than "in the Western Province, appearing as if it increased gradually towards the south-east coast, where it is extremely abundant;" this seems, on further experience, to be the case. It inhabits the southern ranges and the lower hills of the Kandyan Province, and is found in coffee-districts of considerable altitude on the north and west of the main range, being not uncommon as high up as Maturata on one side and Lindula on the other. In the former neighbourhood its limit is abruptly defined by the high spur which culminates in the mountain of Mahacoudagalla, to the south of which it does not seem to pass, being immediately replaced on the Elephant Plains by the Hill Stonechat, *Pratincola bicolor*. It again reappears in Uva, extending from Badulla eastwards to Madulsima, and thence into the low country, in the interior of which, as well as to the south of Haputale, it is common. On the Dimbulla side I have seen it as high up as the Agra patnas, and about Lindula it is not uncommon.

In India this species is found, according to Jerdon, as far north as Taptee on the west and the Godaveri on the east, and is tolerably common in the south. It does not appear to frequent regions of any elevation, as it is not recorded from Travancore, and in the Palanis only from the eastern base. Dr. Fairbank says that it is found in the villages of the Deccan, as well as on the sides of all the hills. Messrs. Davidson and Wender likewise say that it is common in this region. To the north of this region it is replaced immediately by the species already noticed in the "observation." It inhabits the island of Ramisserum and the adjacent coast. I have lately acquired a specimen of *T. cambaiensis* from Mr. Whitely's collection, labelled Malabar; but I am of opinion that there has been a mistake in the locality.

Habits.—This familiar little bird is a general household favourite in Ceylon, frequenting the vicinity of human dwellings, perching on walls and roofs, and resorting even to the verandahs of bungalows. It seems to covet the companionship of man, taking up its abode in the very towns, and, as Layard remarks, frequents alike the Governor's palace and the native hut. I remember that a pair established themselves in an unused portable engine at the Colombo Breakwater Works, and dwelt fearlessly among the busy throng of workmen; in the evening, when the labours of the day were ended, they would roam about among the huge "beeton" blocks and warble out their cheerful little notes, their tiny black forms contrasting strangely with the enormous white masses inanimately waiting their turn to be lowered into the deep. In the northern and eastern parts, where it is abundant, and likewise in many portions of the interior, it is by no means restricted, as Layard supposed, to the neighbourhood of houses, but is found in all open rocky places, in newly burnt clearings, and in cultivated cheenas; and in the Central Province it affects stony patnas and bare hill-sides. It is particularly fond of the low jungle, interspersed with "wood-apple" and other trees, which is characteristic of the east coast; and I have often enjoyed its companionship when sitting in the verandahs of huts and outhouses in that part and resting after the labours of the morning's collecting; it would come into the verandah and perhaps fly on to the arm of the long lounging-chair, or take up its position on the railing at the other end of the building, and give out its animated little call-note to its shier partner, who flitted from bush to bush in the adjacent compound. It is most animated in its movements, carrying its tail erect and jerking it up with a corresponding strutting down of its wings when giving out its pretty warble. It passes

much of its time on the ground, darting about after flies and insects, and moving hither and thither with a short jerky flight. It consorts in pairs; but the young brood remain a long time with their parents, thus forming after the breeding-season a little troop of three or four.

Jerdon writes as follows concerning this sprightly little bird :—" Its familiar habits well entitle it to the name of Indian Robin. It is usually found about villages, pagodas, old buildings, and mud walls, often perching on the roofs of houses and tops of walls, and feeding in verandahs, or occasionally even entering houses. It is, however, not confined to the vicinity of houses or villages, but is very common on rocky and stony hills, and in groves of palmyra or date-palms. It is generally seen singly or in pairs, and feeds on the ground, on which it hops with great agility, frequently pursuing and capturing several insects before it reseats itself on its perch either on a house or on a neighbouring tree or bush."

Nidification.—The "Black Robin" breeds during the months of March, April, May, and June in the Central, Western, and Southern Provinces, the majority of nests being built at the end of April. In the coffee-districts it often chooses the bank of one of the "zigzags," and builds in a niche in these exposed situations, heedless of the numbers of passers by. A hollow in the ground under the shelter of a rock or stone is another favourite spot; and not unfrequently the nest is constructed on the top of a low outhouse wall, or in the side or against the beam of a roof. It is loosely constructed, and varies in size according to the locality; those which are built in niches or holes are made so as to fill the cavity, and are constructed of dry roots and grass-stalks of various sizes, being lined with finer materials of the same sort. One which I found placed against the "wall plate" of the roof of an outhouse in the Southern Province had a foundation made of portions of a cooley's blanket, which the bird had literally made wool of, completely pulling it to pieces and placing it in layers beneath the other materials of the nest, which consisted of moss, hair, roots, and grass. Two is the normal number of eggs, but sometimes three are laid; the ground-colour is greenish white, and at the obtuse end they are spotted thickly with bluish and grey, mixed with several shades of brown, which sparsely extend over the whole surface; these markings are often confluent and form a zone or cap at the large end; but this feature is entirely wanting in other specimens. They vary in length from 0.82 to 0.87 inch, and in breadth from 0.6 to 0.62 inch. After preservation they fade to a white colour.

In the north Layard has found the nest in December. In India the principal months are March, April, and May. The same miscellaneous materials are sometimes found in Indian nests as in Ceylonese. Mr. Aitken mentions having found one in a thatched roof; but such an elevated position is unusual, and he rightly states that the bird does not build so high as the Magpie Robin.

Genus CYANECULA.

Bill straight, much compressed towards the tip, which is slightly notched. Nostrils exposed; rectal bristles few and small. Wings somewhat pointed; 1st quill slightly exceeding the primary-coverts; 3rd and 4th the longest; 2nd equal to the 6th. Tail shorter than the wings and even at the tip. Tarsus long and smooth. Toes rather short and weak.

CYANECULA SUECICA.

(THE RED-SPOTTED BLUETHROAT.)

Motacilla suecica, Linn. Syst. Nat. i. p. 336 (1766).

Cyanecula suecica (L.), Brehm, Vög. Deutschl. p. 350 (1831); Blyth, Cat. B. Mus. A. S. B. p. 167 (1849); Layard & Kelaart, Cat. B. Prodromus, App. p. 57 (1853); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 311 (1854); Jerdon, B. of Ind. ii. p. 152 (1863); Blyth, Ibis, 1867, p. 17; Holdsw. P. Z. S. 1872, p. 454; Shelley, B. of Egypt, p. 85 (1872); Dresser, B. of Europe, pt. 26 (1874); Seebohm & Harvie Brown, Ibis, 1876, p. 125; Scully, Str. Feath. 1876, p. 145.

Cyanecula cærulecula (Pall.), Hume, Str. Feath. 1873, p. 190.

The Bluethroat, *Blue-throated Warbler* of some; *The Blue-necked Warbler*, Lath.; *The Swedish Nightingale*, in Sweden. *Hussenipidda*, Hind.; *Gunpigera* and *Gurpedra*, Beng.; *Dumbak*, Sindh; *Chaghchi*, Turki (Scully).

Adult male. Length (from skin) 5·4 inches; wing 2·9 to 3·1; tail 2·5 to 2·6; tarsus 0·95 to 1·05; middle toe and claw 0·8; bill to gape 0·65.

“Iris dark brown; bill black, interior of mouth yellow; legs and feet black and brownish black; claws black” (*Scully*). Above, with the wings earth-brown, pervaded slightly with greyish on the hind neck, and inclining to ochraceous brown on the rump; primaries edged pale; the longer upper tail-coverts darker brown than the back; the central tail-feathers and the terminal third of the rest blackish brown; the remaining portion of them and the middle tail-coverts rufous.

A broad buff supercilium, extending from the nostril to the ear-coverts; lores blackish; ear-coverts tawny; chin, upper part of throat, its sides, and the lower part of the fore neck glistening lazuline blue, in the centre of which is a large rufous patch; beneath the blue of the fore neck is a black band, succeeded by another and a broader one of rufous; remainder of under surface dull white; under wing-coverts pale rufescent.

The depth of the rufous colour and the extent of the black and rufous pectoral bands depend on age. Specimens which show signs of immaturity in the presence of rufescent tippings to the wing-coverts have the throat-spot and the rufous pectoral band much paler than fully-matured birds.

Female. Wing 2·9 inches; tarsus 0·9.

Bill pale at the base; legs pale brown, feet blackish brown.

Above similar to the male, but with the forehead and crown darker, the centres of the feathers being blackish brown; a broad supercilium and almost the entire loreal space whitish; throat and fore neck white, like the lower parts; the sides of the fore neck and a zone connected with them across the chest blackish, on each side of which the feathers are often tinged with rufescent and mingled with a few blue ones.

In this species the females, probably those which are barren, occasionally assume the plumage of the male. Such an example, in course of change, obtained in Heligoland by my friend Mr. Seebohm, has a white throat-patch, with the lower part of it rufous, on each side of it is a black patch; there is a blue zone across the chest, which shades gradually into the blackish band.

Young (Yenesay, Siberia, August, in Mus. Seebohm). Head, back, wing-coverts, throat, and chest blackish brown; the feathers on the upper parts, sides of the throat, and chest with broad fulvous striæ; the chin and down the centre of the throat fulvous; wings blackish brown, the primaries and secondaries edged with rufescent; tail the same, upper tail-coverts dusky rufous; tail with the black terminal portions slightly deeper than in the adult, the rufous bases the same in colour; belly dusky whitish, the feathers tipped with blackish, which gradually increases up to the chest; under tail-coverts pale rufescent.

After the autumn moult the nestling acquires a certain amount of blue on the throat. A Heligoland example killed in May, which would be about ten or eleven months old, has a blue gorge, mingled with buff spottings, a small rufous spot on the throat, immediately succeeded by the black zone, the feathers of which are tipped with white; at the next moult the blue colour spreads, and the rufous, as already mentioned, deepens and becomes pure.

Obs. The White-spotted Bluethroat (*C. leucocyanea*), which is generally admitted now to be a distinct race, has, as its name implies, the spot of the throat satiny white. The present species, however, exhibits a tendency to assume the white throat in some localities, although in other parts, such as Scandinavia, it never does; while there are likewise certain regions (Holland and N. Germany) in the habitat of the other race where it is known always to possess the white throat. Captain Shelley, writing in his 'Birds of Egypt' of *C. suecica*, says they differ considerably in the colour of the throat-spot, "which may be met with in all stages from pure white to rufous." Dr. Altum relates an instance, in 'Naumannia' for 1855, of a young bird, which turned out to be a true *C. leucocyanea*, assuming a red throat-spot for a few days during the time that this was turning from greyish white to pure white; from which combined testimony we gather that each race occasionally assumes in the throat-spot the colour of the other, but that they put on their true dress in the breeding-season in the localities to which they resort to rear their young. Mr. Hume remarks that the white-spotted race is *rarely* found in India. Specimens so identified may have been perhaps *C. suecica*. A third race exists in Germany, Holland, and Spain, in which the throat is unspotted blue. It is rare, and is the *C. wolffi* of Brehm.

Distribution.—The interesting fact that at certain periods of their existence birds are possessed of the instinct of migration to a greater degree than at others, and consequently are induced at times to overstep the ordinary limits of their annual journeys, is demonstrated in more than one instance in the history of Ceylon ornithology.

The case of the present species is one of the most interesting which I have to deal with in this work. It takes its place in our lists as a *migratory* straggler on the evidence of Layard, who procured "a few specimens in the month of March at Ambegamoa;" one of these is still extant in the Poole collection, and is the only example I have ever seen from Ceylon. I am under the impression that a bird I met with in a thicket, while traversing some jungle on the slopes of the Dolookanda mountain in the Seven Korales, was this species; but I was unable to verify my identification, either by shooting it or sufficiently observing it as it darted into the underwood in the shade of the thick jungle. On some future occasion it will doubtless be procured again in Ceylon; for its visits are, perhaps, of more frequent occurrence than has been supposed.

It is a cool-weather visitant to India, spreading more or less throughout the country; but it does not appear to be often found in the extreme south, neither Dr. Fairbank nor Mr. Bourdillon having procured it. Jerdon remarks that it is found in "suitable localities," from which I gather that there are many districts in which it is not usually met with. It extends as far east as Burmah, having been procured by Wardlaw Ramsay on the Pegu plain, and to the Andamans it is a regular annual visitor. It leaves the country for the north in March and April, and arrives in Turkestan, according to Dr. Scully, at the end of March, and leaves again in September. Its migration, however, is continued much further north than Turkestan; for Mr. Seebohm procured it in the valley of the Yenesay, and found it breeding as far up as latitude $66\frac{1}{2}^{\circ}$ N. Dr. Finsch found it in July 1876 on the Chinese Altai and on the Irtisch, as also at Semipalatinsk; and Von Middendorff observed it breeding as far north as 70° N. It extends to the eastern parts of Siberia, and is found, according to Swinhoe, throughout China. From Western Asia and North-eastern Africa it migrates to Northern Russia and Scandinavia, breeding there in great numbers; and it occurs on passage in the spring in Heligoland. In Palestine it is, according to Canon Tristram, a winter visitant. Captain Shelley remarks that it is an extremely abundant species in the delta of the Nile, and that it is very generally distributed throughout Egypt. It does not arrive in Northern Russia until late in the spring, as Messrs. Seebohm and Harvie Brown did not observe the first migrants to the Lower-Petchora district until the 23rd May.

Habits.—This handsome Warbler, which is gifted with such fine notes that it is styled, in some countries, the Nightingale, frequents gardens and open country in India, and is, according to Jerdon, particularly partial to reeds and corn-fields. Its habits are in the highest degree interesting. I subjoin the following account of its vocal powers from Messrs. Seebohm and Harvie Brown's paper on the Birds of the Lower Petchora:—"Often were we puzzled by the mimicry of this fine songster. On one occasion, after listening for some time to the well-known musical cry of the Terek Sandpiper, blended with the songs of scores of other birds, on approaching we saw our little friend perched high in a willow-bush, with throat distended, bill rapidly vibrating, and uttering the *tirr-r-r-whui* with perfect distinctness. We have heard the Blue-throated Warbler also imitate, amongst other bird-voices, the trilling first notes of the Wood-Sandpiper, or the full rich song of the Redwing.

Sometimes he runs these together in such a way as to form a perfect medley of bird-music, defying one who is not watching to say whether or not the whole bird-population of that part of the forest are equally engaged in the concert at the same time." In this district it frequents underwood in the pine- and juniper-forests clothing the sides of the valleys and also the birch- and willow-thickets along the river-banks. Captain Shelley remarks that, "although it frequents reedy marshes and mustard-fields, or wherever the vegetation is luxuriant, it rarely alights upon the plants, but almost invariably keeps to the ground, where it runs with tail upraised, stopping every now and then to pick up an insect or to watch the intruder from the edge of its retreat." Its disinclination to perch, and normal terrestrial habit, which show its affinity to the rest of the Saxicolinæ, are likewise noted by Dr. Scully, who observed it in Yarkand, and who remarks that "it did not seem to perch, but moved about pretty rapidly on the ground, picking up insects, and every now and then spreading out its tail widely." The same writer says that its Turki name is given it on account of a sound which it is said to make, resembling the noise of the spinning-wheels used by the women of Yarkand. It feeds on insects, and while doing so, says Jerdon, sometimes jerks up its tail, but does not quiver it like the Redstarts.

Nidification.—In the neighbourhood of Yarkand, the Bluethroat breeds in May, the nest being, says Dr. Scully, placed usually in long grass. The eggs are described as "moderate ovals, compressed at one end, and with a very slight gloss; the ground-colour is pale greyish green, abundantly blotched and spotted with light greyish brown, the whole surface of the egg having these markings pretty widely distributed over it."

PASSERES.

Fam. TURDIDÆ.

Bill straight, compressed towards the tip, the culmen gently curved, and the tip more or less notched. Rictal bristles generally small. Wings with the 1st quill *markedly reduced*. Tail, shorter than the wings, of 12 feathers, except in one genus, in which the number varies from 12 to 14. Tarsus *smooth*, longer than the middle toe.

With a single annual moult.

Genus LARVIVORA.

Bill straight, compressed; culmen slanting from the base and curved at the tip only, which is obsoletely notched. Rictal bristles short and scanty. Nostrils exposed. Wing with the 1st quill much reduced, slightly exceeding the primary-coverts; the 4th longest, and the 2nd equal to the 6th. Tail short, about two thirds the length of the wing. Tarsus long and slender, smooth in front. Feet delicate; the middle toe much exceeding the lateral ones.

Of small size.

LARVIVORA BRUNNEA.

(THE INDIAN WOODCHAT.)

Larvivora brunnea, Hodgson, J. A. S. B. 1837, vi. p. 102 (female).

Larvivora cyana, Hodgson, *t. c.* p. 102 (male); Jerdon, B. of Ind. ii. p. 145 (1863); Holdsworth, P. Z. S. 1872, p. 454; Hume, Nests and Eggs, ii. p. 324 (1874).

Calliope cyana (Hodgs.), Blyth, Cat. B. Mus. A. S. B. p. 169 (1849); Layard & Kelaart, Prodromus, Cat. B. App. p. 57 (1853); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 266.

Phaenicura superciliaris, Jerdon, Cat. B. S. India, Madr. Journ. 1844, xiii. p. 170.

Larvivora superciliaris (Jerdon), Blyth, Ibis, 1867, p. 16; Brooks, Str. Feath. 1875, p. 240; Fairbank, *ibid.* 1876, p. 259.

White-browed Redstart; *The Blue Larvivora*, Hodgson; *The Blue Wood-Chat* (Jerdon).

Manzhil-pho, Lepchas. *Robin* of Planters in Ceylon.

Adult male and female. Length 5·3 to 5·6 inches; wing 2·9 to 3·1; tail 1·9 to 2·1; tarsus 1·0 to 1·1; mid toe and claw 0·8; bill to gape 0·75.

Male. Iris brown; bill blackish brown above, under mandible brown, pale at base and at gape; legs and feet delicate fleshy, claws concolorous.

Above, with the wing-coverts and tail dull blue; lores, cheeks, beneath the gape, and ear-coverts black, blending on the sides of the neck into the blue; a conspicuous white supercilium, and in some the chin and a thin bordering line below the cheeks white; wings blackish brown, the outer webs of the quills bluish, the margins of the outer primaries the palest; throat, chest, breast, and flanks fine orange-rufous; the under tail-coverts, vent, and abdomen white, blending into the surrounding colour; thighs bluish brown externally.

Female. Iris brown; bill not so dark as in male; legs and feet dusky fleshy.

Head, upper surface, and wing-coverts dark olivaceous brown, greenest on the back, and changing into a rusty colour on the upper tail-coverts; quills brown, the outer webs of the primaries, secondaries, and primary-coverts rusty brown, the longer primary somewhat pale at the edge; tail rusty olive-brown; an orbital fringe of fulvous; tips of the loreal feathers dark, the bases being fulvous; ear-coverts concolorous with the head, but striped with fulvous; throat, chest, breast, and flanks rusty fulvous, paling to buff on the gorge and chin, and with the feathers of the fore neck more or less tipped with dusky; cheek-feathers tipped with olivaceous; abdomen, vent, and under tail-coverts pure white; under wing-coverts fulvescent.

Very old bird? Head, hind neck, and back a darker or less olivaceous brown than the above, with a bluish cast on the crown; the wing-coverts and the tips of the lower back-feathers, as well as the upper tail-coverts, dull bluish; quills and greater wing-coverts brown, edged with rusty; tail rusty brown; lores and orbital fringe as in the above; the under surface a much brighter rufous than in the mature female; some of the throat-feathers tipped with dusky.

This is a description of a presumed female (carbolized) which I received from Mr. Thwaites of Hakgala. I have little doubt as to its being a female, on account of the absence of the black lores and supercilium.

Young. Males in the first year are dull bluish above, with the *lores only* black surmounted by a short white stripe or spot; throat whitish; chest and breast as in female. With age the black extends over the cheeks and ear-coverts.

Females are olivaceous above, brownest on the head, and changing into rusty on the upper tail-coverts; wings and tail brown, more or less edged with rusty; lores pale, orbital fringe whitish; ear-coverts pale-shafted; chin and gorge whitish, tinged with the hue of the chest and flanks, which is olivaceous fulvous; lower parts as in the adult. Scarcely any two examples are alike; the younger the bird is the more olivaceous are the upper tints, and the more dusky the chest and sides of breast. In some there is a brownish wash across the chest, and the forehead is rusty.

Obs. This interesting genus appears to form a link between the Saxicoline birds and the true Thrushes. It only differs from *Turdus* in its small size, *slightly* straighter and less notched bill, and shorter tail. Its habits are essentially those of a forest-loving Thrush, resembling such in its mode of feeding and progression, its flight, and its style of song.

At the time that Hodgson named this bird *L. cyana*, he perhaps did not know that Pallas had already applied a term of *similar meaning* (*cyane*) to the Siberian and Chinese species, or he would not surely have employed a title which sounded so much like a previously bestowed one. It has been in vogue up to the present by Indian writers; but I propose here to discard it, as it is, in my opinion, inexpedient to use a specific name of similar sense to, and only differing in its terminal letter from, an already existing one; and I will take the opportunity of mentioning that Mr. Sharpe approves of my decision. The specific name, it is true, is not very applicable to the male bird of the present species; but there are, I think, precedents for such a departure from strictly applicable nomenclature. Mr. Swinhoe procured the true *L. cyane* in China, and named it *L. gracilis* ('Ibis,' 1861, p. 262), as Mr. Blyth, to whom he sent his specimen, pronounced it to be distinct from Hodgson's bird; and it was not until four years later that he recognized in Pallas's figure of *Lusciola cyane* (pl. x. 'Travels in Eastern Siberia') his Chinese bird.

The male of *Larvivora cyane* has the upper surface dark blue, the forehead and above the eye brighter than the head; wings and tail brown, edged with dull blue; chin, fore neck, and under surface pure white, separated from the blue of the head and hind neck by a broad black border, which starts from the lores, covering the cheeks, face, and ear-coverts, and descending the sides of the neck to the flanks. Length 4·6 inches, wing (in seven examples) varying from 2·8 to 3·0. An immature male (September) has the head and hind neck brown; back and rump dull blue; beneath whitish, washed with rufous-buff on the sides of the throat and chest; the cheeks barred with dusky grey: a female (May) is olive-brown; under surface whitish, washed with buff; the feathers of the sides of the throat and across the chest tipped with dusky grey; wing 2·75. These examples are in the "Swinhoe collection," forming part of Mr. Seeböhm's museum. It is found in Tenasserim, as well as in China and Eastern Siberia.

Distribution.—This handsome Chat is a migrant to our hills, arriving in the island about the middle of October and departing again in April. Being a bird of weak flight its migration to the Kandyan Province takes place by a gradual movement through the jungle from the extreme north, where it first appears. There Layard procured specimens in October 1851, and in the same month in 1873 I obtained a male example in the jungles surrounding Trincomalie. It is chiefly located in the upper hills or main range, being very common in the Horton Plains and throughout all the Nuwara-Elliya district; lower down it is found in all the surrounding coffee-districts, including the Knuckles or trans-Kandyan hills as low as 3000 feet. In the eastern parts of Uva it is not common, the great expanse of patnas below the plateau and the deep valley of Badulla probably proving a barrier to its progress. In the southern hills I never met with it; but it was probably overlooked by me, as there is no reason to suppose that some individuals do not cross the Saffragam valley to the Morowak and Kolonna Korales. It is worthy of remark that it comes to us largely in the young stage; and I have likewise observed that females predominate.

Concerning its distribution in India, Jerdon remarks that it is found in the Himalayas from Cashmere to Sikhim, and in the cold weather extends in small numbers to the plains, for it is procured near Calcutta. It is also an inhabitant of the Nilghiris. He met with it in a mango-grove at Nellore in the month of March, at which time, as he suggests, it must have been migrating northwards. It appears to be resident in the Nilghiris, as it breeds there. Dr. Fairbank mentions it as being found in Mahabaleshwar, which has an altitude above the sea of 4700 feet, and on the Goa frontier; but he does not say at what season of the year he met with it.

Habits.—This retiring little bird is almost wholly terrestrial in its habits, dwelling in nilloo and other dense undergrowth of the hill-forests, and now and then coming out into hedges and thick cover in gardens which are in proximity to the jungle; it even then covets the shelter which its life in the forest normally affords it, only showing itself for a moment or two, and then retreating. It is often seen at the edge of a forest-path searching for insects; but it quickly disappears into the adjacent thickets on the least alarm. The Hakgala Gardens are suitable to its habits; here it finds a welcome shelter beneath the choice conifers and handsome shrubs with which the enclosure abounds, and searches for its food in the well-kept soil. It proceeds along the ground or over prostrate dead wood with quick hops, and darts actively about, alighting on low sticks

or branches when disturbed. It feeds after the manner of a Thrush, pecking quickly at insects on the ground or on rotten moss-covered timber; and such a great variety does it devour, that Hodgson applied to it its generic name of *Larvivora*. From pecking in the soil its bill is frequently coated with earth like that of a Thrush. It is usually of silent habit; but the male has a lively little song, composed of a few sibilant notes, which it suddenly warbles out from beneath the dense underwood in the forest. Hodgson remarks correctly that it perches freely, but is usually on the ground; and Jerdon states that it has a low chuckling note like that of certain Stonechats.

Nidification.—Little is known of the nesting of this Chat. Its home is probably in Cashmere and the Himalayas; but some remain in the south of India during the breeding-season, and rear their young in the Nilghiris. Mr. Davison, in writing to the author of 'Nests and Eggs,' alludes to two nests found in March and May respectively, the first of which was in a "hole in the trunk of a small tree about 5 feet from the ground, and was composed of moss mixed with dry leaves and twigs." This nest contained three young birds. An egg found in the latter nest was an elongated, slightly pyriform oval, with but little gloss, and the ground-colour of a pale greyish green, thickly mottled throughout and chiefly at the large end, where the markings were almost confluent, with pale brownish red. Dimensions 0.98 by 0.67 inch.

Genus TURDUS.

Bill moderately long and straight, compressed towards the tip. Rictal bristles feeble. Wings with the 1st or bastard primary equal to the primary-coverts, or slightly exceeding them; the 4th or 5th the longest, and the 2nd longer than the secondaries. Tail and tarsus typical in their characters.

TURDUS KINNISI.

(THE CEYLONESE BLACKBIRD.)

Merula kinnisi (Kelaart), Blyth, J. A. S. B. 1851, xx. p. 177; Kelaart, Prodrömus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 270; Blyth, Ibis, 1867, p. 304; Holdsworth, P. Z. S. 1872, p. 446; Hume, Str. Feath. 1878, p. 35.
The Nuwara-Elliya Blackbird, Residents in Ceylon.

Adult male and female. Length 9·0 to 9·7 inches; wing 4·3 to 4·6; tail 3·5 to 3·8; tarsus 1·25 to 1·3; middle toe and claw 1·2 to 1·25; bill to gape 1·17 to 1·25. Females average smaller than males.

Obs. In this species the wing is slightly rounder, and the 1st primary is often more lengthened than in typical *Turdus*. I say "often," for it is a singular fact that this feather varies in length in this bird. In some examples, especially young ones, it considerably exceeds the primary-coverts, although it generally equals them only, and in several specimens that I have examined it is longer in one wing than in the other of the same bird! In view of the irregularity in the length of this feather I have not removed it from the genus *Turdus*.

Male. Iris pale brown; eyelid and bill orange-yellow; legs and feet paler yellow than the bill; claws yellowish horny. Above slaty bluish black, darkest on the face and head, the feathers of the upper surface having bluish-grey margins everywhere but on those parts; quills and wing-coverts broadly margined with dark bluish slaty; tail black, more indistinctly edged with the same; beneath dingy black, the feathers edged paler than those of the back, and with a greyish hue slightly pervading the abdomen.

Female. Bill yellowish orange; eyelid yellow; legs and feet pale yellow. Above dark bluish slate, pervaded with brownish on the head, the margins of all the feathers black; outer webs of primaries and secondaries washed with brownish slaty; tail blackish brown, beneath slaty washed with earthy brown; the feathers of the abdomen sometimes with light shaft-streaks; under wing-coverts edged with earthy brown.

Young. In the nestling the iris is brown; bill black, tinged near the gape and at the base of the lower mandible with yellow, which colour gradually spreads with age; legs and feet brownish yellow. A young bird in Mr. Holdsworth's collection has the head and neck brownish, the ear-coverts and lores darker; the back has a more bluish tinge than in the adult; the wings and tail blackish brown, with dull slaty edgings; throat and chest fulvous, the feathers with dark tips, the breast slightly paler, without the dark tippings.

An immature female in the plumage of the latter end of the first year, which I shot in January 1877 on the Horton Plains, has the throat, fore neck, and breast, together with the sides of the neck, as also the forehead and a space above the eye, earthy brown; but the lores and face are coal-black; on the head and hind neck there is a fulvescent tinge, and the wing-coverts and flanks have the feathers tipped with a still more ochraceous hue. This plumage is mingled on the back and wings with the nigrescent feathers of the adult stage. The last remnant of the immature attire is usually found in the pale tippings of the wing-coverts.

Obs. This Blackbird, which is a representative of the Nilghiri species *Turdus simillima*, has, until quite recently, been considered to be peculiar to Ceylon. Mr. Hume, however, has received specimens from Mr. Bourdillon, shot in Travancore, which he ('Stray Feathers,' 1878, p. 35) unites with the Ceylonese form, owing to the fact of their being as dark as Nuwara-Elliya examples. He remarks, notwithstanding, that they are slightly larger, measuring 4·7 inches in the wing, whereas our birds never exceed 4·6. As the distinctive character in plumage of the Nilghiri bird is its paler colour, and as it is considerably larger than *T. kinnisi*, measuring 5·0 inches in the wing, it seems not unreasonable to unite the Travancore species with the latter; and I must therefore, though somewhat reluctantly, consent to our fine Blackbird being disrated from its rank as a peculiar island species! I wish, however, that more had been said about the coloration of these newly discovered Travancore birds, namely as to whether they exhibited the peculiar slaty edgings to the upper-surface feathers which are characteristic of *T. kinnisi* from Ceylon.

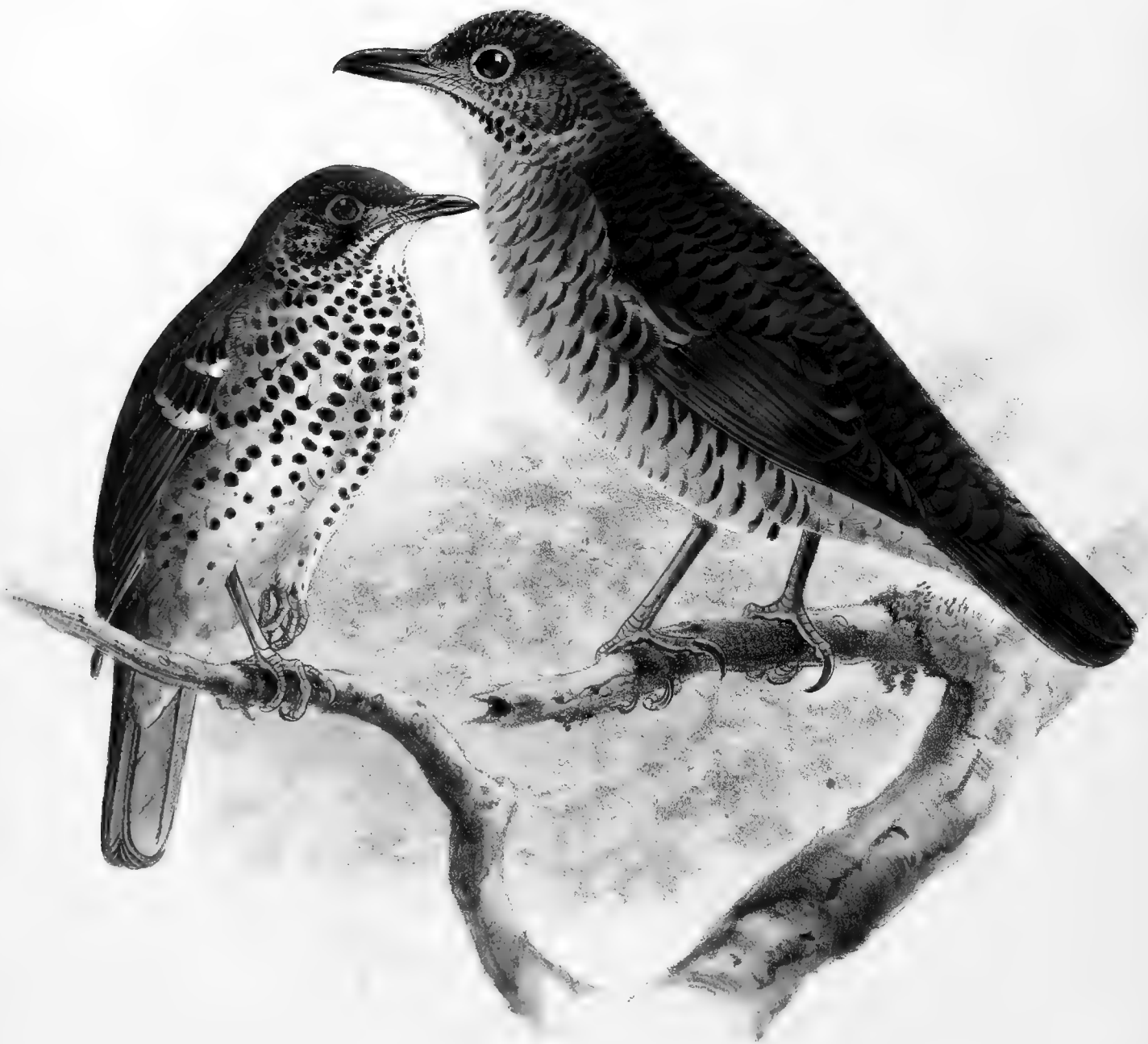
Blyth in describing the species, *loc. cit.*, incorrectly called the male "jet-black," and laid stress on the proportion of the primary feathers; but these vary with age.

Distribution.—The Blackbird of Ceylon, which bears a great resemblance to our home favourite, is an inhabitant of the entire hill portion of the Kandyan Province, from the loftiest regions down to an elevation of between 2500 and 3000 feet; it is, I am given to understand, likewise found on the uppermost parts of the Morowak and Kolonna Korales, but I have not seen specimens myself from that district. It is very numerous at the Horton Plains, in the wilderness of the Peak, the Nuwara-Elliya district, and in all the forests of the main range. In Haputale, on Namooni-kuli hills, the Knuckles, and all other ranges where any considerable amount of forest has escaped the woodman's axe it is common. On isolated hills, such as the Allegalla peak, I have found it; but it is rare in such localities. In many of the coffee-districts intersected with wooded patnas, which furnish it with a stronghold, it is a familiar bird and in the north-east monsoon season appears about the residences of the planters.

Habits.—The presence of this songster at Nuwara Elliya is not without interest to the English colonist; its lively though somewhat subdued matutinal song recalls home recollections and memories of the lovely spring time in England when all nature seems awakened after the slumbers of winter. It frequents a variety of situations, passing, however, most of its existence in thick undergrowth, particularly the nilloo and elephant-grass scrub. It strays out of the forest into detached groves, copses, umbrageous coffee, and about Nuwara Elliya resorts even to the gardens and plantations surrounding the villas of the residents. It is a very shy bird, feeding entirely in the thick cover of the jungle until evening, when the departing sun illumines the borders of the forest; it then sallies out, mounting high into trees and pouring out its song, which is neither so loud nor so full in tone as that of its English congener; it then proceeds by short flights from tree to tree, uttering its call-note of *cluck-onk* until it finds its way back to its accustomed roosting-place. At the break of day it is again abroad, singing before sunrise, and shortly after it retires into neighbouring thickets for the entire day. While searching for its food it gives vent to a very low chirp, which one would imagine came from the throat of the smallest bird; and when alarmed by the sound of an approaching footstep takes refuge into the depths of the scrub with quick hoppings along the ground or short flights from branch to branch. It is very partial to some fruits in the forest, collecting in considerable flocks in the loftiest trees; and while some greedily pluck the berries from the top branches, others remain in the underwood beneath and reap a harvest on those that fall. In spite of its fruit-eating propensities, however, it is highly insectivorous in diet; and I have seen it scratching in manure at the edge of forest-paths. Layard writes that Mr. Mitford, of the Ceylon Civil Service, shot one of these birds (the only animal life he saw there) at the very summit of Adam's Peak, feeding on the crumbs of rice thrown out by the pilgrims as an offering to Buddha. Mr. Forbes Laurie writes me that it has the power of diminishing the tone of its voice until its notes have the effect of coming from a distance.

Nidification.—The Blackbird breeds from April until June, building in a niche of a trunk, on a stump, or in the forked branch of a low tree; its nest is composed of grass, moss, and roots, strengthened with a few twigs, and is somewhat massive in structure, the interior being a deep cup lined with fine roots, most probably underlaid by a foundation of mud, as in the nests of other species. The eggs are four in number, of a pale green ground-colour, blotched evenly all over with faded reddish brown and light umber, overlying smaller reddish-grey spots. Dimensions 1.05 by 0.82 inch.

In the matter of situation it has, however, a variety of choice, sometimes nesting, according to Mr. Holdsworth, in out-buildings at Nuwara Elliya, and occasionally choosing the side of a rock, as will be seen from the following experience of Mr. Bligh. He writes me:—"I have often found this charming bird's nest; on one occasion it proved to be a strange structure, composed of *seven distinct nests*, which were fixed among the roots of a bush which grew out of a perpendicular rock above the "Swallows' Cave" at Dambetenne; it contained three young ones. The situation no doubt proving very safe and suitable, induced perhaps the same pair to build successively on the old nests, all of which still presented a fresh green appearance, from the moss not readily drying in such a moist climate. Usually the nest is very like the English Blackbird's, but smaller; and the same may be said of the eggs, except that they are rather rounder. These birds nest regularly near the Catton bungalow; and directly this important business is over they retire to the higher jungle, assembling in more or less numerous parties. I have seen as many as forty or fifty at the same time in what might be termed scattered company; but this is a rare habit, and only to be accounted for by the abundance of favourite food in a particular locality."



$\frac{2}{3}$

OREOCINCLA IMBRICATA.
TURDUS SPILOPTERA.

TURDUS SPILOPTERA.

(THE SPOTTED THRUSH.)

(Peculiar to Ceylon.)

Oreocincla spiloptera, Blyth, J. A. S. B. 1847, xvi. p. 142; id. Cat. B. Mus. A. S. B. p. 160 (1849); Kelaart, Prodrumus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 270; Blyth, Ibis, 1867, p. 303; Holdsw. P. Z. S. 1872, p. 446; Legge, Ibis, 1874, p. 18; id. Str. Feath. 1875, p. 367.

The Thrush, Europeans in Central Province.

Val-avitchia, lit. "Wild Ant-thrush," Sinhalese.

♂ *ad.* suprâ olivascenti-brunneus, vix rufescens, uropygio tamen et supracaudalibus magis rufescentibus: tectricibus alarum minimis dorso concoloribus, medianis nigris conspicuè albo terminaliter maculatis, majoribus interioribus dorso concoloribus, exterioribus nigris dorsi colore extûs lavatis et albo terminatis: secundariis dorso concoloribus, primariis nigricanti-brunneis, extûs dorsi colore lavatis: rectricibus mediis olivascenti-brunneis, reliquis saturatè brunneis extûs olivascenti-brunneis: loris albidis: annulo ophthalmico purè albo: facie laterali albidâ, plumis nigro terminatis, maculâ infraoculari nigrâ: supercilio albedo, supra regionem paroticam indistincto: corpore subtûs albo, præpectore maculis nigris triquetris magnis ornato: pectore quoque maculato, maculis tamen minoribus et magis ovalibus: gulâ, abdomine toto, subcaudalibus et corporis lateribus grisescenti-brunneo lavatis: subalaribus albis, majoribus basaliter nigris: axillaribus albis nigro terminatis: remigibus infrâ brunneis, secundariis ad apicem pogonii interni albis: rostro nigricanti-brunneo: pedibus corneo-plumbescentibus, unguibus pallidè brunneis: iride clarè brunneâ.

Adult male and female. Length 8·0 to 8·7 (average 8·4) inches; wing 3·8 to 4·1; tail 3·0 to 3·2; tarsus 1·3 to 1·5; mid toe and claw 1·1 to 1·25; bill to gape 1·05 to 1·2.

Iris brown; eyelid leaden grey; bill blackish, pale at gape; legs and feet dusky bluish grey or greyish fleshy, claws dusky horn.

Above olive-brown, more or less pervaded with a rusty hue, chiefly on the lower back and upper tail-coverts; least wing-coverts concolorous with the back; primaries and secondaries brown, washed with olive on the outer webs; median and greater wing-coverts with a terminal white spot, smallest on the greater series, which have their outer webs concolorous with those of the quills; tail rusty olive-brown, crossed with faint dark rays towards the end, and with the inner webs dusky; lores and a narrow imperfect supercilium whitish; beneath the eye and the ear-coverts black, the latter crossed obliquely by a white patch; on the lower part of the cheek the feathers are tipped blackish; chin, throat, and under surface white, the feathers on the lower fore neck, chest, and breast with oval bar-like terminal blackish spots; flanks and sides of ventral region smoky olivaceous grey; thighs olivaceous on the exterior side; under wing-coverts white, with a blackish bar formed by the tips of the median row and the bases of the succeeding one.

Females. Have the upper surface, as a rule, more rusty than males, and sometimes a buff hue on the throat and parts of the under surface.

Examples of both sexes vary in the extent of the spottings on the chest and sides of breast.

Young. The nestling, when leaving the nest, has the bill brown, with the base and the tip yellowish; legs and feet bluish fleshy. Upper surface ferruginous brown, generally darker on the head and most rufous on the rump and upper tail-coverts; the hind neck, back, and scapulars with fulvous mesial lines, and the tips of the coverts the same; the markings of the face, ear-coverts, and sides of neck buff instead of white; prevailing hue of the under surface the same; the chin and abdomen whitish; chest and sides of breast with blackish edgings; the cheek-patch and spot on the upper eyelid blacker than in the adult.

During the first few months the bill becomes black, and the ferruginous and buff livery is doffed, the white, black-spotted feathers of the chest and under surface first appearing.

Obs. This Thrush varies, according to climate, in the hue of its upper surface. As might be expected, in the dry forests of the north and east this is ferruginous, while up-country and Saffragam birds are quite olivaceous in their coloration.

Obs. Blyth placed this bird in the subgenus *Oreocincla* of Gould, the characteristic of which is that the back and breast are marked with crescentic edgings of dark brown. Inasmuch, however, as it has a plain upper surface, it cannot well belong to *Oreocincla*, and, in fact, it is a true *Turdus*. The wing is slightly more rounded than in typical species of this genus, the 5th quill usually proving the longest, and the 2nd is considerably shorter than the 3rd; but were variations in the wing-formula of such birds as the Thrushes to be taken as sufficient basis for the establishment of genera, we should have a useless multiplication of them.

The nearest Indian ally of our Spotted Thrush is *T. mollissima* from the sub-Himalayan region. This species is brownish olive above, some examples having a rusty tinge; the greater and median wing-coverts have fulvous-white tips; beneath white, tinged with buff on the throat and chest, and spotted with black on those parts; the feathers of the breast and flanks with slightly crescentic-shaped tips of black, and in this last feature it differs from our bird. Wing 5.4 to 5.6 inches.

Distribution.—The Spotted Thrush, which is the Ceylon representative of the Indian Plain-backed Thrush, was discovered by the late Dr. Templeton. It is an inhabitant of the central hill-region, from about 4000 feet downwards, being not at all uncommon in Uva and in the less elevated district of Dambara. From the base of the hills, where it is more frequent, it spreads outwards, particularly in the forest-districts, and in the western and southern parts of the island is found within a few miles of the sea. In Saffragam, and on the well-wooded tract lying between Ratnapura and Dambulla, along the base of the western ranges, as also in the Pasdun, Raygam, and Hewagam Korales, it is more often heard and seen than in other parts of the low country; and I and others have procured it within a few miles of Colombo. In the low-hill jungles of the south-west it is scarcely less frequent. In the forests of the Wannu and those of the Friars-Hood group I have procured it; but it is rarer in those parts than in the bamboo-jungles of the Western Province.

Habits.—A shy, retiring bird, this species frequents damp jungle, undergrowth in forests, and bamboo-thickets, not often mounting to any height on trees, but passing its time near the ground, about which it hops quietly, picking up pupæ, Coleoptera, and other insects; and when alarmed it runs very quickly through underwood, uttering a weak chirping note. The male has a very pretty whistle, ending in a human-like note, which it utters, seated on a low branch, for a considerable time at intervals throughout the day, but chiefly in the morning and evening. Both sexes have a weak, almost inaudible “*tzsee*,” which they utter, as the Black-bird does, while searching for food. It does not often come into the open; but at sunset I have now and then seen it in little copses of guava and other small trees which are to be found in the meadows on the banks of some of the western streams; and I once shot one whistling in a clump of the tall bamboo (*Bambusa thourarsi*). The young bird quickly acquires its vocal powers, and whistles as sweetly in the soft-gape stage as an adult.

A singular theory obtains among the Sinhalese with reference to this species and the Pitta or Ground-Thrush. They have a tradition that Buddha, in former times, changed some of the spotted Thrushes into Pittas, a bird which they likewise style “*Avitchia*,” and they believe that these beautiful birds are the progeny of the Spotted Thrush, asserting, however, that the young of both species are to be found in the nest of this latter bird. The fact of the Pitta being a migratory bird, and appearing in the island suddenly, no doubt is the cause of this imaginative mode of accounting for its arrival.

Nidification.—I have found this bird nesting in the northern forests near Trincomalie in January, and I obtained a young nestling in Uva in September. Mr. MacVicar has taken its eggs at Kæsbawa, near Colombo, in May; the breeding-season, therefore, extends over the first half of the year. The nest is placed in the fork of a sappling a few feet from the ground, or among the roots of a tree on a bank or little eminence, and is a loose-looking, though compactly put together structure of small twigs, roots, moss, and grass, lined with finer materials of the same, the egg-cavity being a deep cup, tolerably neatly finished off. The eggs are two or three in number, of a pale bluish-green ground, freckled throughout with light reddish brown, or light red and reddish grey, over a few lilac spots at the obtuse end, the markings in some being confluent at that portion; they are regular ovals in shape, measuring from 1.06 to 1.17 in length, by 0.74 to 0.77 in breadth.

The figure on the Plate accompanying this article is that of a male shot on the Sittawak ganga, a large affluent of the Kelani ganga.

TURDUS WARDI.

(WARD'S PIED BLACKBIRD.)

Turdus wardii, Jerdon, J. A. S. B. 1842, xi. p. 882; id. Ill. Ind. Orn. pl. 8 (1847); G. R. Gray, Gen. Birds, i. p. 219 (1845); Brooks, Str. Feath. 1875, p. 237.

Merula wardii, Blyth, J. A. S. B. 1847, p. 146; id. Cat. B. Mus. A. S. B. p. 163 (1849); Kelaart, Prodromus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 270; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 402 (1854).

Turdulus wardii, Jerdon, B. of Ind. i. p. 520 (1862); Holdsw. P. Z. S. 1872, p. 445.

Cichloselys wardii, Hume, Nests and Eggs, p. 231 (1873).

Oreocincla pectoralis, Legge, Str. Feath. 1876, p. 244 (young male); Hume, ibid. 1877, p. 202.

Ward's Thrush, Kelaart; *Pied Blackbird* in India.

Adult male and female. Length 8.0 to 9.0 inches; wing 4.3 to 4.8; tail 2.9 to 3.3; tarsus 0.95 to 1.1; mid toe and claw 1.0 to 1.1; bill to gape 1.1 to 1.15.

Male. Iris brown; bill yellow, dusky at base of culmen; legs and feet amber-yellow; claws yellow.

Whole head, neck, chest, upper surface, wings, and tail black; a broad supercilium from the bill to the nape, terminal portion of wing-coverts (forming a patch on the lesser row), tips of all but the outer quills and their inner edges at the base, a portion of the outer margins of the longer primaries, tips of the rump, and upper tail-covert feathers, together with the under parts from the chest downwards, white; two outer pairs of rectrices wholly white, except a portion of the outer webs; remaining rectrices successively less white towards the centre, the colour chiefly confined to the inner webs; flank- and thigh-coverts black, with deep white tips.

Female. Iris as in the male; bill brown, pale at the base; legs and feet brownish yellow.

Head, upper surface, wings, and tail olive-brown; lores dark brown, a fulvous streak from the nostril over the eye; wing-coverts with a large terminal fulvous spot; primaries with a pale edge, most conspicuous on the three long outer ones; basal portion of both primaries and secondaries buff-white; upper tail-coverts tipped with whitish; two outer tail-feathers with a terminal white patch running up the centre; throat and fore neck buff-white, the feathers with a dark brown terminal band, and the concealed portion with lateral indentations of the same; centre of the throat unmarked; breast, lower parts, and flanks white, with terminal bars of blackish brown, except on the centre of the breast, abdomen, and under tail-coverts; lower flanks well covered with brown, owing to the depth of the dark tips; under wing-coverts white, crossed with a brown bar.

Young. The male of the year is coloured similarly to the female, but the upper surface is of a darker or richer brown, the ear-coverts are darker, the secondaries and tertials are more or less tipped with buff-white, and the tippings of the upper tail-coverts whiter than in the female; tail tipped similarly to the female; supercilium similar; centre of the throat and lower part of the face buff, the latter with the feathers tipped brown; sides of the gorge blackish brown, and the feathers of the chest olive at the tips and sides, within which is a blackish rim enclosing an oblong patch of white; the olive coloration imparts the appearance of a *band across the chest*; breast and lower parts purer white than in the female, with deep terminal blackish bands, except down the centre; under tail-coverts edged laterally with dark brown. This plumage is probably doffed at the second autumn moult, and the pied dress forthwith assumed.

Obs. The above is a description of the plumage in which I described the young male of this species as *Oreocincla pectoralis*. Not being acquainted with the young male at the time, and finding that the specimens I acquired from Mr. Thwaites differed from the female (an example of which in my collection had been shot by Mr. Forbes Laurie) in the olive pectoral band, I was erroneously led to consider it new. Mr. Hume remarks (Str. Feath. 1877) that this Thrush is such a common and well-known species, that it could not well be described as new. This is, however, not the case as regards collections in England, in which young males and females are very rare; there is no specimen of either in the British Museum; and the late Lord Tweeddale was the only naturalist in whose collection I have

seen the immature male. *Turdus sibiricus*, regarding which Mr. Hume himself was led into error, is, perhaps, a commoner bird in English collections.

This species is usually placed in the subgenus *Turdulus*, on account of its pointed wing (the 3rd quill being the longest, and the 2nd not much shorter than it) and the sexes differing in coloration; the tarsus is somewhat shorter than in the typical Blackbirds. I prefer, however, to simplify matters by keeping it in *Turdus*, and pointing out here its characters as a *subgenus*.

Distribution.—The Pied Blackbird is a cool-weather migrant to the hills of Ceylon, arriving late, during the month of November, and leaving again at the latter end of March or early part of April. It does not appear to locate itself in the same localities every year, or else its numbers vary considerably, for in some seasons it is almost wanting in districts in which it has commonly been observed. It is found in most of the upper regions of the Kandyan Province, from the altitude of Nuwara Eliya down to about 2800 feet; but it is most common between 3000 and 4000 feet in the Knuckles ranges, Kotmalie, Dickoya, Uda Pusselawa, Uva, and Haputale. In some years it occurs in considerable numbers between the Elephant Plains and Kanda-polla, Mr. Watson informing me that he has seen it in flocks in the patna-woods near Ragalla. In November and December it has been several times seen in Hakgala Gardens, to which it is attracted, with many other species, in search of the insectivorous food harboured in the bare soil beneath the conifers and other choice trees with which this beautiful spot abounds. I have no doubt that it finds its way, in small numbers, into all the forests of the main range.

Jerdon writes of this Blackbird's distribution in India as follows:—It is "spread, but very sparingly, through the Himalayas, and during the winter in the plains of India; I first procured it through Mr. Ward at the foot of the Nilghiris, and afterwards obtained two specimens from Nellore in the Carnatic; Hodgson procured it at Nepal, and it has also been obtained in the North-west Himalayas, where it is far from uncommon." He further says, "Whether those birds met with near the Nilghiris also migrate northwards or are permanent residents there or on other mountain-ranges cannot now be decided." I observe that neither Mr. Fairbank nor Mr. Bourdillon procured it in the Travancore and Palani hills, where it should be found if it were a resident in the Southern ranges of India; and the inference therefore is that it does migrate to the south from its headquarters in the Himalayas. Mr. Brooks remarks that it is common at Mussoori.

Habits.—This species frequents the outskirts of forest, patna-jungle, detached woods, and frequently visits therefrom the gardens of the planters, in which its frugivorous habits cause it to do a considerable amount of mischief. It is very partial to mulberries, and, in fact, does not seem to turn aside from any fruit grown in the hills of Ceylon. Mr. Bligh, who has seen it frequently in Kotmalie and Haputale, tells me that it collects in scattered flocks to feed on the fruit of the guava and wild fig, uttering a chirping note while so doing. Young males, which Mr. Thwaites observed in the Hakgala Gardens, were very shy, flying up from the ground, when flushed by him, into low trees, and then escaping into the surrounding jungle; they frequented the manure-heaps near his bungalow, and had a low cry like that of a young Blackbird. Its song, heard at Mussoori by Mr. Brooks, and which, I conclude, is only uttered during the breeding-season, is described by him as "a strange one of two notes, and quite unmusical."

Nidification.—As regards the breeding of this Blackbird in India, the testimony of Messrs. Marshall, Hutton, and Hodgson, as quoted by Mr. Hume in his 'Nests and Eggs,' proves that, on arriving from the south in the Himalayas in May and June, it commences to nest, building either in the fork of a branch of a tall tree, or placing its habitation in a low situation, such as on a stump. The nest is a "compact, cup-shaped structure, built of moss and dead leaves, cemented together with a little mud and lined with roots;" the interior has a diameter of about 3 and a depth of 2 inches. The eggs are four in number, and are, according to Mr. Hodgson, pale verditer, spotted with sanguine brown; and one specimen, in the possession of Mr. Hume, is described by him as of a "pale sea-green ground, blotched, spotted, and streaked, most densely at the larger end (where also a number of small pale purple clouds seem to underlie the primary markings), with a moderately bright, somewhat brownish red." Dimensions from 1·01 to 1·06 inch in length by 0·74 to 0·76 in breadth.

Genus OREOCINCLA.

Bill stout and longer than in *Turdus*. Tail variable, consisting, in some members of the group, of 14 feathers.

Plumage above and beneath with dark scale-like tippings.

OREOCINCLA IMBRICATA.

(THE BUFF-BREASTED THRUSH.)

(Peculiar to Ceylon.)

Zoothera imbricata, Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 212; Jerdon, B. of India, i. p. 509 (1863).

Oreocincla nilghiriensis, Jerdon, Ibis, 1872, p. 139; Holdsw. P. Z. S. 1872, p. 456.

Oreocincla imbricata (Lay.), Hume, Str. Feath. 1873, p. 437.

Oreocincla gregoriana (Nevill), id. *tom. cit.*

Ad. suprà ochrascenti-brunneus, plumis omnibus conspicuè nigro marginatis, quasi lunulatis, uropygii et supracaudalium marginibus angustioribus: pilei plumis subterminaliter clariùs ochrascentibus: tectricibus alarum nigris ad apicem olivaceo-brunneo maculatis et aureo-brunneo terminatis: tectricibus primariorum nigris extùs versùs basin latè aureis: remigibus nigricanti-brunneis, extùs dorsi colore lavatis et aureo-brunneo marginatis: rectricibus duabus medianis olivascenti-brunneis, reliquis nigricanti-brunneis, exterioribus pallidioribus: loris albicantibus: regione parotica aureo-fulvâ, plumis nigro terminatis et medialiter albido striolatis: genis aureo-fulvis nigro maculatim terminatis: gulâ aureo-fulvâ immaculatâ: corpore reliquo subtùs aureo-fulvo, plumis nigro fasciatim terminatis: hypochondriis paullò latiùs nigro ad apicem fasciatis: abdomine et subcaudalibus aureo-fulvis immaculatis: rostro brunneo, mandibulâ pallidiore: pedibus brunneis.

Adult male. Length 9·3 to 9·6 inches; wing 4·8 to 5·05; tail 2·9 to 3·0; tarsus 1·1 to 1·15; middle toe and claw 1·15 to 1·2; bill to gape 1·38 to 1·53, average length 1·4.

Adult female. Wing 4·65 to 4·8.

These measurements are taken from a series of 14 examples in my own collection and those of the late Lord Tweeddale, Messrs. Bligh, Holdsworth, and Thwaites.

Iris brown; bill blackish brown, paling at the base of the lower mandible; legs and feet fleshy brown, some with a bluish tinge; claws brownish at the tips.

Head and upper surface brownish olive, paling slightly on the rump and upper tail-coverts, each feather with a broad black, crescentic-shaped tip, imparting a scale-like appearance to the upper plumage; wings dark brown, the secondary-coverts tipped and externally margined with dusky buff, the tips of the median series being the palest; the primary-coverts, with the tips and inner webs, black, and a rufous-buff wash on the outer portions of the feathers; quills margined with yellowish brown, spreading over the outer webs of the innermost secondaries; tail brownish olive, the three feathers next the outermost on each side blackish with pale tips.

Face and under surface rich buff, paling on the chin and abdomen into whitish buff, and darkening on the sides of the chest and flanks into olivaceous, each feather, except those of the gorge and abdomen, with a bold black crescentic tip; ear-coverts with pale shafts and (as also the face) tipped less blackly than the under surface, the dark tips taking the form of a stripe on each side of the throat; under wing-coverts black, with the terminal half of the feathers white; under tail-coverts unmarked.

Females are coloured exactly like the males.

Obs. The subgenus *Oreocincla*, founded by Gould for the reception of some Thrushes with the peculiar type of marking above noticed, may, I think, be allowed to stand, not on account of this character, but because its

members differ from true *Turdus* in the bill and vary in the number of their tail-feathers. Their wings are those of a typical Thrush and so are their habits. The present species is a typical example of this group.

It was united by Jerdon ('Ibis,' 1872) with the above-named Nilghiri species, inasmuch as he states, in his supplementary notes to the 'Birds of India,' that the "*Zoothera imbricata* of Layard turns out to be *Oreocincla nilghiriensis*." On what evidence this statement was made I am not aware, but it is certain that *O. nilghiriensis* is a very distinct species. Mr. Hume avers this, *loc. cit.*, and gives the testimony of Mr. Davison, who is acquainted with the bird in all its stages, concerning the *white under surface* which is characteristic of it. It is very rare in European collections; but the magnificent collection of that distinguished ornithologist the late lamented Lord Tweeddale contains a fine example which I have lately had the opportunity of examining. Its measurements are:—wing 5·4 inches; tail 3·7; tarsus 1·2; middle toe and claw 1·2; bill to gape 1·42. It is paler than *O. imbricata* on the upper surface, particularly as regards the lower back and rump, and the feathers have their dark tips pervaded by a pale fulvous ray or patch, which is particularly noticeable on the head, hind neck, and rump; the pale tips of the median and greater wing-coverts are lighter than in our bird and much larger; the under surface, together with the throat and fore neck, is *white*, slightly tinted with buff on the sides of the throat and on the lower part of the fore neck; but the breast and lower parts are pure white; the terminal markings of the feathers of the chest, upper breast, and flanks are very bold and deep, and the belly is almost unmarked.

With regard to the specific name of this Thrush, it is evident, from Layard's description of his specimen, that it was no other than the present species; he writes:—"On the breast the colours are pale rufous-yellow, darkening into deep rufous with very dark brown edge; vent and under tail-coverts rufous." A specimen was sent some years ago by Mr. H. Nevill, of the Ceylon Civil Service, to Mr. Hume, and the name *O. gregoriana* (after Sir Wm. Gregory, late Governor of Ceylon) proposed for it, from which I conclude that the fact of its having been already named by Layard was overlooked.

Distribution.—This fine Thrush was first noticed and described by Layard, *loc. cit.*, from a specimen that he discriminated in the collection of Mr. Thwaites, who was, therefore, its discoverer. Where this gentleman procured it Layard does not mention, but, as a matter of fact, it is found throughout the main range and in the uncleared portions of most of the coffee-districts; it is decidedly an uncommon bird, and, being very shy and retiring, almost entirely escapes observation. It is most frequently met with in the high land round Nuwara ELLIYA and in the wilderness of the Peak; but I have seen it in Maturata, and procured it in a small wood on Allegalla mountain, where it is not unfrequent, and where Mr. Farr likewise has obtained several examples. Mr. Thwaites informs me that it makes its appearance at the beginning of every year from the surrounding jungle in the Hakgala Gardens, in which the open though secluded ground and the ample shelter of shady conifers afford it a favourite feeding-place. I do not think it descends below an altitude of 3000 feet, at which I procured it at Allegalla, and also observed it in the forest on the Peak above Gillymally.

Habits.—The Buff-breasted Thrush dwells almost exclusively on the ground, from which it rises, when startled, with a loud flutter, and taking a short irregular flight, suddenly drops again. I have always observed it alone, and have met with it in openly timbered forest and in thick willow-scrub. It appears to feed on insects, which it procures beneath fallen leaves; and Mr. Thwaites informs me that it scratches much in rubbish thrown out at the borders of his plantation, and when flushed betakes itself to a low branch and then disappears into the adjacent forest.

I can give no particulars as to its nidification.

The figure in the Plate accompanying my article on *Turdus spiloptera* is that of a female shot in jungle at the summit of Allegalla peak.

Subgenus GEOCICHLA.

Bill somewhat short; a naked space at the posterior corner of the eye; otherwise as in *Turdus*.

GEOCICHLA CITRINA.
(THE ORANGE-HEADED THRUSH.)

Turdus citrinus, Lath. Ind. Orn. i. p. 350 (1790).

Geocichla citrina, Blyth, J. A. S. B. 1847, xvi. p. 145; id. Cat. B. Mus. A. S. B. p. 163 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 189 (1854); Jerdon, B. of Ind. i. p. 517 (1862); Hume, Nests and Eggs, i. p. 229 (1873); Ball, Str. Feath. 1874, p. 407; Hume, ibid. 1875, p. 114; Oates, ibid. 1877, p. 151; Hume & Davison, B. of Tenass., Str. Feath. 1878, p. 250.

Geocichla layardi, Walden, Ann. & Mag. Nat. Hist. 1870, v. p. 416; Holdsw. P. Z. S. 1872, p. 445, et 1877, p. 160.

The Orange-headed Ground-Thrush (Jerdon); *The Rusty-throated Bush-Thrush* (Hume).

Adult male (Darjiling). Length (from skin) about 8·5 inches; wing 4·5; tail 2·9; tarsus 1·25; mid toe 0·8, claw (straight) 0·25; bill to gape 1·0.

Adult (Nepal). Wing 4·5 inches; tail 3·0; bill to gape 1·1.

“Bill blackish brown; gape and base of lower mandible fleshy; eyelids greenish plumbeous; iris dark hazel; legs, feet, and claws fleshy pink” (Oates, Pegu).

Adult male (Ceylon, *G. layardi*). Length (from skin) 8·5 inches; wing 4·5; tail 2·7; tarsus 1·2; mid toe 1·05, claw 0·25; bill to gape 1·0.

Iris brown (?); bill dark brown, pale at the base, the gape yellowish; legs and feet fleshy yellow; claws yellowish brown.

Forehead, top of the head, back and sides of neck rich aureous chestnut, paling on the throat, fore neck, entire breast, and flanks into a more fulvous hue, the lores, chin, and gorge being lighter than the fore neck; lower part of hind neck, back, scapulars, wing- and upper tail-coverts glistening bluish grey, each feather with a broad paler grey margin; terminal part of median wing-coverts, belly, thighs, and under tail-coverts white, tips of the greater secondary coverts whitish; quills brown, the outer webs of a paler grey than the edgings of the upper surface; tail bluish grey, brown on the inner webs of all but the central feathers, and the whole crossed by dark rays, almost obsolete on the latter.

Female. Length 8·0 inches; wing 4·4; tail 2·5; tarsus 2·15; mid toe 0·75; bill to gape 0·95.

Chin and throat more albescent than in the male; entire abdomen and sides, vent, and under tail-coverts white; interscapular region, scapulars, and lesser wing-coverts washed with olivaceous greenish, the central parts of the feathers being slaty; upper tail-coverts tinged with olivaceous in a less degree.

The above are descriptions of the only male example I have seen from Ceylon (which is the type of Lord Tweeddale's *G. layardi*) and of a female procured at Jaffna, and now in Mr. Holdsworth's collection.

The following is a comparison of the two Indian specimens of which the dimensions have been given above:—

Darjiling. Somewhat paler in its rufous colour than the above; distribution of the white on the abdomen and lower flank-plumes exactly the same; wing-bar similar.

Nepal. As dark as, if not darker than, the Ceylonese specimen in its rufous coloration; less white on the abdomen.

Obs. The Ceylonese Orange-headed Thrush was separated from the North-Indian form by the late Lord Tweeddale, and named by him *G. layardi*. It was stated, *loc. cit.*, “to be readily distinguished by the much deeper orange of

the head and nape, these parts being of the same dark shade of orange-brown characteristic of *G. rebecca*, Gould. ex Java. On the under surface the orange tints are brighter and richer than in *G. citrina*, yet not nearly so dark as in *G. rubecula*; the blue-grey portion of the plumage is likewise darker than in *G. citrina*, but not so dark as in *G. rubecula*." I have, however, examined a considerable series and find that the species is most variable. As regards the depth of the orange-rufous colour of those I have examined, I have given two examples to show the variation in this respect. There is less white on the lower parts of some specimens from North India than in the type of *G. layardi*; but Mr. Hume, in his paper on the birds of Tenasserim, shows this to be a variable characteristic also. There is no difference in the size of wing or tail, and, in fact, if the type of *G. layardi* be laid by the side of a series of *G. citrina* it is not possible to separate the two.

G. rubecula, from Java, is smaller than the present and has no wing-spot; the head is dusky orange-rufous, the back and wings as in *G. citrina*, and the under surface very dark chestnut, but scarcely any darker than some specimens of the last-mentioned species, which it quite resembles in the colour of its back and wings. Wing 4.0 inches; tail 2.8; tarsus 1.15. *G. cyanotus* is a specialized form inhabiting the jungles of Southern India, and differs notably from the two foregoing in the coloration of the face and throat; the chin and throat are white; cheeks and ear-coverts black, with a white bar across them; the under surface yellower than in *G. citrina*.

Distribution.—This handsome Thrush has only been, as yet, procured three times in the island; and as the dates of its occurrence fall within the duration of the cool season, the hypothesis is that it is migratory, coming from Northern India, as is evidently the case with several other birds, *vid* the east coast of the peninsula, and thus avoiding the jungles of the southern ranges, in which it has never been noticed. The first specimen obtained in Ceylon, and already referred to above, was shot by Mr. Spencer Chapman at a place called Kondawathawan, near Ambaré, in the Eastern Province, and sent by that gentleman to Lord Tweeddale. A second example was shot by Mr. F. Gordon, of the Oriental Bank, in open country near Jaffna, in the beginning of 1876, proving, since the species is by habit a forest bird, that it had recently arrived in the island. A third was killed in March 1877 on the banks of the Kirinde ganga, in the Hambantota district, by one of the collectors of the Colombo Museum, in which it is now preserved. It will be observed that the localities in which it has occurred are very far apart; and it is evidently a species which is extremely rare in Ceylon. For five years I was constantly on the look out for it in forests in all parts of the island (indeed there was no species the possession of which I so much desired), but I never saw a sign of it anywhere.

In India this species is found chiefly in the sub-Himalayan region, extending as far westward as Mussoorie. It is not uncommon in Nepal and about Darjiling, and appears to move about in Sikhim, depending on circumstances connected with the vegetation of various districts in that province. Mr. Gammie writes of it:—"*G. citrina* is another bird that has become common in the shady cinchona-plantations. Until a year ago I never saw it except near the bottom of our warmest valleys and in the Terai, where it is abundant; but this year (1877) we have it in large numbers up to 4000 feet." Further south, in Bengal, it has been obtained by Captain Beavan at Maunbhoom and by Col. Tickell in Singbhum; in the Rajmehal hills and in the neighbourhood of Calcutta it is not uncommon (*Ball*). Jerdon says that it has been found in the forests of Central India, extending rarely as far south as 10°; he met with it in the jungles of the Eastern Ghâts. Further east it is recorded by Mr. Inglis from Cachar, and thence it extends into Pegu and southwards into Tenasserim. Mr. Oates remarks:—"Though not often *seen*, this is really a common bird from Thayetmyo to Tonghoo;" and as regards Tenasserim, Mr. Hume writes that it is "apparently confined to the southern half of the Province, and there to the neighbourhood of the coast, reappearing in the extreme north." Lieut. Wardlaw Ramsay procured it at Karennee.

Habits.—This handsome bird is a denizen of forest, heavy jungle, and shady groves. The specimen mentioned above as shot in the Hambantota district was met with in forest on the river-bank, and the country in which Mr. Chapman's bird was procured is covered with heavy jungle. Mr. Davison writes of it as keeping to "forest, but to the more open portions along the beds of streams, near the forest-paths, &c. It feeds usually on the ground, turning over the dead leaves, hunting for insects, which chiefly constitute its food." The writings of Jerdon afford the same testimony as to its habit of turning over leaves, and he says, also, that it keeps to woods and shady gardens, preferring bamboo-jungle; it often has "its bill clogged with mud, from feeding in damp spots. It is shy and silent in general, but during the breeding-season the male

has a pretty song." Captain Hutton likewise writes that it is a true forest bird, "building in trees and taking its food upon the ground, finding it in berries and insects among the withered leaves, which they expertly turn over with their beaks; and hence the reason why the bill is almost invariably clothed with mud or other dirt."

Nidification.—This species breeds in the Himalayas and in Pegu from April until June. Its nest has been found by Messrs. Hutton, Marshall, Thompson, and Oates, and appears to be built sometimes in the fork of the branch of a low tree and at others constructed in a similar situation at a considerable height from the ground. Captain Hutton says that it is composed of coarse dry grasses, somewhat neatly interwoven on the sides, but hanging down in long straggling ends from the bottom. Within this is a layer of green moss and another of fine dry woody stalks of small plants, and a scanty lining at the bottom of fine roots. Another, found by Mr. Oates in a ravine near Pegu, was situated about four feet from the ground, made of roots and strips of soft bark, the ends of some of the latter hanging down a foot or more; the interior lined with moss and fern-roots; the interior diameter about 4 inches and the inside depth about 2 inches. The eggs are usually three or four in number, sometimes five. The ground-colour is described by Mr. Hume as "dull greyish or greenish white, with a conspicuously mottled and speckled red-brown cap at the large end; they vary from 0·82 to 1·1 inch in length, and in breadth from 0·7 to 0·82 inch."

Genus MONTICOLA.

Bill straight, rather wide at the base; the culmen only curved at the tip, which is suddenly bent down. Nostrils oval and exposed. Wings long in proportion to the tail; the 1st quill equal to the primary-coverts; the 3rd the longest, 2nd subequal to the 5th. Tail rather short, even at the tip. Tarsus with an inclination to be scutellated and rather short.

MONTICOLA CYANA.

(THE BLUE ROCK-THRUSH.)

Turdus cyanus, Linn. Syst. Nat. i. p. 291 (1776).

Monticola cyanus (L.), Boie, Isis, 1822, p. 552; Shelley, B. of Egypt, p. 70 (1872).

Petrocossyphus cyanus (L.), Boie, Isis, 1828, p. 319; Jerd. B. of Ind. i. p. 511 (1862); Sharpe & Dresser, B. of Eur. pt. 8 (1871); Hume, Str. Feath. 1873, p. 179; Howard Irby, B. of Gibraltar, p. 74 (1875); Legge, Str. Feath. 1876, p. 249 (first record from Ceylon); Whyte, *ibid.* 1877, p. 203.

Petrocincla pandoo, Sykes, P. Z. S. 1832, p. 87.

Petrocincla cyanus (L.), Jerdon, Ill. Ind. Orn. pl. 20 (1847); Blyth, Cat. B. Mus. A. S. B. p. 164 (1849).

Cyanocincla cyanus (L.), Hume, Nests and Eggs, 1873, p. 226.

Cyanocincla cyana (L.), Ball, Str. Feath. 1874, p. 407; Butler, *ibid.* 1875, p. 470; Bourdillon, *ibid.* 1876, p. 398; Hume & Davison, *ibid.* 1878, p. 247.

Blaumerle, German; *Solitario*, Portuguese. *Shāma*, Hind. South of India; *Pandu* (male), *Maal* (female), Mahrattas; *Podda kachi-pitta*, Tel. (Jerdon); *Tchau-tchau zerak*, Moorish (Howard Irby).

Adult male and female. Length 6·3 to 9·0 inches: wing 4·5 to 4·8; tail 3·25 to 3·8; tarsus 1·1; bill to gape 1·2 to 1·3.

These measurements are from a series of specimens from widely spread localities.

Iris brown; bill, legs, and feet black.

Adult male (spring plumage, Mus. Seebohm). Upper and under surface dull blue, brightening into silvery blue on the forehead and crown; the face and throat the same, but less bright; lores and a fringe round the eye black; wings dark brown, the outer webs of the primaries and secondaries edged with dull blue; the primary-coverts and outer feathers of the median series with fine light edgings; quills faintly tipped light; tail slightly darker than the wings, the feathers margined with blue; breast and belly a duller blue than the breast, and with a few light tipplings to the abdominal feathers.

In winter the adult male has the feathers edged with brown, and the blue is not so bright.

Adult female (normal dress). Above greyish brown, the feathers of the head with faintly indicated pale edgings, and the same on the rump; lores fulvous-grey; throat and fore neck fulvous, each feather with a dark brown edging; on the chest the feathers change into greyish brown, with the fulvous hue gradually reduced, and the dark edgings change into terminal bars on each feather, preceded by a fulvous patch; the under tail-coverts are generally of a richer hue than the rest—that is, rufescent fulvous, boldly barred with blackish. Messrs. Sharpe and Dresser contend, in their long and able review of the plumage of this species, that the female eventually assumes the blue dress of the male, in support of which theory they examined correctly identified specimens from various parts of Europe. It would appear, however, that the majority of female birds are shot in the brown dress—Mr. Hume having acquired a very large series from all parts of India, out of which only three were in the blue livery, which is, perhaps, merely the result of advanced age or barrenness, in which latter stage not a few species put on the plumage of the male.

Young. The nestlings of both sexes are alike, being brown, with dusky bars and light spottings; this dress is doffed by the male at his first autumn moult. Messrs. Sharpe and Dresser instance an example, shot in Macedonia in August, which was in a “state of change,” moulting from the downy mottled white feathers to the blue immature dress, in which the upper feathers have white tips preceded by a black line; most of the feathers were shaded with brownish, as in the winter plumage of the adult.

An immature male in my collection, shot in March in Ceylon, appears to be in the next stage to the adult dress. The blue plumage of the upper surface is intermingled with brown pale-tipped feathers, principally on the head and hind neck; the wing-coverts, shorter tertials, and upper tail-coverts are tipped with white; the primaries and secondaries are tipped pale; under surface pale blue, lightest on throat; the chest-feathers are brown terminally, their extreme tips being fulvous; the feathers of the breast and lower parts are tipped whitish.

After the next moult the white edgings in this bird would disappear, and it would be in the dull blue brown-edged plumage of the adult winter dress.

Obs. The first writer on Indian ornithology who drew attention to the Blue Rock-Thrushes of the country was Col. Sykes, who described the species found in it as distinct, under the title of *P. pandoo*, alleging that it differed from the European bird in its smaller size, slighter form, brighter cærulean tint, want of orange eyelids and white tips to the feathers. As can be seen at a glance, however, these were individual peculiarities; and on further acquaintance with the species in India, Sykes's name relapsed into a synonym for the European bird, as did also, some years later, the *P. longirostris* of Blyth, founded on a Cashmere specimen.

It will not be necessary, in a local work such as this, to investigate the vexed question of the validity or otherwise of the eastern species, *M. solitaria*, a partly rufous form of the present. The subject has been ably treated by Messrs. Sharpe and Dresser in the 'Birds of Europe,' and by Mr. Hume in 'Stray Feathers.' It will suffice to state the case, and refer my readers to the exhaustive researches of these authors, should they wish to judge for themselves in the matter. From Eastern Bengal, through Burmah and Tenasserim, to the easternmost parts of China it is found that the males of the Blue Rock-Thrushes inhabiting that quarter of Asia assume a plumage which, in its perfect state, consists of a deep chestnut-colour from the breast to the under tail-coverts; they pass into this dress from the immature stage of the spring following their first moult, in which the blue feathers of the upper surface are pale-edged, and those of the throat dark-tipped; during the time this plumage is being acquired immature specimens are met with in every degree of advancement to the rufous coloration, while also mature examples, with a uniform blue upper plumage, are to be seen in every degree of diminution from the rufous dress—some having, for instance, only a small portion of the breast or abdomen thus coloured, while others may have no sign of it, except on the under tail-coverts, proving that the bird passes into the rufous stage, and then out of it as it gets fully adult. This character is not found in the females, for Mr. Hume can find no trace of it in a large series collected from Spain to Amoy.

It seems reasonable, I think, to assign the eastern form to the rank of a *local race* or *subspecies*, as in it alone, and not in the western, is found this peculiarity of coloration in the male bird.

Distribution.—The Blue Rock-Thrush is a migratory straggler to the hills of Ceylon, probably coming thus far south only during those years which witness an unusual stream to the Nilghiri hills and other elevated portions of Southern India. I have but to record two examples, both shot by a gentleman of the planting community who interests himself much in the birds of the island—Mr. Thos. Farr, of Maskeliya. The first was obtained in the vicinity of Kadugannawa during November 1872, and the second (one of a pair) on the Galloway-Knowe Estate, Nilambe, in March 1875; both were shot frequenting boulders beneath high precipices. This part of the Central Province, lying as it does to the westward of Kandy, is a district where an occasional migrant from India to our hills would naturally first lodge; but there are still more likely localities in the Kurunegala and Matale hills, where future research may prove that it locates itself during its short stay. That it does not wander far from those spots which are suited to its habits, and in which it first arrives, is evident on the testimony of one or two gentlemen who have described to me a bird, which can be no other than this species, frequenting the rocks in the same estate for a whole season. One of these instances occurred in the Knuckles, and another very close to where the first example above recorded was shot.

This Thrush is found throughout the whole of India in winter, arriving, according to Jerdon, about October, and retiring again in April. Regarding its distribution in the south, he writes that it is common in the Nilghiris in open and rocky ground, more rare in the Carnatic, very common in the Deccan and Central India, and abundant along the northern portion of the west coast, being likewise found in N.W. India, Cashmere, and the N.W. Himalayas. Additional evidence as to its localization in India is afforded by the writings of naturalists in 'Stray Feathers': Mr. Bourdillon says it visits the Travancore hills in small numbers; Mr. Fairbank remarks that it leaves the Deccan in March, and Khandala at the end of April. Mr. Ball writes that it is found near most of the large rivers in Chota Nagpur, and that he procured it in Singhbhum, Sirguja, and Hazaribagh. It is found throughout the Mt.-Aboo and Guzerat districts; and in Sindh, Mr. Hume writes,

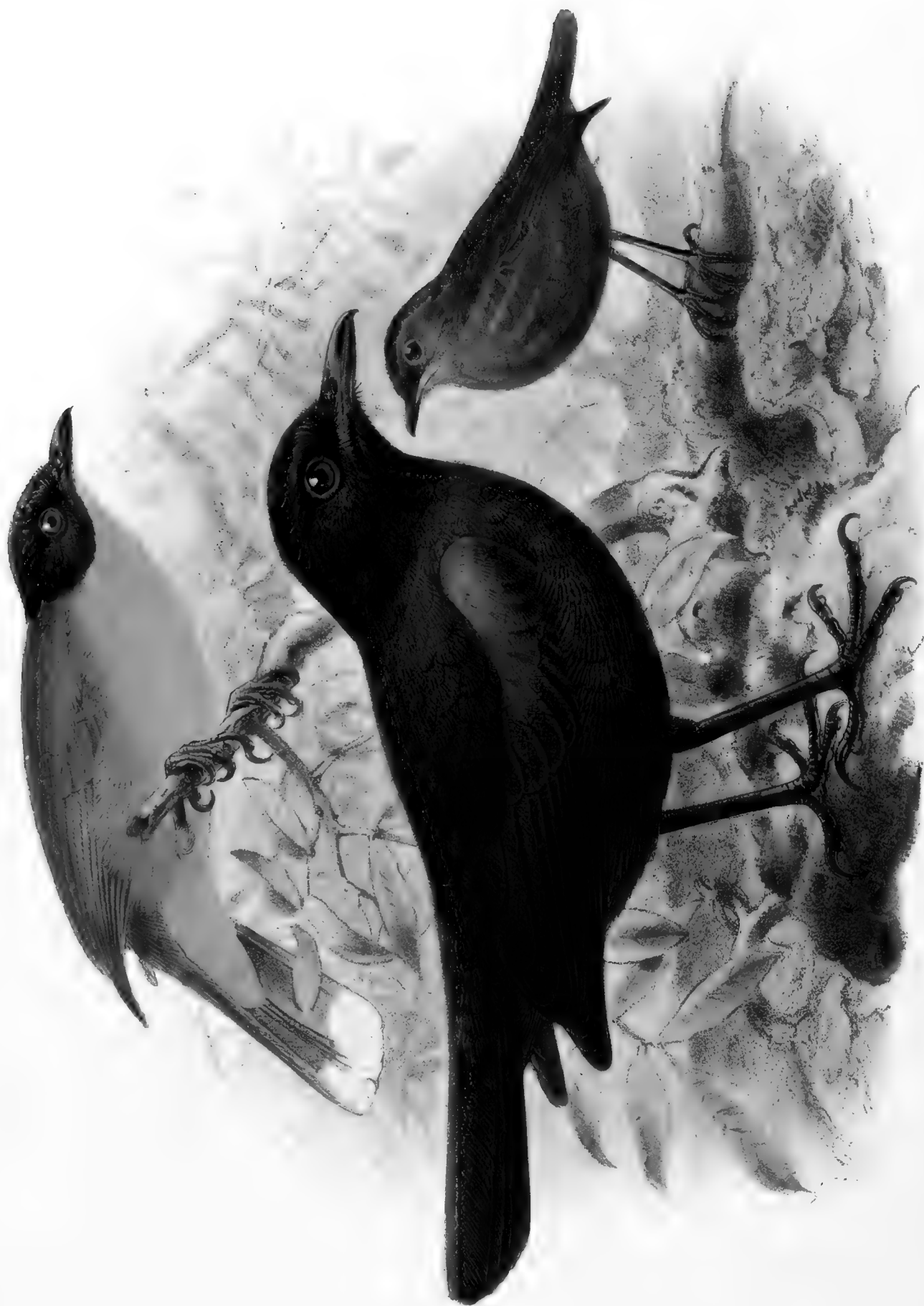
it was by no means uncommon in the rocky hills that divide that province from Khelat, being abundant on the rivers flowing through these ranges; he likewise met with it on the Mekran coast and in Muscat.

It is, however, as I have stated, only a migrant to the East-Indian peninsula, and we must travel far to the north-west before finding its more permanent quarters. It is, in point of fact, chiefly found in the country bordering the Mediterranean both north and south, and is spread so entirely throughout Europe, that it occasionally visits Heligoland, and is stated to have been killed in Ireland in 1866. Captain Shelley frequently met with it in Egypt in April; and Von Heuglin considers it to be a visitor only in the spring and autumn months to that country, as also to Abyssinia and Arabia. It is common in Morocco and also in Andalusia on the Spanish side of the Straits, where Col. Irby says it is stationary. It is also found in Portugal. Further east, Mr. Basil Brooke says it is very common in Sardinia; and in Malta Mr. C. A. Wright testifies to the same fact. In South-eastern Europe it is a well-known bird, and spreads thence into Southern Germany, thence extending to the wonderful little bird-island of Heligoland.

Habits.—This species varies in its habits according to the locality it frequents. Its usual custom is, doubtless, as its name implies, to affect rocky places, boulder-strewn hill-sides, wild gorges, the stony banks of rivers, the vicinity of mountain-precipices, and other barren and inhospitable spots; and when thus met with is a shy and wary bird, manifesting a very restless disposition, flitting from rock to rock, and uttering a clear whistle as it takes flight on the approach of danger. Mr. Farr informs me that it displayed all these restless manners on both occasions when he met with it in the Ceylon hills. In parts of India, however (and the same is the case with the eastern variety), it is quite a familiar bird, “perching on housetops, feeding about stables, and frequently even entering verandahs, and sheltering itself during the heat of the day on beams and the eaves of houses.” It is, in fact, writes Jerdon, supposed to be the Sparrow of the English version of the scriptures, “which sitteth alone on the house-top.” Mr. Oates has a similar experience of it in Pegu; he says that “it is not unfrequently seen singly, more especially in the vicinity of wooden bungalows. At Thayetmyo one occasionally came into my compound for a day or so, and then suddenly disappeared for a month or two. It will flit into the verandah, sit on the post-plate, and remain for a few minutes in perfect silence.” Mr. Elliot likewise noticed that it was very tame, often coming into houses and hopping about the verandah. It is usually a solitary bird, and feeds entirely on the ground on ants, Coleoptera, and various insects. Its song is said to be very sweet, and is commenced in India for some time before it leaves the country, not when feeding, but when it happens to have taken shelter during the heat of the day. It is caught in the Deccan and on the Bombay coast by the natives, and is much prized as a songster, being called by them the *Shāma*, which name, however, really applies to the Long-tailed Robin (*Cittocincla macrura*). Col. Irby, who publishes some interesting notes on its habits in the ‘Birds of Gibraltar,’ writes that it frequents daily the same spots, attracting considerable notice, both from its agreeable song and conspicuous habits. He further remarks, “The Blue Thrush very often perches on trees, and at Gibraltar and Tangier is frequently seen on the house-tops, though generally observed on bare rocky ground. It is sometimes found in wooded parts, if there are any high rocks; for instance, a pair nest at the first waterfall at Algeciraz, which is in the midst of a dense forest. It has a habit, in the courting-season, of flying straight out from a rock, and then suddenly dropping with the wings half shut, like a Wood-pigeon in the nesting-time. The Blue Thrush is very fond of ivy-berries and all fruit.”

Lord Lilford writes:—“It is very omnivorous; literally, fish, flesh, fowl, and fruit I have seen it devour with apparently equal gusto, to say nothing of almost any insect.”

Nidification.—This handsome Thrush breeds, as far as India is concerned, in the Himalayas, nesting in June. Capt. C. H. T. Marshall, who alone has taken the eggs in that country, records that the nest “was in a low stone wall, at no great elevation, and that it contained 4 eggs.” Mr. Hume describes one of these, in ‘Nests and Eggs,’ as having a pale, slightly greenish-blue ground-colour, closely speckled at the larger end with very minute brownish-red spots; a few similar specks are sparsely scattered over the rest of the surface of the egg.” It is very small for the size of the bird, measuring 1.0 by 0.73 inch.



RUBENIA MELANOTIS
M. MELANOTIS, P. 1000, 1001

Genus MYIOPHONUS*.

Bill rather broad at the base, the tip somewhat lengthened and much decurved; rictal bristles much developed. Wings rounded, the 1st quill considerably lengthened, exceeding the shortest secondary; the 2nd, 3rd, and 4th graduated, and the 5th the longest. Tail-feathers lax. Tarsus long. Toes rather short.

MYIOPHONUS BLIGHI.

(BLIGH'S WHISTLING THRUSH.)

(Peculiar to Ceylon.)

Arrenga blighi, Holdsw. P. Z. S. 1872, p. 444, pl. xix.

Ad. sordidè cyanescenti-niger, uropygio et supracaudalibus rufescenti-brunneo lavatis : alis caudâque nigris, pennis omnibus dorsi colore extûs marginatis : tectricibus alarum minimis lætiùs cyaneis, plagam conspicuam exhibentibus : pileo toto, capitis lateribus et gutture toto nigerrimis : corpore reliquo subtùs dorso concolori, crisso et subcaudalibus rufescenti-brunneo lavatis : subalaribus pectori concoloribus : rostro et pedibus nigris : iride brunneâ.

Juv. brunneus, suprâ saturatior brunneus, subtùs rufescentior : frontis, gutturis et pectoris plumis flavescenti-brunneo medialiter notatis : plagâ cyaneâ alari vix indicatâ.

Adult male and female. Length 8·0 to 8·5 inches; wing 4·2 to 4·4; tail 3·1 to 3·5; tarsus 1·4 to 1·5; mid toe and claw 1·25; bill to gape 1·25.

Iris brown; bill, legs, and feet black.

Entire head, throat, and hind neck coal-black (the feathers of the chin with spinous shafts), changing into dark cærulean blue on the interscapulars, back, scapulars, wing-coverts, chest, and breast, the basal portion of the feathers of these parts black; least wing-coverts and point of wing bright smalt-blue; wings and tail brownish black; quills obscurely edged with blue; upper tail-coverts and basal portion of rectrices edged chocolate-brownish; belly, lower flanks, and under tail-coverts edged with a lighter shade of the same, the basal portions of the feathers brown.

Female. The only example of this sex which has as yet been obtained was, Mr. Bligh informs me, similar to the male, but had the wing-spot lighter in colour, but at the same time of a brighter tint than in the male.

Young. An immature bird, figured in P. Z. S. 1872, pl. xix. fig. 2, is, writes Mr. Holdsworth, "brown, darker on the upper surface and more rufous below, the feathers of the forehead, throat, and breast centred with yellow-brown, and there is an indication of blue on the carpal joint."

Obs. This interesting Thrush is allied to *M. cyaneus* of Java, and forms one of the most noteworthy instances of the connexion, as regards some families, of the Ceylonese with the Javan avifauna. The South-Indian species (*M. horsfieldi*) has not nearly so much affinity with ours as the Javan bird. Blyth, with his wonted perspicuity, suggested, in his paper on Ceylonese birds (*Ibis*, 1867, p. 312), that *M. horsfieldi*, or a specialized representative of it, ought some day to be found in the island; and the value of his prophecy has been realized in the discovery of our handsome Whistling Thrush.

M. cyaneus is a larger bird than the present species. An adult male in the British Museum measures 5·8 and a female 5·4 inches in the wing; tail 3·0, tarsus 1·6, bill to gape 1·4.

* This genus, on account of its rounded wing and lengthened 1st primary, almost merits being placed in a separate subfamily. Jerdon, indeed, places it in the *Myiotherinæ*, among which, however, he includes the Wrens and the Pittas, the latter not appertaining at all to the Thrushes. It will suffice, therefore, for the purposes of this work to keep *Myiophonus* among the Thrushes, particularly as Mr. Seebohm is now studying this group of birds with a view to giving the world a new classification of them in the 5th volume of the 'Catalogue of Birds.'

General plumage black; the hind neck, back, wing-coverts, and rump washed with hyacinth-blue; the centre portion of the feathers black; point of the wing deep hyacinth-blue; wings and tail black, the outer webs washed with blue; beneath black, washed with a darker blue than that of the back, except at the flanks, belly, and thighs, which are dull blackish; the bases of the feathers of the upper surface from the scapular region downwards, and of the under surface from the chest to the abdomen, are marked with a white lanceolate stripe; this character is not noticeable unless the feathers be raised.

An example of a male *M. horsfieldi* in the British Museum measures in the wing 6·3 inches. The species is very handsome. The lores and a frontal band are intense velvety black, while the head and the entire neck, chest, and interscapular region are jet-black; the outer webs of the wing-feathers are bright greenish blue, those of the tail a darker blue; least wing-coverts glistening smalt-blue; feathers of the breast and underparts with broad crescentic edgings of smalt-blue, of a deeper hue than that of the shoulder.

Distribution.—The present species, which is one of our rarest hill-birds, was discovered in 1868 by Mr. Samuel Bligh. He obtained it at an altitude of about 4200 feet, in forest on the banks of the Lemastota oya, which descends through the magnificent gorge below the Pite-Ratmalie Estate, Haputale, to the town of Lemas. Since that time he has procured one or two examples, and tells me that he has seen it several times, both in the Haputale and Kotmalie districts. In July 1870, Mr. Holdsworth procured a young bird near Nuwara ELLIYA; and in 1875 a male in fine plumage was shot by myself on the Badulla road, just above the Hakgala Gardens; finally, in December 1876 and in January 1877, Mr. Cobbold, of Maskeliya, obtained two male examples on the Maskeliya oya, a tributary of the Kelani, at about 3800 feet. In addition to the record of these few captures, I may mention that Mr. Forbes Laurie met with an individual on his estate at Kabragalla, near Nawalapitiya, at an elevation of about 3000 feet. This altitude is the lowest to which I have heard of it ranging; and I have no doubt it will be found in other forests of similar elevation throughout the coffee-districts; but I apprehend the jungles of the main range form its chief habitat. It is no doubt more common than such isolated captures would lead us to believe; but being a denizen of forest-clad mountain-gorges, which are mostly difficult of access, it has hitherto almost entirely escaped observation.

Habits.—The very shy nature of this handsome bird has doubtless conduced to its non-discovery until so recent a period. Mr. Blyth, in his note above quoted, remarked that a *Myiophonus*, or Whistling Thrush, was not a likely bird to have been overlooked; but, nevertheless, such was the case, for until late years the forests of the upper ranges had only been cursorily explored, and their most interesting novelties consequently remained to be discovered. It affects the vicinity of mountain-streams, and is very wary, keeping almost entirely to the shade of the thick forest, and only now and then showing itself on the rocks of the dashing torrent, where it will rest for a moment, piping out its "long-drawn, plaintive though loud, whistling note," or it will seize some looked-for morsel of food and then dart quickly out of sight. Its discoverer remarks that at such times it is very impatient of observation, and also that it appears to consort in pairs; this condition is, however, doubtless varied by the companionship of the yearling birds with their parents; and a brood of such probably combined to form a little troop of four which I met with at sunset on the occasion above mentioned. At this period of the day it exhibits the restless habits of the Thrush family by coming into the open and giving vent to its vocal powers, combined with a boldness apparently foreign to its nature; for the male which I procured at Hakgala sat whistling for some moments in an exposed tree by the roadside, and allowed me to dismount from my pony and shoot it! During the few minutes to which my observations were confined, the rest of the "family" flew hither and thither across the road, uttering a high sibilant whistle. It would likewise appear to wander occasionally from the shelter of the forest; for my friend Mr. Forbes Laurie tells me of one which he discovered beneath an umbrageous tree at the outskirts of a plantation, and which, when approached, took refuge under a coffee-bush, running in and out beneath the branches, and refused to depart until his coolies endeavoured to capture it by throwing a blanket over the shrub. Its food consists of various insects, Coleoptera, &c.; and in the stomach of my specimen I detected the bones of a frog, probably of the tree-frequenting genus (*Polypedates*). Mr. Holdsworth killed his specimen on the low branch of a tree near a mountain-stream.

It is much to be feared that the extensive felling of the forest for tea-planting, in the upper ranges, will limit within the smallest possible bounds the portion of country in Ceylon alone fit for the habitation of this species, and may possibly conduce to its ultimate extinction.

Nidification.—Nothing of any certainty is known of the nesting of the Whistling Thrush; but I am inclined to the belief that several nests which I have found on the banks of streams belonged to it. They resembled those usually constructed by this family, and were deep ample cups, composed almost entirely of moss and fine roots, fixed in niches, in overhanging trees, or in forks of sapplings at some height from the ground.

The figures in the Plate accompanying this article are those of a male shot by myself near Hakgala, and of a young bird procured by Mr. Holdsworth near Nuwara Elliya.

P A S S E R E S.

Fam. BRACHYPODIDÆ.

Thrush-like birds of *arboreal* habit, mostly frugivorous in diet, with the legs and feet short.

Bill variable, in most Thrush-like. Wings with the 1st quill not less than half the length of the secondaries. Tail of 12 feathers, and shorter than the wing.

Subfam. IRENINÆ*.

Bill very wide, the mandibles inflated; both culmen and commissure curved, the tip slightly hooked and notched. Nostrils round, perforated in a deep indentation, and protected by well-developed bristles. Rictal bristles small. Wings somewhat pointed, the 4th and 5th quills the longest, the 3rd equal to the 7th. Tail even. Legs and feet proportionately very short. Tarsus slightly exceeding the middle toe; the outer toe connected with the middle at the base as far as the 1st joint of the latter.

Nape furnished with long hairs. Sternum narrowed in front and widening considerably towards the posterior edge, which is indented with a wide notch close to the sides.

* I have placed this singular and interesting group of birds first in the family of Brachypodidæ because, as a sub-family possessing some abnormal characteristics, they are better in this position than following the Phyllornithinæ, with which they have nothing in common except the very superficial character of a partial blue coloration. That the *Irenas*, with their arboreal and frugivorous habits, their Brachypodine legs and feet, and wing- and tail-formation, belong to the short-legged Thrushes is the opinion of many able ornithologists. They were placed, through an oversight, in the Dicruridæ by Mr. Sharpe, and he now informs me that he considers them to have affinities with the Bulbuls. Mr. Hume argues, on the evidence afforded by their peculiar eggs, that they are not well placed in this position, and suggests that they will have to be located between the Paradiseidæ, Sturnidæ, and Icteridæ. Their totally different wings would, in my opinion, remove them far from the Starlings, and to the Birds of Paradise they possess only a rostral resemblance.

Genus IRENA.

Characters the same as those of the subfamily, of which it is the only genus.

IRENA PUELLA.

(THE FAIRY BLUEBIRD.)

Coracias puella, Latham, Ind. Orn. i. p. 171 (1790).

Irena puella (L.), McClell. P. Z. S. 1839, p. 160; Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 262; Blyth, Cat. B. Mus. A. S. B. p. 214 (1849, in pt.); Layard & Kelaart, Cat. B. Prodromus, App. p. 58 (1853); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 130; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 273 (1854); Jerdon, B. of Ind. ii. p. 105 (1863); Walden, Ibis, 1871, p. 170; Holdsworth, P. Z. S. 1872, p. 452; Ball, Str. Feath. 1873, p. 71; Hume, Nests and Eggs, ii. p. 298 (1874); id. St. Feath. 1874, p. 226, et 1875, pp. 130, 325; Armstrong, ibid. 1876, p. 326; Sharpe, Cat. B. iii. p. 268 (1877); Fairbank, Str. Feath. 1877, p. 406; Hume & Davison, ibid. 1878, p. 328.

Irena indica, A. Hay, J. A. S. B. 1846, xv. p. 170.

Irena, sp.?, Kelaart, Prodromus, Cat. p. 124 (1852).

The Fairy Roller, Latham. *Nil rajah kurulla*?, Sinhalese.

Adult male and female (Andamans). Wing 5·0 inches; tail 3·85 to 4·2; tarsus 0·7 to 0·75; mid toe 0·6, claw (straight) 0·27; bill to gape 1·15; under tail-coverts falling short of the tip of the tail by 1·5.

Adult male (Ceylon, Poole collection). Wing 5·0 inches; tail 4·0.

Dr. Armstrong gives the measurements of Burmese examples in the flesh as:—Length 9·75 to 10·3 inches; wing 4·8 to 5·2; tail 3·75 to 4·25; tarsus 0·78 to 0·85; bill to gape 1·1 to 1·2.

“Iris light reddish brown, in a female deep red; bill, legs, feet, and claws black” (*Armstrong*).

Male. Top of the head to within one eighth of an inch of the culmen and the eyes, nape, back of neck, entire back, upper and under tail-coverts, sides of the rump, scapulars, lesser wing-coverts, and tips of the greater coverts glistening lazuline blue, mostly pervaded with a purplish hue, except on the head; rest of the plumage deep black, less intense on the wings and tail; the inner webs of the quills brownish black. At each side of the nape there are several lengthened hairs.

Female. Above and beneath a dull greenish or Prussian blue, brightening on the upper and under tail-coverts; the tips of the feathers are brighter than the central portions; the shafts of the feathers blackish; primaries, secondaries, and greater coverts blackish brown, the primaries edged with blue, and the inner secondaries washed with the same; central tail-feathers blue, and the remainder blackish brown, the innermost edged outwardly with blue; lores blackish, the ear-coverts dusker than the surrounding parts.

Obs. Layard's Ceylonese specimen corresponds entirely with an Andaman example in my collection, and the latter is identical with Indian ones. The Malaccan form (*I. cyanea*) differs from the Indian solely in the shorter tail, but equally long upper and under tail-coverts, causing a diminution of the distance between the tips of the coverts and those of the rectrices. *I. cyanea* measures in the tail 3·5 inches, and the upper tail-coverts fall short of its tip by about 0·9 inch, while the lower approach to within less than half an inch of it. The race inhabiting the more southerly region comprised of Labuan, Borneo, and Sumatra has the tail shorter still, about 3·2 inches, and the

under tail-coverts are produced in some examples quite to the tip of the tail. It has been named *I. criniger* by Mr. Sharpe, on account of the nuchal hairs, which are very prominent. Some Malayan examples of *I. cyanea* seem to form a link with this Bornean race, for the late Lord Tweeddale instances one in which the lower tail-coverts only fall short of the tips of the rectrices by $\frac{1}{8}$ inch. The Javan bird has been separated as another species, *I. turcosa*, by the last-named author, on account of the paler or more silvery tint of the blue colour; the under tail-coverts likewise reach to the end of the tail.

Distribution.—The extreme rarity of this species as a Ceylonese bird fosters the belief that it is a visitant to the island from the south of India. It could scarcely be a resident form, as it has very seldom been met with, and during all my wanderings in the timber-forests of the south and west I never saw a sign of it. Layard obtained a specimen near Kandy, which is still extant in the Poole collection, and Kelaart procured a second in the same district. Subsequently it has been met with in Saffragam, where the forest is usually lofty and luxuriant and eminently suited to its nature. For information of its existence in this district I am indebted to Mr. Hart, the taxidermist of the Colombo Museum, who met with a small flock in the neighbourhood of Rakwana in 1868, and still more recently near the same place in November 1877. On the last occasion three or four were observed perched on the summit of a lofty tree, out of which one was procured. I have no data concerning the season of the year in which the other examples were met with, and therefore it is still a matter of uncertainty whether it is migratory or not. On the mainland it is found in the lofty forests of Malabar, Travancore, the Nilghiris, and the Palanis. In the latter district Dr. Fairbank procured it at an elevation of 3500 feet, and observed it from the base of the range up to 4000 feet; he likewise notes it as an inhabitant of the Sawant-Wade woods in the Khandala district. Jerdon says that it is far from uncommon in the lofty jungles of Malabar, and remarks that he met with it in forest near Palghautcherry, Trichoor, the Wynaad, and on the Coonoor Ghât as high as 4000 feet and upwards. It does not seem to have been noticed anywhere between the Khandala district and the sub-Himalayan region. In the latter it is known at Sikhim. Captain Butler speaks of a specimen in the Frere-Hall collection at Kurrachee, stated to have been procured at Sehwan in Sindh; but Mr. Hume suggests that, this locality being totally out of the range of the species, the bird must have escaped from captivity. Continuing, however, to trace out its range from Sikhim eastwards, we find it in Cachar, where Mr. Inglis says it is not rare, and further to the south in Burmah it is far from uncommon. Mr. Oates writes that it is extremely abundant in all the evergreen forests on the eastern slopes of the Pegu hills, but that it is never seen on the western slopes or on the plains. Dr. Armstrong states that it occurs sparingly at China-Bakeer, but is extremely abundant “at Syriam, where, in the early mornings, large flocks of these birds may be found feeding amongst the different fig-trees in the neighbourhood.” Extending to the south we find it in Tenasserim, common throughout the evergreen forests, rare in the north, and very abundant in the south of the Province. How far down the peninsula the typical *I. puella* extends does not appear yet to be known; but it is probable that it merges very soon into the Malayan race, for Mr. Hume testifies to the Mergui (South Tenasserim) specimens being already intermediate between the two.

Habits.—The Fairy Bluebird associates in small parties and affects lofty trees in foliage, feeding on their fruit. It is entirely a fruit-eating bird, and in this respect shows its affinity to the rest of the short-legged Thrushes (Brachypodidæ). It is never found, says Mr. Davison, in the deciduous forests of Tenasserim; the tenacious manner in which it confines itself to the evergreen jungle is remarkable, for he writes, “About Pappoon, where the forests are deciduous, I never saw one; but, again, about twenty miles to the north of that place, the bird reappears with evergreen forests.” The constantly recurring supply of food in the latter naturally accounts for the predilection of the Bluebird for them; but it is strange that when deciduous woods are found in their vicinity it does not wander through them during the season of fruition. Mr. Davison writes:—“It is almost always found in flocks, but occasionally in pairs or even singly. It is a very bright and lively bird, always on the move, hopping from branch to branch or flying from tree to tree, uttering its fine note, which resembles exactly the words ‘be quick, be quick.’ They live on fruit, I believe, exclusively, and are especially fond of figs; and where a fig-tree is in fruit great numbers congregate, with Hornbills, Green Pigeons, Fruit-Pigeons, and numbers of other fruit-eating birds. In the middle of the day

they habitually come down to the banks of streams and the smaller rivers to drink and bathe." Jerdon styles its note "a fine mellow warble, which it is constantly repeating, both when feeding and as it flies from one tree to another."

Nidification.—This lovely bird breeds in the forests of Southern India in the early part of the year. Through the researches of Mr. Bourdillon the particulars of its nidification have been made known. He found it nesting some years ago in a sappling about 12 feet from the ground; the nest was a loose sparsely built structure composed of "dead twigs lined with leaves, and was about 4 inches broad." More recently he has found others, concerning which Mr. Hume sends me particulars *in epist.* One was, writes Mr. Bourdillon to Mr. Hume, in "a pollard tree beside a stream among some thick branches about 20 feet from the ground; the nest was neatly but very loosely constructed of fresh green moss, which formed the bulk of it, and was lined with the flower-stalks of a jungle shrub. It was very well concealed, and was about 4 inches broad, with a cavity not more than $1\frac{1}{2}$ inch deep." Another nest was situated about 10 feet from the ground and was composed of twigs without any lining. The number of eggs seems invariably to be two. They are regular or elongated ovals; the shell is fine and close-grained, but not very glossy. The ground-colour is pale green, and they are streaked and blotched with pale dull brown or reddish brown. In one specimen they are "almost entirely confluent over the large end (where they appear to be underlaid with dingy, dimly discernible, greyish blotches), and from the cap thus formed they descend in streaky mottlings towards the small end, growing fewer and further apart as they approach the latter, which is almost devoid of markings." In others, he writes, the markings are pretty thick, even at the small end. The eggs average in size from 1.05 to 1.15 inch in length by 0.71 to 0.81 inch in breadth.

PASSERES.

BRACHYPODIDÆ.

Subfam. PYCNONOTINÆ.

Bill straight; the culmen curved; mandibles compressed towards the tip, which is distinctly notched. Nostrils basal, placed in a capacious membrane; rictal bristles well developed; nape furnished with hairs. Wings somewhat rounded, the secondaries lengthened. Tail shorter than the wings. Legs and feet typical in their shortness.

Genus HYPsipetes.

Bill long, commissure straight for the greater part, culmen but slightly curved. Nostrils long, protected by bristles, and with a tuft of feathers at the base; rictal bristles stout and not very long. Wings with the 1st quill very short, and the 4th the longest or equal to the 5th. Tail long and square at the tip. Legs short. The tarsus shorter than the middle toe and claw. Nuchal hairs lengthened.

HYPsipETES GANEESA.

(THE BLACK BULBUL.)

Hypsipetes ganeesa, Sykes, P. Z. S. 1832, p. 87; Jard. & Selby, Ill. Orn. 2nd ser. pl. 2; Blyth, Cat. B. Mus. A. S. B. App. p. 339 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 255 (1854); Jerdon, B. of Ind. ii. p. 79 (1863, in part); Blyth, Ibis, 1865, p. 42; Holdsw. P. Z. S. 1872, p. 450; Hume, Str. Feath. 1876, p. 400; Fairbank, ibid. 1877, p. 405.

Hypsipetes nilghiriensis, Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 245; Blyth, Cat. B. Mus. A. S. B. p. 207 (1849); Kelaart, Prodromus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 125; Jerdon, B. of Ind. ii. p. 78 (1863, in pt.); Hume, Nests and Eggs, ii. p. 280 (1874); id. Str. Feath. 1873, p. 438.

The Nilgherry Black Bulbul and *The Ghât Black Bulbul* (Jerdon).

Kele kondiya, Sinhalese.

Male. Length 9·6 to 10·5 inches; wing 4·5 to 4·9; tail 4·3; tarsus 0·8; mid toe and claw 0·85 to 0·9; bill to gape 1·35.

Iris faded red or orange, with a dusky tinge; bill coral-red, the nostril-membrane brown; legs and feet yellowish red, the claws blackish (these latter fade in dried specimens).

Lores, forehead, head, and nape glossy black, with a greenish lustre in freshly moulted birds; hind neck, back, rump, and upper tail-coverts dull bluish slate, the centres of the back-feathers dark; wings and tail dull brown, the wing-coverts, secondaries, innermost primaries, and tail-feathers at their bases edged with bluish ashy, the latter faintly so; cheeks and ear-coverts cinereous brown; chin darkish; throat, chest, and under surface faded slate-grey, paling on the abdomen; under tail-coverts slaty brown, with dark shafts and whitish edges.

Adult female. Length 9·6 inches; wing 4·4; tail 3·6; tarsus 0·7; bill to gape 1·2.

Iris, in some examples I have examined, slightly brownish.

Plumage similar to that of the male.

Young. Birds of the year have the tip of the bill and space round the nostril blackish; iris yellowish brown; legs and feet dusky yellowish.

Throat and under surface lighter than in the adult; wings and tail browner, or of a paler hue than in old birds; the quills deeply margined with pale tawny, and the edges of the tail-feathers slightly coloured with the same.

Obs. This bird has been known under two names—*H. ganeesa* of Sykes and *H. nilghiriensis* of Jerdon. The former author described his type from the Ghâts, and birds from that region were accordingly kept as *ganeesa*; while those from the Nilghiris were separated by Jerdon under the above-mentioned specific name, which he likewise applied to the Ceylonese race. Blyth pointed out (Ibis, 1865) the identity of the two forms; and Mr. Holdsworth accordingly applied Sykes's title to our birds. I cannot do better than subjoin Mr. Hume's note on this subject, written after he had fully satisfied himself that these two supposed species were one and the same. He writes (Str. Feath. 1876, p. 400):—"I have carefully compared seven specimens from Mahabaleshwar with nine from the Nilghiris, three from the Assamboo hills, and four from Ceylon. I find that adults and young birds from the three former localities are precisely similar; in the younger birds the bills are browner and the wings smaller, but there is no difficulty in matching any Mahabaleshwar bird with some Nilghiri one. Birds from Ceylon are, in all respects but one, identical with those from the other localities; but they certainly do appear to have somewhat larger bills. I entertain no doubt that the birds from all these localities should henceforth stand under Sykes's name of *ganeesa*." Blyth noticed a peculiarity in the Ceylon birds in that they were paler than those from South India. I have compared Ceylonese specimens with some from the Bombay district and Madras Presidency, and find scarcely any appreciable difference, except, perhaps, in the throat and flanks, which, in the Indian examples, are somewhat darker than in ours. A bird from Matheran measures 4·4 inches in the wing, and 1·21 in the bill from gape to tip.

The dimensions of an example shot by Mr. Fairbank in the Palanis are:—Length 9·5 inches; wing 4·6, expanse 14·0; tail 4·0; tarsus 0·75; bill to gape 1·1. Iris hazel, dyed with lake-red.

This species is allied to the northern form, *H. psaroides*, which differs in being generally paler, and more particularly as regards the lower parts and outer webs of the wing-feathers; the under tail-coverts are very broadly margined with white, and it is likewise a larger bird. The wings of 7 specimens in the national collection vary from 4·8 to 5·1. It inhabits Bengal and the sub-Himalayan region.

Mr. Hume has lately described an allied species to this latter, which inhabits the Tenasserim hills, as *H. subniger*. It is smaller and everywhere much darker, with the interscapular region black. Males—length 8·5 to 8·9 inches, wing 4·5 to 4·85.

Distribution.—The Black Bulbul is found throughout all the low country of the southern half of the island, wherever there is forest or wild secondary jungle, particularly that growing on the sides of moderately-sized hills. It is especially abundant in the interior of the Western Province, where the hills are well wooded, as in many parts of the Raygam and Hewagam Korales; in Saffragam it is extraordinarily numerous, swarming in the Peak forests and ascending to the highest elevations in it. In the Pasdun Korale and the south-western hilly districts it is very common, extending into the Morowak and Kolonna Korales. It is also found throughout the Kandyan districts, and in the dry season frequents the upper forests in the main range and on the Nuwara-Elliya plateau. In the higher parts of Uva it is always stationary. As regards the forests of the northern half of the island, it may be said to wander about in them, being found here and there when perhaps little expected. I have seen it near Trincomalie during the north-east monsoon, and also in other localities between that station and Anaradjapura. From this latter place, and also from the forests near Puttalam, it is not recorded by Mr. Parker in the lists furnished to me by him, but it probably occurs in both.

This species does not enjoy a wide distribution on the mainland, though it is very numerous in the southern hilly portions of the peninsula. It abounds, says Jerdon, on the summit of the Nilghiris from 6000 to 8000 feet, and likewise frequents the district of Coorg. It extends along the Western Ghâts to the Mahabaleshwar hills, where Col. Sykes first procured it, the dense woods of that region being given by him as its habitat. Mr. Fairbank remarks that it is rarely found on the Mahabaleshwar plateau, though it is abundant on the Goa frontier; he found it on the tops of the Palanis and on the lower hills, and Mr. Bourdillon speaks of it as being very abundant at higher elevations on the Travancore hills, but less so at their base. It is likewise found on the Assamboo hills.

Habits.—This large Bulbul frequents forest, jungly ravines, steep woods, and most places in which there are large trees. It is a sociable and very restless bird, extremely noisy and lively in its movements, and possessing, for a Bulbul, very varied notes. Out of the breeding-season it congregates in vast flocks to feed on certain fruits, and, dashing about from tree to tree with loud notes, and with apparently no other object than that of chasing its companions for amusement, it fills the forest with a ceaseless din, completely drowning the voices of all other birds. Among its various notes is one frequently uttered when in company, resembling the sound *tchéé*, and another, a call-note, which may be likened to the syllables *zū-kink up*, *zū-kink up*, repeated several times, and nearly always given forth when alone, either on the wing or feeding. Its usual harsh warble, so well known to those who have frequented the forests in the south and west of Ceylon, is uttered from the tip top of a high tree, to which the bird, with some show of good sense, invariably mounts when it desires to make itself heard! Its diet consists of fruits, seeds, and berries; and when many trees are in bearing in the same spot, all the Black Bubluls in the neighbourhood flock to them in great numbers: it, however, also feeds upon insects; and I have observed it dart occasionally at them from its perch, although its usual manner of capturing them is to seize them from the branches of trees, to which it will sometimes cling after the manner of a Tree-creeper.

Concerning its economy in India I find the following observations:—Jerdon writes that it lives in small flocks in the dense woods, feeding on various fruits and berries, usually on the tops of trees; it keeps up a lively and agreeable warbling, which it often continues during its occasional flight from one tree or patch of wood to another. Its flight is undulating, easy, and rapid. Mr. Bourdillon finds that they are gregarious and very noisy, apparently preferring the tops of trees, though they also feed on the berries &c. found in secondary jungle. Mr. Fairbank noticed that they only assembled in flocks during the month of June.

Nidification.—In the western parts of the island this species breeds from January till March, building its nest on a horizontal bough or in the fork of a lateral branch at a considerable height from the ground. It is a compact, though rather untidy-looking structure, made of dead leaves, roots, and moss, and lined with fibres and “bents.” The eggs are normally two in number, of the usual ovate shape characteristic of Bulbuls; ground-colour white, spotted and speckled with reddish brown, somewhat confluent at the obtuse end. Axis 1·0 to 1·05, diameter 0·72 to 0·73 inch.

In India it breeds, according to the experience of several observers, from March until June, laying two eggs. Mr. Davison writes, “The nest is generally placed from 12 to 20 feet from the ground, in some dense clump of leaves; favourite sites are the branches of parasitic plants with which nearly every acacia, and, in fact, nearly every other tree about Ootacamund, is covered. The nest is composed exteriorly of moss, dry leaves, and roots, lined with roots and fibres.” Mr. Wait writes of its nest, as made at Coonoor, that it is neatly and firmly made, composed chiefly outside of green moss, grass-stalks, and fibres; while inside it is lined with fine stalks and hairs; the cavity is from $2\frac{1}{2}$ to 3 inches in diameter, and about half that depth. The ground-colour of the eggs, says Mr. Hume, varies from white to delicate pink. The markings consist of different shades of deep red and pale washed-out purple, which in some eggs are bold, large, and blotchy, and in others minute and speckly, and in both forms there is a tendency to form an irregular zone round the large end; the shell has commonly little or no gloss, and is very fragile. The eggs vary from 1·0 to 1·17 inch in length by 0·7 to 0·8 in breadth.

Genus CRINIGER.

Bill stout, much shorter than in *Hypsipetes*, moderately curved, the tip notched. Nostrils linear, protected by fine bristles; rictal bristles moderate. Wings with the 4th and 5th quills equal and longest. Tail rather long, broad, wider at the tip than at the base. Legs and feet small. Tarsus about equal to the middle toe and claw.

Nuchal hairs more numerous than in the last genus.

CRINIGER ICTERICUS.

(THE FOREST BULBUL.)

Criniger ictericus, Strickland, Ann. & Mag. Nat. Hist. 1844, xiii. p. 411; Kelaart, Prodrömus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 124; Jerdon, B. of Ind. ii. p. 82 (1863); Legge, J. A. S. (Ceylon Branch) 1870-71, p. 43; Holdsworth, P. Z. S. 1872, p. 450; Hume, Nests and Eggs, ii. p. 282 (1873); Legge, Ibis, 1874, p. 20, et 1875, p. 396; Bourdillon, Str. Feath. 1876, p. 400.

Pycnonotus ictericus, Blyth, J. A. S. B. 1844, xiv. p. 570.

Hemixos icterica, Blyth, Cat. B. Mus. A. S. B. p. 207 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 250 (1854).

The Yellow-browed Bulbul (Jerdon).

Male. Length 8·0 inches; wing 3·7; tail 3·3; tarsus 0·72; mid toe and claw 0·75; bill at front 0·7, to gape (straight) 0·82.

Iris light red, or red; bill black; legs and feet bluish leaden or dusky slatish.

Lores and at the base of nostril, supercilium, face, throat, and entire under surface, under tail- and under wing-coverts, with the basal portion of the inner margins of the quill-feathers and tertials, sulphur-yellow; the face, side of throat, and flanks shaded with the hue of the back; entire upper surface olive-green; inner webs of quills brown, the shafts dark brown; inner margins of all but central rectrices yellowish, the shafts are brown above and yellow beneath.

Female. Length 7·75 inches; wing 3·3 to 3·5; tail 3·1.

The yellow in front of the eye is confined to the lores; the under surface slightly duller, the face duskier than in the male.

Young. Birds of the year have the cheeks faintly barred brownish, and the flanks generally somewhat darker than adults.

Obs. Indian specimens of this bird that I have examined measure as follows:—S. India—wing 3·5 inches, tail 3·3; S. India—wing 3·6, tail 3·4; Coorg—wing 3·6, tail 3·5. Size of bill and plumage identical with Ceylonese examples.

The nearest Indian ally to our bird is the northern form *C. flaveolus*, Gould. An example in the national collection from Nepal has the head dull rusty brown, the feathers elongated; lores, forehead, chin, and throat greyish white; back greenish yellow, with a rusty tinge; wings and tail rusty brown; chest and under surface dull yellowish; wing 4·1. As showing, however, the singular affinity of the Malayan avifauna with that of Ceylon we have a much more closely related species in the *C. simplex*, Kuhl, of the Malay islands. This species has the upper surface almost of the same tint as in our bird; the throat and under surface dull yellow, suffused with olive-greenish on the sides of the chest and flanks; it wants the yellow lores and face, which parts are duskier than the head. Wing 3·5 to 3·7.

Distribution.—This fine Bulbul is widely diffused throughout the island, restricting itself to forests and heavy secondary jungle, in which it is a common bird. It is essentially a denizen of timber-jungle, for though it is not found in the cultivated portions of the Western Province, directly the forests in the Hewagam, Raygam, Three and Four Korales are entered it at once forces itself upon the acquaintance of the naturalist. In the Pasdun Korale, throughout Saffragam, in the south-west (beginning as near the sea as Kottowe and Baddegama), and in the Morowak and Kukkul Korales it is a common bird. It is scattered throughout all the northern forests, but does not apparently inhabit the Jaffna peninsula, for the simple reason that there is no heavy jungle on it. In the wilds of the Eastern Province, and in the forest along the rivers flowing through the Park country and the district lying to the south of Haputale, it is also found. As regards the

Kandyen Province, it is a common bird in the forests up to an altitude of 3500 feet, and in the "Knuckles," and on the slopes of the main range and the Peak wilderness, ascends to a greater elevation than this, but does not, as far as I am aware, inhabit the immediate neighbourhood of Nuwara ELLIYA. In Uva it is very numerous, affecting even little patches of jungle on the patna-streams.

Those who have not collected much in the heavy forests of the low country have but little idea how common a bird this Bulbul is in the particular localities which suit its habits. Kelaart wrote that it was a common species in the low country; but Messrs. Layard and Holdsworth have taken exception to this statement, inasmuch as they had not perhaps met with it themselves. Layard infers that Kelaart spoke of *Ixos luteolus*, and it is possible that there may have been such misidentification; but nevertheless, as I have shown, it is a common bird in all the forests of the low country; had Kelaart written of it, "common in the low-country forests," his statement would have been beyond criticism.

As regards the mainland, this species has only been found in the peninsula, and its range does not appear to extend further north than Bombay. Dr. Fairbank, who records it as common on the Goa frontier and rarely found on the Mahabaleshwar plateau, remarks that it may extend along the strip of country which, with similar conditions of climate and food, reaches as far up the west coast as Surat. Mr. Bourdillon states that it is a common bird in the Travancore hills, and in the Palanis it is said to inhabit an elevation of 4000 feet and upwards. Jerdon writes that it prefers mountainous regions at from 3000 to 5000 feet, being abundant on the slopes of the Nilghiris at that altitude, although it is also occasionally found "at a few hundred feet above the sea-level."

Habits.—No bird that I am acquainted with appears to be more at home in the solitude and shade of the forest than the present. It is often met with associating in a little party far from the proximity of other species, hopping actively about among the boughs of lofty trees or in the luxuriant sappling growth beneath them, in which it finds no lack of insect-food, and, during the time that it is partaking thereof, testifies to a happy existence by frequently flying on to some bare branch, to give out its quiet little warble and then resume its sociable fellowship with its companions. I have always found it in the society of one or two of its fellows, the little troop thus formed exhibiting a most restless character: their sombre-coloured backs and wings and perpetual movement make it difficult to discern them among the foliage, although they may be heard warbling close at hand; and it not unfrequently happens that, when the jungle is at all thick, they disappear without being detected, notwithstanding that the branches around have been diligently scrutinized in the search for them. They do not, as a rule, keep to the tops of trees, but usually hunt for their food in lateral branches or on the upper boughs of sapplings. Their low-toned varying notes are difficult to describe, but, on the whole, form a not unpleasing little warble. Some of them resemble the sounds *cl̄y eye, te white up, te whit up*, which three modulations are continuously repeated for no little space of time. I have found its food to be more insectivorous than frugivorous; but in India it is said of it that the latter condition chiefly obtains. Mr. Bourdillon writes that it wanders "about in small flocks, feeding almost entirely on fruits and seeds." Jerdon says of it, in the Madras Journal Lit. and Sci. x. p. 249, "In all specimens I have examined I have found fruit only in its stomach; but, from the strong bristles at the base of the bill, I suppose it may, at certain seasons, partake of insects."

Nidification.—I once found the nest of this bird in the Pasdun-Korale forests in August; little or nothing, however, is known of its breeding habits in Ceylon, so that it most likely commences earlier than that month to rear its brood. My nest was placed in the fork of a thin sappling about 8 feet from the ground. It was of large size for such a bird, the foundation being bulky and composed of small twigs, moss, and dead leaves, supporting a cup of about 2½ inches in diameter, which was constructed of moss, lined with fine roots; the upper edge of the body of the nest was woven round the supporting branches. The eggs were two in number, of a reddish-white ground-colour, rather thickly freckled throughout with sienna, and forming a well-marked zone round the obtuse end. They were broad, rather stumpy ovals, and measured 0·97 inch in length by 0·70 inch in breadth. The situation of this nest was near a stream in the forest; and many other old ones, which, I believe, belonged to this species, were in similar spots. Mr. Hume, in his 'Nests and Eggs,' remarks that some eggs which he received had "only the faintest trace of pale pinkish mottling towards the large end,"

while others were "thickly freckled all over, most densely at the large end, with salmon-pink or pale pinkish brown," showing that they are subject to considerable variation in colour.

Naturalists quoted by Mr. Hume speak of the nest being "suspended by the outer rim to two branches," or "attached to twigs by cobwebs," and never placed in a fork. My experience (and I have no doubt about my identification) tends to show that it does build at times like other Bulbuls. The bottom of the nest was *in the fork*.

Genus IXOS.

Bill stouter, wider at the base, and less compressed at the tip than in *Criniger*. Wings shorter, less pointed, with the 5th and 6th quills subequal and longest. Tail not so broad and less square at the tip. Legs and feet stout. The toes strongly scaled; lateral toes equal; claws rather short. Nuchal hairs lengthened, but scanty.

IXOS LUTEOLUS.

(THE WHITE-EYEBROWED BULBUL.)

Hæmatornis luteolus, Less. Rev. Zool. p. 354 (1840).

Pycnonotus flavirictus, Strickl. Ann. & Mag. Nat. Hist. 1844, xiii. p. 413; Blyth, J. A. S. B. 1845, xiv. p. 567; id. Cat. B. Mus. A. S. B. p. 210 (1849); Kelaart, Prodrömus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 124 (*flavirictus* errore).

Pycnonotus luteolus, Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 243 (1854).

Criniger tickelli, Blyth, J. A. S. B. 1845, xiv. p. 571.

Ixos luteolus, Jerdon, B. of Ind. ii. p. 84 (1863); Holdsw. P. Z. S. 1872, p. 450; Hume, Nests and Eggs, ii. p. 283 (1874); Ball, Str. Feath. 1874, p. 410, et 1876, p. 235; Fairbank, *ibid.* 1877, p. 405.

The Yellow-bellied Bulbul, *The White-browed Bush-Bulbul* in India; *The Cinnamon-Thrush* (Europeans in Ceylon). *Poda-pigli*, Telugu; *Pastro kondache*, Portuguese in Ceylon.

Guluguluwa, Sinhalese.

Adult male and female. Length 7·4 inches; wing 3·1 to 3·3; tail 3·0 to 3·2; tarsus 0·8 to 0·95; mid toe and claw 0·8; bill to gape 0·8 to 0·9.

Iris variable, rust-colour, dull red, or blood-red; bill black; legs and feet dusky-leadén blue or plumbeous.

Above olivaceous brown, the edges of the feathers obscure greenish; on the head the centres of the feathers are brown, edged with greyish, below the eye and a broad stripe from nostril above it white, with a dark brown dividing line above the lores; quills and wing-coverts edged with greenish; the tail the same but duller, the exterior feathers tipped with yellowish grey; shafts reddish brown; ear-coverts brownish; beneath whitish, washed with brownish on the chest, and becoming yellowish on the lower breast and abdomen; vent, under tail-coverts, and under wing-coverts pale sulphur-yellowish, showing rather conspicuously beneath the carpal joint. Some examples have the feathers of the chest more markedly edged with yellowish than others.

This Bulbul is in a constant state of moult, affecting its plumage chiefly at the back of the neck, which part is often quite bare.

Young. Iris not so bright a red as in the adult. Plumage similar.

Obs. Two examples from South India measure in the wing 3·3 and 3·4 inches respectively: one is identical with Ceylonese specimens, the other is tinged with rusty; the throat and vent are more tinged with yellow than in my examples of our bird.

Another *Ixos* from South India, found on the Eastern Ghâts, is *I. xantholemus*, Jerdon, the "Yellow-throated Bush-Bulbul." It has the head, face, and occiput dusky yellowish green, the chin and throat yellow; hind neck and back ashy grey; wings and tail hair-brown, the margins of the feathers greenish; under surface pale brownish grey, under tail-coverts yellow. An example in the British Museum measures in the wing 3·15.

A more closely-allied Bulbul to *I. luteolus* is *I. analis* from Java. It has very much the appearance of our bird, but the lores and a ring round the eye are black, the supercilium is very broad and spreads at the back of the eye over the face and ear-coverts; the brown of the upper surface is more ruddy than in *luteolus*, and the tail-feathers not margined with greenish; throat whitish buff; under tail-coverts and vent yellow; the under surface greyish, the centres of the feathers on the chest brown. The wings of examples in the national collection measure from 3·4 to 3·5 inches. I instance this species to show, as in the case of *Criniger simplex*, how nearly allied the avifauna of Java is to that of Ceylon.

Distribution.—This soberly-clad and familiar bird is one of the commonest and best-known species in Ceylon; it is very abundant in most parts of the low country both in the north and south of the island, and is especially so in the maritime districts. In the low jungle-covered tracts round the whole of the north

coast and in the scrubs bordering the south-eastern shores it is as numerous as on the western sea-board. In the interior it is almost everywhere to be met with, whether in the semicultivated country between Colombo and the Kandyan hills, the forests of the northern half of the island, or the similarly interminable jungles of the Eastern Province. In the south-western hill-region it chiefly frequents the open and partially cultivated tracts of country; but it is also found in wooded places, particularly in secondary jungle, where the forest has been, at some time or another, cut down by the natives. In the Kandyan province it is common in Dumbara and the surrounding neighbourhood up to an elevation of about 2500 feet; but in the eastern district of Uva I have observed it much higher, for in that part it frequents the patna-scrubs which clothe the hills between Fort Macdonald and Badulla. I noticed it everywhere in the Jaffna peninsula; and Mr. Holdsworth writes that it is equally common at Aripu and Colombo.

Jerdon writes of this Bulbul that it is plentiful in many parts of South India, that it is not found in the forests of Malabar, but is common in low jungle and on the skirts of the forests occasionally. In the Carnatic it is tolerably common in bushy jungle, and even in gardens in wooded districts, also throughout the Northern Circars to Goomsoor; and in Central India it was found by Tickell. It is not, however, remarks Jerdon, known at Jubbulpore, Saugor, Nagpore, nor Mhow, nor on the bare tableland of the Deccan. Referring to 'Stray Feathers,' we find Dr. Fairbank testifies to its local distribution in his remarks on the Khandala district, and says that it is found in thickets by the Gatprabha river, but not on the Goa frontier; further north it inhabits portions of the country near Bombay. Mr. Ball writes that it is very abundant in Orissa, throughout a broad zone in which the vegetation is characterized by certain species of plants which are not met with further to the west, and which district, he says, extends "westwards as far as Ungul," beyond which it is not found. Colonel Tickell procured it at Midnapur, which, I imagine, is its most northern limit. In the Palani-hill list it is included as common at the east base of the hills.

Habits.—This Bulbul has been named the "Cinnamon-Thrush," on account of its abundance in the plantations of that tree in the Western Province. It is fond of frequenting open bushy land, scrub, woods in cultivated country, thickets at the edge of jungle, and underwood in dry forests; in heavily-timbered country it is not nearly so frequent, although it is more so than the Common Madras Bulbul. Except when feeding on some favourite fruit, it does not usually affect tall trees, but prefers to live in the thick cover afforded by brambles and other dense undergrowth, to none of which is it more partial than to the *Lantana*-scrub so abundant in the Western Province and in Dumbara. It associates usually in pairs, and, concealing itself from view, frequently utters its loud, jerky warble while threading its way through the thickets, or darting actively in and out with a quick irregular flight, and thus gives one the impression of being a most busy bird! In the evening it is particularly restless and noisy, and before going to roost flies to and fro among the bushes, darting into the thickest cover at hand, where it gives out its voluble notes, and then starts out again with a rustle loud enough to be caused by a much larger bird. It is both insectivorous and frugivorous in its diet, but chiefly the latter; and there is nothing to which it is more partial than the seeds or berries of the *Lantana*-plant.

Nidification.—The breeding-season of this bird in the west and south-west of the island lasts from December until June, the months of April and May appearing to be the favourite time. On the eastern side it breeds during the north-east rains. It builds in a low bush, placing the nest in the fork of an upright branch, sometimes 3 or 4 feet from, and at others close to, the ground. It is a rather loosely made cup-shaped structure, built of small twigs, grass-stalks, and fine roots, with occasionally a few dead leaves at the bottom to act as a foundation; the lining is scanty and is of fine grass. The eggs are from two to four in number, ovate in form, but sometimes stumpy at the large end; the ground-colour is reddish white or pale reddish, covered openly throughout with brownish or claret-red over a few markings of lilac-grey; in many specimens the spots are confluent round the obtuse end. They measure from 0.9 to 0.95 inch in length by 0.63 to 0.65 inch in breadth.

At Bombay it is recorded as laying in June and September, building a loose straggling nest in a bush a few feet from the ground; it is there made of fine twigs, lined with grass-stems, and portions of the exterior tied with wool and cobwebs to the surrounding twigs. A correspondent of Mr. Hume's draws attention to a nest which was tied at one place to a twig to prevent its being blown off its insecure site.

Genus RUBIGULA.

Bill short, stout, rather straight; rectal bristles moderate. Wings short and rounded; the 4th and 5th quills equal and longest. Tail nearly even at the tip. Legs and feet small. Tarsus feathered just below the knee, as in the preceding genus; toes short; claws long and acute.

A portion of the back of the neck bare, but overlaid by the occipital feathers. Nuchal hairs short.

RUBIGULA MELANICTERA.

(THE BLACK-HEADED BULBUL.)

(Peculiar to Ceylon.)

Muscicapa melanictera, Gmelin, Syst. Nat. i. p. 941 (1788).

Ægithina atricapilla, Vieill. N. Dict. i. p. 176 (1816).

Iora nigricapilla, Drapiez, Dict. Class. vi. p. 170 (1840).

Rubigula aberrans, Blyth, J. A. S. B. 1846, xv. p. 287.

Pycnonotus atricapillus, Blyth, Cat. B. Mus. A. S. B. p. 211 (1849); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 125.

Pycnonotus nigricapillus, Kelaart, Prodromus, Cat. p. 123 (1852).

Rubigula gularis, Kelaart, l. c.

Rubigula melanictera, Walden, Ibis, 1866, p. 316; Blyth, ibid. 1867, p. 304; Legge, J. A. S. (Ceylon Br.) 1870-71, p. 44; Holdsworth, P. Z. S. 1872, p. 452; Legge, Ibis, 1874, p. 20; id. Str. Feath. 1875, p. 368; id. Ibis, 1875, p. 396.

Yellow-breasted Flycatcher, Brown, Ill. pl. 32; *Le Cap nègre*, Le Vaill. pl. 140; *Le Gobe-mouche noir et jaune de Ceilan*, St. Croix; *Black-capped Tanager*, Latham.

Ka-kurulla, Sinhalese in Western Province.

♂ *ad.* suprâ saturatè flavicanti-viridis, uropygio et supracaudalibus latiùs flavis: tectricibus alarum dorso concoloribus, majoribus et primariis brunneis lætiore flavo limbatis, secundariis dorsi colore lavatis: rectricibus nigricanti-brunneis, versùs basin olivascentibus et olivaceo lavatis, omnibus (duabus mediis exceptis) albo terminatis, exterioribus latiùs apicatis: pileo haud cristato nuchâque nitide nigris: loris, facie laterali, genis et regione paroticâ nigris: corpore subtùs toto lætè flavo, lateribus vix olivascenti lavatis: subalaribus et axillaribus flavis, majoribus basaliter albis: remigibus infrâ brunneis, intùs versus basin albicanti marginatis: rostro nigro: pedibus nigricanti-olivaceis: iride sordidè rubrà.

Adult male and female. Length from 6·3 to 6·5 inches; wing 2·7 to 2·9; tail 2·5 to 2·6; tarsus 0·6; mid toe and claw 0·58; hind toe and claw 0·48; bill to gape 0·75 to 0·8. Females are the smaller of the sexes.

Male. Iris dull red; bill black; legs and feet blackish.

Female. Iris dark brown; legs and feet deep plumbeous or blackish blue.

Head and face, down to the level of the lower mandible, glossy black; lower part of hind neck, back, scapulars, upper tail-coverts, upper surface of tertials, and edges of quills dusky olivaceous green, palest on the rump, and with a brighter or yellowish hue on the outer webs of the primaries; the first primary and the tips and inner webs of all the other quills brown; tail blackish brown, edged, principally near the base, with the hue of the back, and with a terminal white spot to all the feathers but the central pair, which are simply tipped with it; chin, throat, lower part of breast, abdomen, and under tail-coverts saffron-yellow; the chest and flanks washed with olivaceous green; under wing-coverts and flexure of the wing yellow.

Obs. The history of this species has been fully worked out by the late Lord Tweeddale in an article published in the 'Ibis' for 1866, in which is given a comprehensive review of the different names applied to it by various authors, and a satisfactory conclusion arrived at as to which should have the priority. Vieillot's name of *atricapillus*, founded on Le Vaillant's "*Cap nègre*" (a title bestowed by the latter in 1802 upon a bird six specimens of which he received from Ceylon), was thought to be the oldest, and is the one used by Layard in his notes on the ornithology of Ceylon. It is, however, plainly demonstrated, in the article referred to, that the bird was sent from Ceylon many years previous by Governor Loten and figured by Brown in 1776, in his 'Illustrations,' as the Yellow-breasted Flycatcher, upon which plate Gmelin founded, in 1788, his *Muscicapa melanictera*, thus establishing, by fourteen years, the priority of this last-named specific title. Some doubt is maintained as to whether the *Cap nègre* is really a peculiar Ceylonese form after all; for Gould described a species, said to be from Travancore, under the name of *Brachypus gularis*, and which the Marquis of Tweeddale (*loc. cit.*) contends, from the description of the skin, was identical with the Ceylon bird. Some years later Jerdon figured another species with a red throat from Malabar, which he considered might be the same as Gould's bird, in the description of which no mention was made of the red throat. He styled it *Brachypus rubineus*, which title, however, he afterwards placed as a synonym of *Brachypus gularis*, in the 'Birds of India;' and the latter name, I observe, is still in vogue with Indian naturalists when writing of the Ruby-throated Bulbul. Now either Gould's bird was from Ceylon and not from Travancore, or else it was from the latter place and he omitted to notice the red throat* in his description; or, failing this, perhaps he had to do with a young bird which had not acquired this distinguishing character. If neither hypothesis holds good, then Gould's bird was actually the same as ours, which, therefore, inhabits the South of India as well as Ceylon, and his name does not apply to Jerdon's Ruby-throated Bulbul. I cannot bring myself to accept this latter theory, as the present species has never since been detected in South India, and I am loath to reduce it from its rank in this work as a *Ceylonese* bird.

It is remarkable that the eye of the male should differ from that of the female. We find the same singular character in the case of two other Ceylon birds, viz. the Red-faced Malkoha and Palliser's Ant-Thrush.

Distribution.—The Black-headed Bulbul occurs throughout all the forest-tracts of the low country, ascending the mountains of the Kandyan and Southern Provinces to an altitude of about 5000 feet in the former, and to the limits of the jungle in the latter. It is plentiful in suitable localities in the Western Province, being found within 4 or 5 miles of Colombo; it is also abundant in all the south-western hill-regions, although almost absent from the arid maritime district between Hambantota and the Park country. It is a common bird in all the forests of the northern half of the island, being numerous round Trincomalie and along the coast to the north of that place. In Uva, Haputale, and the eastern coffee-districts it is found up to the afore-mentioned altitude; but I have not observed it so high on the western side. About Kandy and the circumjacent districts it is very common, preferring to the forests the deep valleys of the Mahawelliganga and its affluents the Maha oya and Bilhul oya, as well as other similarly openly-wooded localities. Mr. Holdsworth does not record it from Aripu, the country in that immediate district being too open for it; but I have no doubt but that it is found in the adjacent forests of the interior.

Habits.—The "*Cap nègre*" frequents shady luxuriant forest, low jungle, cheena-woods, deserted grounds, the wooded borders of tanks, and so forth. It is very partial to forest, and is one of the commonest denizens of such locality in Ceylon. It is met with either in pairs or three or four together, and at times is socially inclined towards its neighbours of the forest, consorting with the Forest-Bulbul, *Criniger ictericus*; and in less heavily timbered spots may be found in company with the common White-eyebrowed Bulbul, *Ixos luteolus*. It delights in the well-wooded shady ravines, watered by rocky streams, which intersect the patnas throughout the Central Province; and while halting for an instant by these delightful brooks on my journeys from one estate to another, I have generally heard its unpretending little warble, which is much like the syllables *whee-whee*, *whee-whee*, frequently repeated. It generally affects the lateral branches of large trees, and searches about among the outspreading boughs for its food, which is chiefly insectivorous; small seeds are sometimes devoured by it, and I have found snails of some little size and also minute ammonites in its stomach. I have occasionally seen small parties in the topmost boughs of large trees; but to ascend thither is not its usual habit, and in such cases it is probably enticed from the foliage beneath by the presence of other birds.

* Lord Tweeddale latterly held this idea, which he expressed to me, *in epist.*, shortly before his death.

Towards its own kin it is extremely sociable, generally living in close fellowship, particularly in the nesting-time. It is rarely disturbed without the little call-note *whēē-whēē* being speedily heard, and its companion is seen flying across the jungle-path or other spot in search of it.

Nidification.—This Bulbul breeds in the southern and central portions of the island from April to September, probably rearing two broods. In the Kandyan Province Mr. Bligh has found its eggs in the former and I myself in the latter month. It usually builds in the fork of a low tree or bush near the ground, and sometimes even on a dead stump. I have taken the nest fixed in a horizontal bifurcation of a small branch which overhung a mountain-stream. It was a loosely-constructed fabric, but tolerably substantial notwithstanding, made in a cup-shape of fine roots, grass, bents, and very small twigs, among which were fixed some dead leaves, the interior being lined with fine grasses. The eggs were two in number, and the diameter of the nest inside was $1\frac{3}{4}$ in. by $1\frac{1}{4}$ in. in depth. In other nests brought to my notice there were three eggs; one of these was constructed of grass and creeper-tendrils and placed on a low stump amidst some bushes. In the southern province I have received its eggs in the beginning of April. Mr. Bligh describes to me a nest which he found in Haputale on the top of an isolated bush about 6 feet from the ground. "It was," he writes, "barely daylight when it was discovered, and the old bird was on the nest; this I took; and about half an hour afterwards, on returning to the spot, found the bereaved pair sitting by each other, their sides touching, close to the former position of the nest; and though I approached within two yards of them, they sat still, wearing the most dejected aspect—as well they might!—causing me much to regret having removed it, although I *was* under the impression that it was the first nest of this species ever discovered." It was, he remarks, a simple but very strong little structure for the materials used; the outside was principally composed of small dead leaves with rough surfaces, next to which was a thin weaving of a kind of flower-stalk which partly entwined the leaves; these stalks were a few inches in length, with a rough exterior, and of the thickness of very thin twine: to the minute barbs on the surface of these stalks was fixed here and there some spiders' webs, which, combined with the peculiar nature of the stalks, which readily adhered to one another, formed a compact and strong material. The interior measured 2 inches in breadth by $1\frac{1}{2}$ inch in depth, and was lined with fine grass and fibres.

The eggs vary but little in character: the ground-colour is reddish white, thickly covered with moderately-sized spots of reddish brown, dusky red, and red, under which lie a few specks of bluish grey; in some specimens the markings are confluent at the large end: in shape they are rather broad ovals, slightly pointed at one end, and average 0.78 to 0.8 inch in length by 0.57 to 0.59 inch in breadth.

In the Plate accompanying my article on *Myiophonus blighi* is to be found a figure of a male of this species shot near Kanthelai Tank.

Genus KELAARTIA.

Bill with the upper mandible more curved than in *Rubigula*; rictal bristles well developed. Wings rounded, with the 3rd and 4th quills shorter than in the last; the 5th and 6th the longest. Tail nearly as long as the wings. Legs and feet robust. Tarsus scutellated.

Feathers of the crown scale-like; nuchal hairs long.

KELAARTIA PENICILLATA.

(THE YELLOW-EARED BULBUL.)

(Peculiar to Ceylon.)

Pycnonotus penicillatus, Blyth, J. A. S. B. 1851, xx. p. 178; Kelaart, Prodrömus, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 125.

Kelaartia penicillata, Jerdon, Cat. B. S. India, Suppl. Madr. Journ. 1845, xiii. no. 70; id. B. of Ind. ii. p. 86 (1863); Holdsworth, P. Z. S. 1872, p. 450; Legge, Ibis, 1874, p. 20; id. Str. Feath. 1876, p. 245.

♂ *ad.* suprà flavicanti-viridis, tectricibus alarum dorso concoloribus: remigibus saturatè brunneis, extùs flavicanti-viridi marginatis, secundariis intimis ferè omninò flavicanti-viridibus: rectricibus olivascenti-brunneis, extùs flavicanti-viridi lavatis et angustè flavo terminatis: pileo summo nigricante, postice flavicanti-viridi lavato: fascià lorali albà: palpebrà summà albà: loris posticis et facie laterali nigricanti-brunneis, fascià per regionem paroticam superiorem ductà latè flavà: supercilio lato, latè flavo, supra regionem paroticam ducto, fasciam penicillatam formante: genis anticis gulaque albis: colli lateribus cinereis: gulà imà et corpore reliquo subtùs flavis, lateribus olivascenti-viridibus: subalaribus et margine alari flavis: remigibus infrà cinerascanti-brunneis, intùs albo marginatis: rostro nigro: pedibus nigricantibus: iride rufescenti-brunneà.

Male. Length 7·5 to 8·0 inches; wing 3·2 to 3·4; tail 3·1 to 3·2; tarsus 0·75 to 0·8; mid toe and claw 0·8; hind toe and claw beneath 0·6; bill to gape 0·85.

Iris red mingled with brown, or red deepening to brown next the pupil; tarsi and feet dark leaden blue; bill black.

Lores, cheeks, forehead, and crown dull black, paling on the occiput into the olive-green of the hind neck, back, rump, wings, and tail, and changing into a grey patch below the ears; a stripe from the nostril up the side of the forehead, a spot at the upper eyelid, the chin and gorge white: a bright yellow tuft of lanceolate feathers passing back to the neck springs from above the eye, and an impure yellow spot lies on the ear-coverts; inner webs of quills and rectrices blackish brown, the latter washed with the olive-green of the outer webs; tips of tail-feathers beneath yellowish; throat yellow, changing into olivaceous or greenish yellow on the under surface; the abdomen and centre of lower breast nearly as yellow as the throat; flanks dusky, under tail-coverts like the breast. Variations exist in the depth of the green of the upper surface and in the yellow of the under surface.

Female (somewhat smaller). Length 7·1 inches; wing 3·1. Bill, legs, and feet as in the male. The tail-feathers are more broadly tipped with yellowish beneath as a rule.

Young birds of the year have the feathers of the head edged whitish, and the yellow of the throat less in extent and more clearly defined from the hue of the chest.

Obs. Until the publication of Dr. Jerdon's great work on Indian birds this species held rank as a *peculiar* Ceylonese form. It was discovered by Kelaart, and forwarded by him to Blyth, with, it appears, the suggested name of *penicillata*. It was described by Blyth, *loc. cit.*, and placed among the Ceylonese local forms. Jerdon, however, included the species in his 'Birds of India' on the evidence of a specimen from the south of the peninsula, of which he writes as follows:—"I believe that this Ceylon bird is identical with one procured by me from the Mysore country, below the Nilghiris, which was accidentally destroyed before I had taken a description; but I had a coloured sketch drawn, from which I briefly described it in my 'Supplement Cat. Birds of South India.'" From that time until the present no second example has, to my knowledge, ever been procured; and Mr. Hume, even, has no record of its occurrence in South India. I therefore include it in this work among the birds "peculiar to Ceylon." Its slight differences from *Ixos* entitle it to generic rank; and it forms the second genus only peculiar to the island, *Phæncophaës* being the first.

Distribution.—This handsome Bulbul is a hill species, and more exclusively confined to the upper regions than any of our "peculiar" birds, with the exception of *Stoparola sordida*. It is abundant in all the higher parts of the Central Province, from the altitude of Horton Plains and the Nuwara-Elliya plateau to about 3500 feet, at which elevation it is common in the Kandyan and other western districts. In Uva, however,

it is not so numerous at that height, but is found more in the forests above 4000 feet. In the Knuckles it is plentiful in the upper forests, as well as in the wooded patnas. In the southern ranges it is found in the higher parts of the Morowak and Kolonna Korales.

Habits.—This showy Bulbul affects forest by choice, frequenting likewise the outskirts of jungle surrounding coffee-estates and patna-woods which line mountain-streams in the Central Province. It lives in low jungle and about underwood more than in the upper branches of lofty trees, except when the latter are in fruit, and it then congregates in flocks, sometimes in company with the Blackbird. A tree thus besieged with the feathered inhabitants of the Ceylon forests presents a lively scene. The sprightly Yellow-eared Bultuls dart in and out, chasing one another among the boughs and greedily feeding on the fruit, which drops with a constant patter on the leaves beneath, while the more conspicuous Blackbirds, equally active in their movements, fly hither and thither and endeavour to drive away their smaller companions from the feast. It is shy in its disposition, and has a quick darting flight, during which it often utters its not unpleasing whistle, which resembles the syllables *wee, wee, wee*, quickly repeated. Notwithstanding its timid nature it is very inquisitive, and will often fly into a bush close to a bystander, peer at him, and then disappear as suddenly as it came. The resemblance in the style of head-plumage in this bird to that of some of the Meliphagidæ from Australia is singular; the tufts or gay-coloured stripes about its face call to mind the markings of *Meliphaga nova-hollandiæ*.

In the Plate accompanying my article on *Malacocercus rufescens* will be found a figure of the present species.

Genus PYCNONOTUS.

Bill stout, slightly curved. Nostrils somewhat advanced; rictal bristles stout. Wings with the 1st quill half the length of the 4th, which is the longest. Tail moderately long, square at the tip. Tarsus somewhat lengthened, shielded with smooth scutæ. Head crested; nuchal hairs well developed.

PYCNONOTUS HÆMORRHUS.

(THE MADRAS BULBUL.)

Muscicapa hæmorrhousa, Gm. Syst. Nat. i. p. 941 (1788).

Hæmatornis pusillus, Blyth, J. A. S. B. 1841, x. p. 841.

Pycnonotus hæmorrhous, Blyth, J. A. S. B. 1845, xiv. p. 506; id. Cat. B. Mus. A. S. B. p. 209 (1849); Kelaart, Prodrum, Cat. p. 123 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 125; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 240 (1854); Jerdon, B. of Ind. ii. p. 94 (1863); id. Ibis, 1867, p. 8; Holdsworth, P. Z. S. 1872, p. 451; Ball, Str. Feath. 1874, p. 292; Butler & Hume, ibid. 1875, p. 473.

Ixos cafer, Sykes, P. Z. S. 1832, p. 88.

Molpastes chrysorrhoides, Adam & Hume, Str. Feath. 1873, p. 378.

Molpastes pusillus, Hume, Nests and Eggs, ii. p. 291 (1874).

Molpastes hæmorrhous, Fairbank, Str. Feath. 1877, p. 405.

Red-vented Flycatcher, Brown, Ill. Zool. pl. 31. fig. 1 (1776). *Bulbul*, Hind.; *Tonki bulbul*, Bengal.; *Pigli pitta*, Telugu; *Konda lati*, Tam. in India (Jerdon). *The Ceylon Nightingale* of some in Ceylon.

Kondé-kurulla, Sinhalese; *Kondacla*, Tamil, lit. "Topknot bird," from the crest; *The Con-datchee Bulbul* (Kelaart); *Pastro kondache*, Portuguese in Ceylon.

Male. Length 7·6 to 8·0 inches; wing 3·75; tail 3·2; tarsus 0·85; mid toe and claw 0·85; hind toe and claw 0·6; bill to gape 0·78.

Iris deep brown; bill black; legs and feet dark or sepia-brown.

Entire head, chin, and throat black, not so intense on the throat, and with the ear-coverts inclining to brown; the feathers of the back of head elongated and capable of being erected at will; hind neck, back, wings, chest, upper part of breast, and thigh-coverts sepia-brown of various shades, deepest adjoining the black of the head and throat, palest on the breast, and edged with greyish white everywhere but on the lower flanks; the edgings are whitest on the sides of the neck, where they coalesce to form a white streak next the black of the throat; quills pale-edged exteriorly; tail blackish brown, broadly tipped with white; under tail-coverts shining crimson.

Birds from high altitudes, such as the upper parts of Uva and about Hakgala have the edgings of the feathers more albescent than low-country specimens, and the whole plumage has a paler appearance.

Young. The black of the head and throat not so intense; and the upper surface with less plainly defined edgings of fulvous grey; quills margined externally with rusty brownish; tail with an obsolete black terminal band, a dusky whitish tip, and the base paler than in the adult; vent and under tail-coverts reddish.

Obs. Some doubt exists as to the true specific name for this species. It has been of late referred to under Blyth's title *Pycnonotus pusillus*, which was held by this naturalist, in his commentary on Jerdon's 'Birds of India' (Ibis, 1867, p. 8), to be alone applicable to the Madras Bulbul, on the ground that the *Muscicapa hæmorrhousa* of Gmelin referred to a Chinese species (*Ixos chrysorrhoides*). It does not, however, appear to me that this is a matter beyond dispute, particularly as one of the localities given by Gmelin for his species was *Ceylon* (Syst. Nat. i. p. 941). I prefer, therefore, not to depart from the nomenclature adopted by Jerdon and others; and I observe that Mr. Hume, in his later notices of this bird, applies Gmelin's title to it. This peculiarly Indian genus of Bultuls runs through a series of closely-allied species from *P. pygæus*, the large northern representative of the present, to *P. atricapillus*, which is common in the north of Tenasserim. The first-named bird differs from ours in its plumage by having the ear-coverts glossy chestnut-brown, and the black of the head descending upon the hind neck, where it pales into the blackish brown of the back—thus being a much darker bird above, while in the lower parts it is paler. The wings of Nepal, Himalayan, and Assam specimens which I have examined vary from 4·1 to 4·2 inches. *P. nigropileus*, a more eastern race than the last, found in Tenasserim, differs, says Blyth, from *P. hæmorrhous* "in having no black on the throat and breast, which are brown, with greyish margins to the

feathers, like the back; and the whole nape and back are much paler than *P. hæmorrhous*, the cap alone being black;" wing 3·6 to 3·7 (*Hume*). *P. atricapillus* may be said, writes Mr. Hume, to be like *P. nigropileus*, but with the throat, ear-coverts, breast, and abdomen uniform very pale greyish white brown.

Distribution.—This very common bird is found abundantly throughout the whole of the island to a general altitude of about 3500 feet, and in Uva ranges to about 5900 feet, its highest point being the neighbourhood of Hakgala, to which it extends from the Fort-MacDonald patnas, a portion of the Kandyan Province where many low-country birds are located. It is most numerous in open and cultivated districts, particularly in the west and south of the island and in the maritime portions of the eastern and northern divisions. In the extensive forests of the east and north-central portions it inhabits chiefly those localities which have been cleared and are now open or covered with low jungle; but in the depths of the woods it is less frequent than the White-eyebrowed Bulbul. In Dumbura and other wide valleys of the Central Province it is almost as common as in the low country, but it does not range so high on the Rambodde side as in Uva. Neither Kelaart nor Mr. Holdsworth record it from Nuwara ELLIYA, nor have I myself observed it there: that it should not occur even as a straggler or occasional visitant in the gardens of the residents, while it is not unfrequent just lower down the valley at Hakgala, is perhaps a proof that it is not able to withstand the frost and cold at nights on the plain.

Of this Bulbul Jerdon says that it is one of the most common and generally-spread birds in the south of India, extending throughout the southern part of the peninsula to the Nerbudda river, and beyond it apparently to the north-west. It ascends the Nilghiris to about 6000 feet, and it is, says Dr. Fairbank, found at the top of the Palanis, though it is more abundant at the bottom and on the adjacent plains; in the Khandala district it is an inhabitant of the slopes of the hills, as well as the neighbouring portion of the Deccan. To the north-west it extends as far as Sindh, to the avifauna of which province Mr. Blanford has recently added it, stating that it is found in the deserts of Umarmkot. Captain Butler remarks that it is found all over the hills and plains of Northern Guzerat, to which Mr. Hume adds, "Common at Sambhur and in the eastern portions of Jodhpoor, also in Cutch and Kattiawar. In Western Jodhpoor it occurs for the most part only in the rains." In Bengal it is replaced by the large and allied species *P. pygæus*, which extends eastwards into Burmah.

Habits.—The Madras Bulbul affects gardens, compounds, cinnamon-plantations, the vicinity of roads, low jungle, open scrubby land, and the edges of forest. It is a fearless and very sprightly bird, most active and animated in its manners, erecting its conspicuous crest to full height as it sits on the top of a bush chirping to its companions. It locates itself in close proximity to houses, and not unfrequently builds its nest in verandahs, and is consequently a universal favourite with Europeans, who rate its attempts at singing so highly that it is styled by many the "Ceylon Nightingale"! As a matter of fact, however, its notes have but little music in them; but it is constantly uttering its quick chirruping warble, which, in the breeding-season, is to a certain extent more melodious than at other times. Its food consists of insects, as well as fruit and seeds of all kinds, the berry of the *Lantana*-plant being a favourite diet, a fact which conduces to the propagation and spreading of this horticultural pest. In the evening little parties of this Bulbul assemble, and after a great deal of excitement and chattering they choose a roosting-place in some thick bush or umbrageous shrub.

Jerdon remarks, in his 'Birds of India,' that in the Carnatic it is kept for fighting, and that it seizes its antagonist by the red feathers, attempting to pull them out. It is said to imitate the notes of other birds when caged. I am not aware that this habit has been much noticed in Ceylon; but it is a great favourite as a caged bird with the natives, becoming excessively tame, and allowing itself to be carried about by hand.

It is, according to the author of the 'Birds of India,' found in that country usually in pairs or in small families, flying briskly about, restless and inquisitive, feeding chiefly on fruits, but occasionally descending to the ground, and even hopping a step or two and picking up insects; "it destroys various buds and blossoms, and is very destructive to peas, strawberries, brazil-cherries (*Physalis peruviana*), and other soft fruit."

Nidification.—In the western and southern portions of the island this bird breeds, as a rule, between January and May, and on the eastern side during the north-east rains at the end of the year. It appears,

however, to have more than one brood in the year, the second being reared as late as August or September. Its nest is a loosely-made cup-shaped structure of fine twigs, grass, and bents, with a scanty lining of grass or vegetable fibre, fixed in the fork of a branch in low bushes a few feet from the ground. It frequently chooses a small lime-tree close to a dwelling, and will sometimes, as above-mentioned, build in the verandahs of houses. In a rest-house on the Trincomalie and Batticaloa road, I once found a nest placed between the tiles and a rafter over the entrance to the apartment, the pretty little owner taking no notice whatever of the passers-by, and, as we stood admiring her, scanned us from her little habitation with an amount of fearless curiosity that was charming to behold. The eggs are three or four in number, and vary somewhat in shape, the usual form being a pointed oval. The ground is reddish white, blotched and speckled all over, but most thickly at the large end, where there is often a cap or zone of colour, with reddish brown of two shades over a few bluish-grey spots, some eggs having much more of the latter tint than others. They measure from 0·84 to 0·87 inch in length by 0·64 to 0·66 in breadth.

In India the breeding-season lasts in the plains from April until August, but in the Nilghiris it breeds as early as April. Its nest is much the same as in Ceylon; but the late Mr. A. Anderson speaks of one which was "entirely composed of green twigs of the Neern-tree on which it was built, and the under surface was felted with fresh blossoms belonging to the same tree." Mr. Hume gives the average of sixty eggs as 0·89 inch in length by 0·65 inch in breadth.

PASSERES.

BRACHYPODIDÆ.

Subfam. PHYLLORNITHINÆ.

Bill longer than in the last subfamily, curved in some genera throughout; rictal bristles minute. Tail rather short. Legs and feet robust.

Body-plumage lengthened and fluffy. Nuchal hairs absent. Tongue in some bifid.

Genus PHYLLORNIS.

Bill long, gently curved, wide at the base, much compressed towards the tip; gonys-angle imperceptible; rictal bristles minute. Wings moderately long and pointed; the 4th quill the longest; the 1st about half the length of the 4th. Tail moderate, even at the tip. Legs and feet stout. Tarsus short, covered in front with a single scale. Toes short.

PHYLLORNIS JERDONI.

(THE GREEN BULBUL.)

Phyllornis jerdoni, Blyth, J. A. S. B. 1843, xii. p. 392; id. Cat. B. Mus. A. S. B. p. 212 (1849); Kelaart & Layard, Cat. Ceylon B. Prodrum, App. p. 57 (1853); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 176; Jerdon, B. of Ind. ii. p. 97 (1863); Holdsw. P. Z. S. 1872, p. 451; Hume, Nests and Eggs, ii. p. 294 (1874); Ball, Str. Feath. 1874, p. 410.

Chloropsis jerdoni, Jerd. Ill. Ind. Orn. pl. 43 (1847).

Chloropsis cochinsinensis, Jerd. Cat. B. S. India, Madr. Journ. 1839, x. p. 247.

Blue-chinned Thrush, Lath. Hist. v. p. 93; *Leaf-bird* of some; *Common Green Bulbul*, Jerdon.

Harrewa, Hind.; *Wanna bojanum*, lit. "Ornament of the forest," Telugu (Jerdon);

Hurrooa in Manbhoom.

Giraw-kurulla, Sinhalese.

Adult male and female. Length 7·3 to 7·5 inches; wing 3·3 to 3·5; tail 2·8; tarsus 0·75; mid toe and claw 0·7; hind toe, from sole, ·35; bill to gape 0·95. The 3rd quill is shorter in proportion to the 4th than in the next species.

Iris brown or pale brown; bill, upper and lower mandibles blackish; legs and feet pale bluish, milky blue, or pale lavender.

Above and beneath, including the wings and tail, grass-green; lores, cheeks, chin, and throat glossy black, enclosing a shining hyacinth-blue cheek-stripe; the forehead, above the eye, and all round the black gorget washed with yellowish, showing plainest in well-plumaged birds; a brilliant turquoise-blue patch on the ulna, and a trace of the same at the metacarpal joint (in some specimens the median wing-coverts are edged with blue); inner webs of quills brown, those of the secondaries washed with green near the tip; under surface of tail greenish grey.

Female. Has a small throat-patch and the lores bluish green instead of black, and the cheek-stripe greenish blue; the wing-patch is less in extent, and the yellowish border round the throat generally more pronounced than in the male.

Obs. A comparison of Ceylonese specimens with South-Indian and peninsular examples enables me to say that our birds do not differ from continental ones. The following are the data from several examined:—Madras—♂, wing 3·45; Travancore—♂, wing 3·5, bill to gape 0·85; Behar—♂, wing 3·6, bill to gape 0·95; Bengal—♀, wing 3·4, bill to gape 0·85. Mr. Ball gives the wing-dimensions of four examples from the Chota-Nagpur district as 3·4 to 3·5 inches; from which results it appears that the example from Behar is longer in the wing and bill than those from other localities. The head and throat are similar in coloration; but a specimen from Madras exhibits an abnormal feature in having the black throat mingled with greenish-blue feathers; and the moustachial stripe is paler than in ordinary birds.

There are several other species of *Phyllornis* inhabiting the regions to the eastward of the Bay of Bengal; among these *P. cyanopogon* of Malacca is not very distantly related to the present. It is larger (wing 4·0), has more black on the throat and face, wants the yellowish bordering, and has a very narrow cheek-stripe.

Distribution.—The Green Bulbul is a very common bird in Ceylon, and diffused throughout all the low country, except those parts which are covered with scrubby vegetation, such as the oft-mentioned jungle-plains on the south-east coast, and similar localities on both sides of the north of the island. It is particularly numerous in the cultivated portions of the western and southern provinces, and ascends the hills of the latter region, as well as those of the Kandyan district, to a considerable altitude. I have met with it in the Morowak-Korale coffee-estates and in the central ranges up to 3500 feet, and in Uva it may possibly be found at a greater elevation. It occurs in open places, and especially on the borders of cultivation, throughout the northern half of the island, the edges of the luxuriant jungle surrounding the great tanks being a favourite locality. In the vicinity of Trincomalie I found it on the borders of paddy-fields and in isolated clumps of

trees on irrigated land near village tanks. It is common in the Jaffna peninsula, affecting the "Jack," tamarind, and other trees cultivated in native compounds.

In the 'Birds of India' we read that the Green Bulbul "is spread over a great part of the continent of India, not extending, however, to Lower Bengal or to the sub-Himalayan forests. It is extremely common in the Western Provinces and in the jungles of the Eastern Ghâts; but is more rare in the open country of the Carnatic, Mysore, and Hyderabad. It is found in Central India at Mhow, Saugor, &c., and through the vast jungles of Chota Nagpur up to Midnapore." Concerning the latter region, Mr. Ball writes that it occurs abundantly throughout the division, and remarks that it is found pretty generally in the region to the south of the Mahanadi river. Dr. Fairbank found it in the Palanis up to 4000 feet, and says that it frequents the hills from Khandala to Goa. It is not recorded by any observer in 'Stray Feathers' from the north of India, Assam, or Burmah, and does not, as far as is known at present, inhabit the eastern side of the Bay of Bengal. Col. Tickell figures it, in his MS. Illustrations of Indian ornithology, from Tenasserim; but Lord Tweeddale remarks that its occurrence there is extremely doubtful; in fact, though the plate represents the species, the description refers to another, *Ph. chlorocephalus*. Furthermore, Mr. Hume remarks, in his list of the birds of Tenasserim, that it certainly does *not* occur in that province.

Habits.—This "Leaf-bird" frequents compounds, gardens, openly-wooded country, the edges of roads leading through jungle, the borders of forests surrounding tanks, the outskirts of paddy-fields, banks of rivers, and such-like places. It chiefly affects the topmost branches of trees, and has a great partiality for the cocoanut-palm, about the heads of which it searches for insects, uttering its whistle, which can often be heard when the bird, hidden by the luxuriant fronds, is invisible from beneath; it often clings to the leaves like a Titmouse, and flits actively about among the sprigs of waving boughs in search of insects. The form of its bill is very much that of a Honey-eater; indeed, Bonaparte classed this genus among the Meliphagidæ, to which it has some affinity in the matter of habit, though its structure allies it to the short-footed Thrushes. There is, I think, no doubt that it sometimes sucks the honey from flowers: I endeavoured to detect it in this while in Ceylon, but was unsuccessful. Mr. Ball, however, writes (*loc. cit.*), "I have observed that it is especially fond of the flowers of the parasitic *Loranthus* which grows on many trees; so far as I could ascertain, it both sips the nectar from the flowers and catches the insects attracted by the same." I have more than once seen a little troop on the branches of a flowering tree, but was unable to ascertain if they were doing further than catch the insects, which, as Mr. Ball remarks, are attracted by such a condition. Seeds may often be found in its stomach, though they are not so generally partaken of as insects.

When not breeding, the females of this species collect in little flocks, and may be found in scattered company, searching for food and constantly uttering a sharp monosyllabic *chick* note. The ordinary voice of the males is comprised of a number of varied whistles; indeed the bird is capable of mocking almost any other species in the forest, and is a most clever imitator of the notes of Drongos, that of the white-bellied form inhabiting the northern forests being most cleverly mimicked by it. These powers of imitation are well known in India, and were first mentioned by Tickell, who remarks that it is a "most excellent mocker, and imitates the notes of almost every small bird in the country." Blyth likens its *call* to that of the Indian Black Drongo (*Dicrurus macrocercus*), though softened down and mellowed; this note, I imagine, is not natural to it, but is simply an attempt at mimicry, which can be so cleverly executed that it would vary in tone according to the particular King Crow that the bird was pleased to mock!

Nidification.—Common as this Bulbul is, I have never succeeded in finding or obtaining its nest. It breeds, I imagine, in April or May in the Western Province. Layard says that it makes an open cup-shaped nest; and he sent one to Sir William Jardine from Pt. Pedro, which the latter describes as having been placed upon a branch, and being flat in general form, and composed of soft materials, such as dry grass and silky vegetable fibres, rather compactly woven with some pieces of dead leaf and bark on the outside, over which a good deal of spider's web was worked.

Captain Beavan, who records it as breeding in April in Manbhoom, writes of a nest that was brought to him, "It is built at the fork of a bough and neatly suspended from it, like a hammock, by silky fibres, which are firmly fixed to the two sprigs of the fork, and also form part of the bottom and outside of the nest. The

outside is lined with dried bents and hairs. The eggs (creamy white, with a few light pinky-brown spots) are rather elongated, measuring 0.85 by 0.62 inch; interior diameter of nest 2.25 inches by 1.5."

Mr. Hume, generalizing, says, "The eggs are sparingly marked, usually chiefly at the larger end, with spots, specks, small blotches, hair-lines, or hieroglyphic-like figures, which are typically almost black, but which, on some eggs, are blackish (or even reddish) or purplish brown." The average size of a dozen is 0.86 inch by 0.6 inch.

PHYLLORNIS MALABARICUS.

(THE MALABAR GREEN BULBUL.)

Turdus malabaricus, Gm. Syst. Nat. i. p. 837 (1788).

Phyllornis malabaricus, Blyth, Cat. B. Mus. A. S. B. p. 212 (1849); Gould, B. of Asia, pt. xiii. (1861); Jerdon, B. of Ind. ii. p. 98 (1863); Holdsw. P. Z. S. 1872, p. 451; Legge, Ibis, 1874, p. 21; Fairbank, Str. Feath. 1876, p. 258.

Chloropsis malabaricus, Jerdon, Cat. B. S. India, 2nd Suppl. Madr. Journ. 1844-45, p. 124.

Phyllornis malabarica, Kelaart, Prodromus, Cat. p. 120 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 176; Bourdillon, Str. Feath. 1876, p. 400.

The Golden-fronted Green Bulbul; *The Malabar Honey-eater*, Kelaart.

Giraw-kurulla, Sinhalese (applied to both these species, probably on account of their being the colour of a Parrakeet).

Adult male. Length 7·5 inches; wing 3·5 to 3·6; tail 2·5 to 2·7; tarsus 0·7; mid toe and claw (straight) 0·75; bill to gape 0·85 to 1·0. The tail of this Bulbul is shorter and the under tail-coverts longer than in the preceding species, a distinguishing characteristic which is noticeable the moment the bird is handled.

Iris brown; bill blackish; legs and feet slaty bluish.

Above and beneath a darker green than in the foregoing; face, chin, and throat similarly enveloped in black, but the colour extends lower down on the neck and encircles the eye; maxillary stripe larger; forehead rich golden, shading gradually into the green of the head; the wing-patch deeper in hue, and along the carpal joint there is a streak of hyacinth-blue.

Young. The male of the year appears to have the forehead and throat green, as specimens are often procured with golden and black feathers mixed with the green respectively on these two parts; the maxillary stripe in these is small.

Female. Somewhat smaller than the male. Length 7·1 inches; wing 3·4; tail 2·3. Bill not so black as the male's. Forehead green; throat-patch and cheek-stripe smaller.

Obs. Not having had access to any South-Indian examples of this species I am unable to give data concerning them, but it is improbable that they differ in any way from insular specimens. The northern form of Golden-fronted Bulbul, *P. aurifrons*, erroneously included in the Ceylon list by Kelaart (Prodromus, p. 120), is allied to the present species. The male has the forehead more occupied by the golden hue, and the gorge, as well as the sides of the throat, are hyacinth-blue; the black of the fore neck is bordered beneath with golden yellow, and the wing-patch is larger than in *P. malabaricus*. The female, as in the present species, wants the golden forehead.

In my synonymy of this bird I have omitted Temminck's reference, Pl. Col. 512, as neither the drawing nor the description apply to the present species. The whole head, nape, sides of neck, and throat beneath the black gorget are yellow, and are described in the text as "une jaune jonquille," which "couvre la tête, la région des oreilles et s'étend en zone autour de la grande et large plaque noire qui couvre toute la gorge." He concludes his notice by saying that a couple of these birds were sent to him from Sumatra. The plate and description are perhaps those of *Ph. cochinchinensis*.

Distribution.—This handsome species has always been considered a rare bird in Ceylon: undoubtedly it is far less numerous than the last mentioned; but it is nevertheless widely distributed, both in the low country and in the mountain-regions of the island. Kelaart is said by Layard to have procured it at Nuwara Elliya; and though the latter speaks of it as confined to the upland districts, he only procured one example, which was brought to him by his collector "Muttoo," at Gillymally. There is an example in the British Museum collected at Nuwara Elliya by Mr. Boate. The first specimen which came under my notice was one which was obtained in Dumbara by Mr. Forbes Laurie, and afterwards noticed, in his catalogue, by Mr. Holdsworth.

In 1871 I met with it in the Kukkul Korale and afterwards obtained it in several parts of the island, and not unfrequently saw it in others. These localities were forests near Galle, coffee-estates in the Morowak Korale, the Kandyan district, Uva, the Trincomalie, Anaradjapura, and Kurunegala districts, and lastly in Saffragam and the Pasdun Korale. In the hills I have not seen it myself above 4000 feet. It will, I believe, be found throughout the northern half of the island wherever there are forests, and the same as regards the south-eastern jungle-clad plains. Mr. Parker writes me that he has found it at Uswewa. While at large this bird would, of course, be taken for the commoner species, as it is not distinguishable from it unless viewed close enough to see its yellow forehead.

On the mainland this bird's habitat is restricted to the southern and central portions of the Indian peninsula. I am not aware that it extends further north than Bombay; and being partial to the damp climate of the Malabar region, it does not appear to extend nearly so far north on the eastern coast; at any rate Mr. Ball, who procured *P. aurifrons*, the northern representative of this species, in the district between the Mahanadi and Godaveri rivers, did not meet with the present bird in that region. Dr. Fairbank writes that it is found along the hills from Khandala to Goa, and usually near their western base. In Travancore Mr. Bourdillon says that it is a common bird in open jungle with large trees. All that is mentioned of it by Jerdon is as follows:—"This species is found most abundantly in the forests of Malabar, in Wynaad, Coorg, and on the sides of the Nilghiris up to about 4000 feet of elevation. It is also found, though rarely, on the Eastern Ghâts and in some of the forests in Central India."

Habits.—In its economy this handsome Bulbul does not differ materially from the last species; but it does not appear to be so much given to the science of mimicry! I have found it frequenting the topmost branches and lateral boughs of moderately sized trees where the forest was not very dense, and also the outskirts of patna-woods and the borders of jungle surrounding tanks in the Northern Province. It is very active in its movements, and while hopping about and scrutinizing the leaves in search of food pipes out a shrill note, differing from the clear whistle of the last species. The male likewise gives vent to a series of chirps, which, combined, make up a short little warble. Of this performance Mr. Bourdillon remarks that the male makes an attempt to sing, uttering a few notes something like those of the Bronzed Drongo (*Chaptia anea*). Jerdon observes that it is "seen in small parties, hopping and flying actively about the branches of trees, and lives both on fruits and insects, chiefly the latter."

Genus IORA.

Bill shorter and straighter than in *Phyllornis*, the tip slightly notched. Nostrils oval and exposed; rictal bristles very minute. Wings rounded; the 4th and 5th quills the longest, the 3rd considerably shorter, and the 2nd less than the secondaries. Legs and feet weak; the tarsus lengthened, equal to the middle toe and claw, and covered with wide smooth scales; toes short, the outer one considerably joined to the inner at the base.

Plumage of the lower back and flanks lengthened and fluffy.

IORA TIPHIA.

(THE COMMON BUSH-BULBUL*.)

Iora tiphia, Linn. Syst. Nat. i. p. 331 (1776); Blyth, Cat. B. Mus. A. S. B. p. 214 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 266 (1854); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Jerdon, B. of Ind. ii. p. 103 (1863); Armstrong, Str. Feath. 1876, p. 326; Hume, ibid. 1877, p. 428.

Iora multicolor, Gmelin, Syst. Nat. Linn. i. p. 924 (1788).

Iora zeylonica, Gmelin, Syst. Nat. Linn. i. p. 964 (1788); Blyth, Cat. B. Mus. A. S. B. p. 213 (1849); Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 267 (1854); Jerdon, B. of Ind. ii. p. 101 (1863); Holdsw. P. Z. S. 1872, p. 452; Butler, Str. Feath. 1875, p. 473.

Iora scapularis, Horsf. Trans. Linn. Soc. iii. p. 152 (1821).

Ægithina zeylonica, Hume, Str. Feath. 1873, p. 438.

Ægithina typhia, Ball, Str. Feath. 1874, p. 411; Hume, Nests and Eggs, ii. p. 295 (1874); id. Str. Feath. 1875, p. 129.

The Green Indian Warbler, *The Ceylon Warbler*, and *The Green-rumped Finch* (Latham); *The Ceylon Blackcap*, Brown; *The Ceylon Bush-creeper*, Kelaart; *The Black-headed Green Bulbul* and *The White-winged Green Bulbul*, Jerdon. *Shoubiga*, Hind.; *Patsujitta*, Telugu; *Pacha pora*, Tam. in India, lit. "Green Bird;" *Chak tuk*, Bengal. (Jerd.). *Kirikahaye* and *Ka-kurulla*, lit. "Yellow Bird," Sinhalese (Layard); *Mam palla kuruvi*, Ceylonese Tamuls, lit. "Mango-fruit Bird."

Adult male and female. Length 5.2 to 5.6 inches; wing 2.4 to 2.6; tail 1.7 to 2.0; tarsus 0.8; mid toe and claw 0.6; bill to gape 0.72 to 0.75.

Male (black plumage). Iris grey, mottled with brown, occasionally hazel-brown; bill, upper mandible black, with a clearly defined blue edge; lower mandible dusky blue with a bluish margin; legs and feet slate-blue, claws black.

September (Colombo). Lores, top of the head, hind neck, wings, and tail deep black; the back and rump intermixed with dark olive-green, the centres of the feathers being of this colour; the terminal half of the median wing-coverts, the tips of the greater coverts, and the inner webs of the lower scapulars white (the latter forming a concealed tuft, except when the bird is in flight); middle primaries with a faint white edge; face, ear-coverts, throat, sides of neck, and under surface, with the under tail-coverts, rich yellow, most brilliant on the throat and chest; lower flank-feathers white and much elongated; under surface of quills at the base white.

This example, in which the breeding-plumage is as perfect as in any that I have seen from Ceylon, is in moult and putting on the dark upper surface; the greater wing-coverts are more tipped in one wing than in the other. The iris is quite brown. An individual shot in January (Colombo) is in the same plumage, but the greater wing-coverts are more tipped with white; the iris is hazel, mottled with grey. Another, shot in October (Colombo), is in the dark dress, but the back-feathers are merely smeared with black, imparting a sooty-green appearance, and the lower wing-bar is wider than in the two foregoing; the yellow of the under surface is not nearly so brilliant, which is invariably the case when the upper surface is not very black.

Green plumage: June (Galle). Iris grey; bill, legs, and feet as above; head, hind neck, back, and rump olive-green, slightly smeared with black on the tips of the nape-feathers; wings and tail black, the upper wing-band broad,

* This seems to me to be the most suitable name to apply to this species.

the lower, formed by the tips of the greater coverts, almost wanting, partly owing to abrasion; the secondaries and inner primaries very finely edged with yellowish; scapulars black, with the inner webs of those which are concealed white; lores yellowish, cheeks and an orbital fringe the same; throat, fore neck, and down the centre of the chest and breast pure saffron-yellow, but less bright than in the dark stage, and shading off into greenish on the sides of the chest and breast; lower flanks mostly white.

August (Pasdun Korale). In the green plumage; but the head and back more surrounded with black than in the last: both wing-bars conspicuous; commencing to moult to black plumage, new and imperfect dark feathers being perceptible among the old green ones of the back.

Obs. From the evidence adduced by these descriptions it may, I think, be concluded that the black plumage is put on in the autumn and the green in the spring. The former has been generally considered to be the breeding attire; but as the nesting-season in the south-west and west of Ceylon lies between February and June, it would appear that the black upper surface is not always a sign of breeding-plumage. I have seen black individuals, however, at all seasons of the year; and therefore the safest hypothesis is that some breed in the green and some in the black stage, as Mr. Hume and others have determined is the case in India; and it may be that the black plumage is, to some extent, a sign of age rather than a seasonal dress.

Female. Iris olive-grey; bill somewhat paler than in the male.

Head and upper surface dull grass-green; scapulars of a darker green, and the tail dusky green; wings *blackish*, the quills and the white-tipped coverts edged outwardly with yellowish green, and the former with white inner margins; tertials and a few of the inner greater coverts with broad yellowish-green outer and white inner edges; orbits, chin, throat, and centre of under surface yellow, shading on the sides into greenish.

Young. The immature males are very similar to females; but the wings are blacker, and the tail is blackish in some and mingled with green feathers in others. An example (November) in my collection has the longer tail-coverts and the central tail-feathers green, while the shorter coverts and the remaining rectrices are black.

Obs. The Ceylonese birds of this species belong to the southern or black-backed race, *I. zeylonica* of Gmelin. After a careful examination of Mr. Hume's masterly review of this perplexing form ('Stray Feathers,' 1877, pp. 428-41), I cannot but accept his decision that the *Iora zeylonica* of Gmelin, which is the "Ceylon Blackcap" of Brown and the "Green-rumped Finch" of Latham, is not separable from the *Iora tiphia* of Linnaeus (the Green Warbler of Latham) inhabiting Bengal, and which was, in all probability, as Mr. Hume remarks, described from a female or young male. In the latter race, which is not found in the south of India and Ceylon, the males do not acquire the black back in the non-breeding-season, but frequently do while nesting, although, until the recently acquired large collection of Mr. Hume's demonstrated this to be the case, they were by many considered constantly to preserve the green back, as in the southern form. The yellow of the under surface is likewise not so brilliant. Mr. Hume has tabulated his enormous series from localities extending from Ceylon throughout all India, Burmah, Tenasserim, the Malay peninsula, and the larger islands of the archipelago, by which it appears that the females throughout all this range are inseparable, and that the black-backed males from Ceylon, South India, the Western Ghâts, and also Mount Abo as an outlying station, are similar to those from the south of the Malay peninsula. Commencing in the central provinces and extending through Chota Nagpur, Lower Bengal, along the sub-Himalayan region to Assam, and thence through Burmah to Tenasserim, we find the *tiphia* type of males existing, with, however, as already mentioned, much individual variation in the character of their plumage out of the breeding-season.

We likewise have these individual irregularities in Gmelin's race, for it is evident that males breed in Ceylon sometimes with green backs; and they have been unquestionably proved to do so in the south of India. The female of the Javan bird, described by Horsfield as *I. scapularis*, was stated by Lord Tweeddale to be identical with the Indian *tiphia*, while the researches of Mr. Hume substantiate this opinion; and, as further evidence concerning the identity of the two species, I might mention that Horsfield's description of the note (which he compares to the word *cheetoo*), and the manner in which it is uttered, are in all respects applicable to that of the Indian *Iora*.

I. nigrolutea, Marshall, is an allied species, inhabiting the dry parts of western continental India, stretching across from the coast-region at Kutch to the north-west provinces. It is distinguished from the present bird by the white on the tail-feathers, of which Mr. Hume writes that the females always, and the males during the non-breeding-season, have the central pair almost wholly greyish white, with the tips generally purer white and the outer web often shaded with ashy; the rest of the tail-feathers are black, broadly tipped with pure white. In

the breeding-plumage the male has the white tippings to the lateral feathers more or less reduced, and the central tail-feathers, like the rest, jet-black and white-tipped. In other respects the plumage is not dissimilar to that of *I. tiphia*.

Distribution.—The Bush-Bulbul is a common bird in Ceylon and widely distributed, being scattered throughout all the low country and the hills up to about 2500 feet. It is of course numerous in the open cultivated lands of the south and west; but it is not less so in the scrubby low jungle-tracts round the north coasts, including the Jaffna peninsula. It inhabits also the east side of the island in the same abundance that it does the west. In the dry forests of the north-central part of the island it is not unfrequent, but it is not found in the damp timber-jungles of the south. In Dumbara and other similarly elevated valleys of the Kandyan Province it is not uncommon; but I am not aware that it ascends to the upper hills, except perhaps in Haputale and other districts in Uva bordering on the low country.

This Bulbul has a very wide distribution on the continent, and is, in many portions of the Indian peninsula and the regions beyond the Bay of Bengal, as common as it is in Ceylon. In Southern India it is an abundant inhabitant of the plains, and extends into the hills to the elevation of Ootacamund, whence Mr. Hume records it. It is not, however, noted either from the Travancore ranges by Mr. Bourdillon, nor from the Palanis by Dr. Fairbank, though the latter procured it at the base of the hills. It is found in the Deccan and in the northern parts of the Western Ghâts, whence it ranges to the north-west as far as Mount Aboon, where it occupies a somewhat isolated position, the circumjacent plains being inhabited by the recently discriminated and allied species, *I. nigrolutea*. Turning eastwards from the northern extremity of the Western Ghâts we find it inhabiting the central provinces, Chota Nagpur, and extending northwards to Oudh, Dehra Doon, Kumaon, Nepal, and along the Himalayas to Assam. In Lower Bengal it is common, and about Calcutta it is numerous. In Burmah it is also common, and inhabits therein the Irrawaddy Delta in tolerable abundance. It is plentiful throughout the province of Tenasserim, not, however, ascending the hills. Southward it extends through the Malay peninsula, specimens being recorded from Wellesley, Pinang, Malacca, and Singapore, and thence onward through the archipelago it is an inhabitant of Sumatra, Borneo, and Java.

Habits.—Owing to its partiality for large trees, which are usually found about the houses of Europeans in Ceylon, this little Bulbul is one of our most familiar birds. It delights in the luxurious shade of the suriah, the mango, the bread-fruit, and in the north the stately tamarind, which spreads out its welcome shelter in the midst of almost every sea-coast village. In one of these latter trees a pair (for they are generally found together) will remain sometimes for fully an hour searching among the boughs and foliage for insects, the male every now and then uttering its flute-like whistle, *chee-too*, which imparts to the attentive listener the idea that the little bird must be in a very contented frame of mind! It is fond of open groves of trees, the edge of jungle, and vegetation at the sides of roads, and it is very partial to the low scattered jungle bordering the sea-shore on the north coast. Occasionally several pairs may be seen frequenting the same tree; but it is not usual to find more than one couple together. It is of a restless disposition, hopping actively about the leaves in search of its food, and often clinging, like a Tit, to a slender twig while scrutinizing the surrounding foliage. In its mode of flight it differs from all its family: owing, perhaps, to the fluffy nature of its long flank-feathers, it appears to have no little difficulty in acquiring speed on the wing; and its flight is at best laboured, being performed merely from one tree to the other with a quick beating of its wings and a dipping motion of the body, which combine to produce a whirring sound.

I have occasionally seen it dart out and seize a passing moth or butterfly on the wing, and alighting again swallow it whole, a habit which is testified to by the large Mantidæ and other winged insects which are often found in its small stomach. While in the black plumage the male presents a very handsome appearance, his black back contrasting with his brilliant yellow breast, and when he darts from one tree to another, puffing out while on the wing his long white flank-plumes, looks more like a ball of feathers than any thing else. Jerdon remarks that the natives in the south of India state that this species repeats the words "*Shoubhiya, Shoubhiya*" before rain.

Nidification.—I have found the nest of the Bush-creeper in the north of Ceylon in July ; but, if different districts be considered, I believe it breeds all the year round, as males may be found in the black plumage at all seasons. It builds at about 15 or 20 feet from the ground, attaching its beautiful nest to the upperside of a small horizontal bough, generally near a fork, but sometimes, according to Mr. Hume, between one or two upright twigs. It is a symmetrical, rather deep cup, with thin, steep, and compact walls, and is usually made of cotton woven in with fine grass or very slender tendrils of plants, the bottom being attached to the bark by cobwebs, which also adorn the neatly finished top ; the interior is roomy and the bottom rather flat, the cavity measuring about 2 inches across. I have found several nests, but only one with eggs : the number was two ; they were broad, stumpy ovals, of dirty white or whitish-grey ground-colour, openly blotched with large longitudinal faded brownish spots. My eggs got broken in travelling, and I therefore lack measurements ; but Mr. Hume gives the average size as 0·69 by 0·54 inch ; and the same author, in his ‘ Nests and Eggs,’ says that the eggs are at times pink or salmon-colour, with *reddish*-brown blotches, which are chiefly confined to the large end, forming there an imperfect zone.

PASSERES.

Fam. TIMALIIDÆ.

Bill curved, compressed, higher at the base than wide. Nostrils placed in a membrane bordered by setaceous feathers. Wings short and rounded. Tail moderately lengthened. Legs and feet strong, with the tarsus longer than the middle toe and scutellate in front ; the hind toe and claw large.

Plumage often lax, and in many silky beneath. Insectivorous in diet.

Subfam. TIMALIINÆ.

Wings rounded, with the 1st quill moderately developed, the secondaries long. Tail of 12 feathers, usually lengthened and graduated. Legs and feet stout and large. Toes stoutly scaled, the outer and the middle slightly syndactyle.

Plumage mostly lax. Of gregarious and very active habit.

Genus MALACOCERCUS.

Bill moderately long, compressed, the base higher than wide ; culmen well curved ; rictal bristles scanty. Wings short, rounded, the 1st quill half the length of the 5th, which is the longest ; secondaries almost equal to the longest primaries. Tail graduated, rounded at the tip. Legs and feet strong. The tarsus covered with broad smooth scutæ, becoming obsolete with age. Toes stoutly scaled.

MALACOCERCUS STRIATUS.

(THE COMMON BABBLER.)

Malacocercus striatus, Swains. Zool. Ill. 2nd ser. pl. 127 (1833); Jerdon, B. of Ind. ii. p. 59 (1863); Blyth, Ibis, 1867, p. 300; Holdsw. P. Z. S. 1872, p. 449; Legge, J. A. S. (Ceylon B.), 1870-71, p. 39; Hume, Str. Feath. 1876, p. 458.

Malacocercus bengalensis, Kelaart, Prodrum, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 271.

The "Seven Brothers" (so called from its associating in flocks of six or seven), *Dust-bird*, *Dirt-bird*, *Dung-Thrush*, *Mud-bird*, Europeans in Ceylon. *Pastro manduco*; *Pastru bragaru* (Layard), Portuguese in Ceylon.

Demelitcha, Sinhalese; *Punil*, Tam. (Layard).

Adult male and female. Length 9.0 to 9.2 inches; wing 4.0 to 4.2; tail 4.0; tarsus 1.3; middle toe and claw 1.0 to 1.05; hind toe and claw 0.8; bill to gape 0.95 to 1.0.

Iris white, or white faintly tinged with green; bill fleshy white or yellowish white; legs and feet sickly yellow or whitish in some, tinged in parts with yellowish; eyelid yellowish.

Head, upper surface, entire neck, and chest brownish ashy grey, the brown portions of the feathers being darkest on the lower part of the hind neck, interscapular region, and chest; the edges grey, contrasting with the dark hue, many of the feathers likewise with pale mesial striæ; the wing-coverts more uniform than the back; quills and terminal portion of tail-feathers glossy brown, the outer webs of the former pale greyish at the edges, showing conspicuously when the wing is closed; basal part of tail olive-grey, and the dark portion cross-rayed with the same hue, which gradually blends into the brown; lores greyish; lower breast, belly, and under tail-coverts pale rufescent, blending into the brownish grey of the chest and flanks; under wing-coverts tinged with rufescent, the inner edges of the quills at the base of the same hue.

Individuals vary *inter se* in the amount of cross-raying of the tertials and tail-feathers; but this character is always most perceptible when the feathers are new; it is plainly indicated in the back-feathers of some examples.

Young. Immature birds are very similar to adults. Mr. Holdsworth remarks that the depth of the striæ varies with age, and that in a well-grown young bird there is not a trace of striæ on the tertiaries, and they are very indistinct on the tail.

Obs. This Babbler is not very aptly named *striatus*, for this term is usually held to signify longitudinal lines or central streaks to feathers; in the present case, however, it was applied by Swainson to the species in question to denote the transverse rays which cross the scapular, tertial, and tail-feathers, and which is a prevailing character in this family of Thrushes. His figure (pl. 127, 2nd series, of his 'Illustrations') represents these transverse striæ more pronounced than they ever really are; for in the drawing they appear as *black* lines, well defined, on a greyish-brown ground. It would appear that the name existed in a MS. form prior to Swainson's description of the species; he writes of it, "The present species we received from Ceylon, but without any notice of its habits; and the specimen is in the Paris Museum, under the manuscript name of *Gracula striata*, from the circumstance of the scapular quills and also the tail-feathers being marked with transverse lines of a darker brown, varying in intensity according to the rays of light."

This species is very closely allied to *M. malabaricus*, the Jungle-Babbler, found in the peninsula of India. It was formerly thought to be peculiar to the island, but specimens in my collection from Ramisserum Island are not to be separated from Ceylonese examples; they measure from 3.95 to 4.2 in the wing; the lower parts and under wing are slightly more fulvous than the Ceylonese, and the tail-feathers are faintly tipped with the same; in one specimen the lateral pair have a very distinct rufescent tip; as regards striæ and the pale wing-edging, they are identical. Two specimens received from the same locality are partial albinos.

M. terricolor, the Bengal Babbler, has the brown of the back and wings more ruddy than in *striatus*, and the under surface paler; the throat is grey, passing into sandy fulvous on the chest, and thence into a more albescent hue on

the lower breast, abdomen, and under tail-coverts; the feathers of the chest are pale-centred. This species varies from 3·9 to 4·2 inches in the wing.

M. griseus has been said by Blyth to have been found in Ceylon; but his remark, contained in Kelaart's 'Prodromus,' does not seem to refer to it, as he says the head is concolorous with the rest of the upper surface; whereas in this species the head is very pale grey, and the throat dark brown and grey; the quills and tail are very dark towards the tips of the feathers. The wing of a Deccan specimen measures 3·8 nearly.

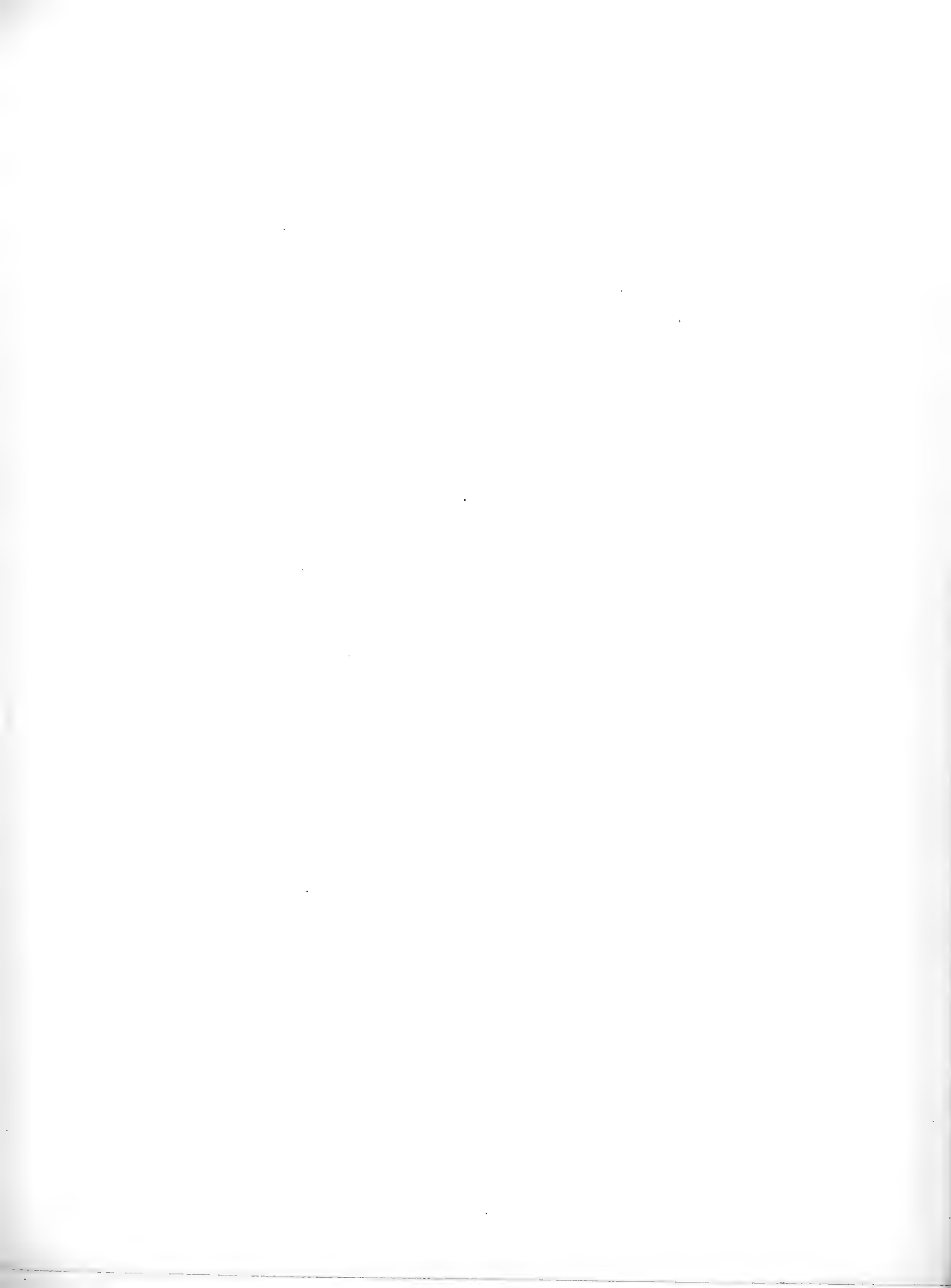
Distribution.—The "Dust-bird," or "Dung-Thrush," as it is commonly called in Ceylon, is found throughout the whole low country from the Jaffna peninsula and north-west coast, where it is very abundant, down both sides of the island to the extreme south. It is more numerous in low scrub or open bushy plains and in cultivated districts than in the wilds of the forest tracts; but it is so universally distributed that it may chance to be found anywhere. It ascends, on the northern side of the Kandyan Province, into Dumbura and all the district round the hill-capital, but does not range in that district above 3000 feet, at which it is not very common. In Uva and the great patna-basin between Fort MacDonal and Haputale it is not unfrequent as high as 4500 and 5000 feet. Kelaart records it in his list of Nuwara-Elliya birds; but neither Mr. Holdsworth nor Mr. Bligh have ever observed it there; although it might find its way in the dry season up the Hakgala pass, on the lower part of which, about Wilson's Bungalow, I have myself seen it.

It is found in the island of Ramisserum and on the adjoining mainland of India; but how far it extends northward in the Madras Presidency I am unable to say.

Habits.—The number of popular names (some of them by no means euphonious) which are bestowed upon this bird amply testify to the familiar acquaintance which Europeans have with it. It is, perhaps, the best known of all our feathered friends, save the impudent little Sparrow—as much at home in the tropics as in England—and the Common Bulbul, which enlivens every compound in the suburbs of Colombo; it is, in fact, found in every variety of situation, from the grounds of the English bungalow to the wilds of the interior, evincing no fear whatever of man, and from its habit of dusting itself by the sides of roads and in the most public situations it has acquired one of its best-known names. Its extreme sociability, causing it to associate in a little flock of a certain number, generally six or seven, has given it another of its sobriquets, "The Seven Brothers," and is the most interesting feature in its economy, bringing out in a striking manner the curious habits of which it is possessed. The antics which these little troops perform, often a few yards from the verandah of a bungalow, are well known to the most casual observer, and are best described, to those who have never seen it in a state of nature, by saying that, when performing them, these singular birds exhibit all the symptoms of being charged with electricity! While two or three jump to and fro on the dusty road, shooting out their wings and twitching their tails from side to side, several more, who are perched on the branches above, peer down on their comrades with no little interest, uttering a scarcely audible whistling, and then suddenly commence a spasmodic series of springs and up-dartings of the wings and tail, jumping round on their perches, and uttering loud screams, until, at a given signal, all is silence and repose. On being alarmed, the whole flock decamp, each bird scudding along after its mate to the next tree, where the same performances are again repeated. It is a systematic bird in its movements. I noticed, while living at Colombo, that a troop, which inhabited the Queen's-house Gardens, sallied out, and journeyed by degrees along an adjacent row of Suriah-trees at the same hour every day, and that they were peculiarly lively after a shower of rain. Its food is entirely insectivorous, and is mostly taken by scratching among leaves and debris on the ground. The cinnamon-gardens at Colombo are a favourite resort of these birds; they delight in the leafy Cadju-trees (*Anacardium occidentale*), which afford them shade during the heat of the day, while the thick bushes are an immediate shelter when they are disturbed while seeking their sustenance on the ground. Plantations of young cocoanuts are never without these flocks of Dust-birds, which delight in the grand platforms afforded them for their dances by the broad fronds of these graceful palms.

Layard writes as follows of this bird:—"They are always seen in small parties varying from three to seven, according to the number of young ones in a nest, which seem to remain with their parents until the period of incubation again commences, when they separate to form families of their own. When alarmed, an old bird utters a piping note, making several prodigious hops, and takes to flight; his example is followed by all the rest in succession, and the whole party wing their way in a long file, alternately beating the air with heavy strokes, or sailing along on their rounded wings to a place of safety."

Nidification.—The breeding-season of the “Seven Brothers” lasts from March until July. The nest is placed in a cinnamon-bush, shrub, or bramble at about 4 feet from the ground, and is a compact cup-shaped structure, usually fixed in a fork, and made of stout grasses and plant-stalks, and lined with fine grass, which, in some instances I have observed, was plucked green. The interior measures $2\frac{1}{2}$ inches in depth by about 3 in width. The eggs are two or three in number, small for the size of the bird, glossy in texture, and of a uniform opaque greenish blue. They measure from 0·91 to 1·0 inch in length, by 0·7 to 0·74 in breadth.





Small illustration of two birds, one perched on a rock and the other on a branch.

MALACOCERCUS RUFESCENS.

(THE RUFOUS BABBLER.)

(Peculiar to Ceylon.)

Layardia rufescens, Blyth, J. A. S. B. 1847, xvi. p. 453; Jerdon, B. of India, ii. p. 67 (1863); Holdsworth, P. Z. S. 1872, p. 449; Blyth, Ibis, 1867, p. 300; Legge, ibid. 1874, p. 18; id. Str. Feath. 1875, p. 368.

Malacocercus rufescens, Blyth, Cat. B. Mus. A. S. B. p. 141 (1849); Kelaart, Prodrum, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 271.

The Red Dung-Thrush, Red Jungle-Thrush, Europeans in Ceylon.

Rattu demelitchia, Parandal kurulla (Saffragam), also *Panderella, Kala parandal*, Sinhalese.

Suprà sordidè fulvescenti-brunneus, tectricibus alarum dorso concoloribus: remigibus brunneis extùs dorsi colore lavatis, secundariis magis rufescenti-brunneis: rectricibus sordidè rufescenti-brunneis, fulvescenti-brunneo marginatis: pileo nuchâque magis grisescenti-brunneis; loris rufescenti-fulvis: facie laterali et gulâ rufescenti-brunneis vix vinaceo lavatis: pectore fulvescenti-rufo: corpore reliquo subtùs saturatè brunneo vix rufescente: subalaribus fulvescenti-rufis: remigibus infrâ brunneis intùs fulvescentibus: rostro aurantiaco, basaliter saturatiore: pedibus saturatè flavis: iride albâ; palpebrâ virescenti-flavâ.

Adult male and female. Length 9·3 to 10·8 inches; wing 4·0 to 4·2; tail 4·2 to 4·6; tarsus 1·3 to 1·4; mid toe and claw 1·05 to 1·1; bill to gape 1·0 to 1·1; hind toe 0·55, claw (straight) 0·37.

The above limit of length is that of an exceptional bird, as 10·5 inches is rarely exceeded.

Iris white, yellowish white, or greenish white; bill orange-yellow, deepest on the basal half; legs and feet dull chrome-yellow; claws yellowish horn; orbital skin and eyelid pale greenish yellow.

Forehead and head greyish brown, deepening on the hind neck into the brownish rufous of the whole upper surface and wings; quills edged with greyish; tail deeper rufous than the back, and crossed, as are likewise the tertials, with faint rays; beneath dull ferruginous, slightly greyish on the chin and the flanks; sides of belly and under tail-coverts shaded with brown; lores and cheeks concolorous with the throat; ear-coverts brown, with pale striae.

Young. Birds of the year have the chin and gorge greyer than adults, and the lower parts are pervaded with a brownish hue. Iris as in the adult.

Obs. This species is closely allied, as regards colour, to the South-Indian *Layardia subrufa*, which has the upper mandible brownish, the forehead ash-colour, and the upper surface rufous-brown, with a tinge of olive in it; the tail is darker rufous, and the throat and fore neck brighter than in the Ceylonese bird. Besides having the frontal feathers remarkably stiff, it has the bill more curved than in either the Grey Babblers of India or the present species, and is quite worthy of being placed as a subgenus of *Malacocercus*, as, in addition to the characteristics alluded to, it has the wings much shorter in proportion to the tail. The Ceylonese bird, however, does not differ from typical *Malacocercus* sufficiently to be separated as *Layardia*, which has usually been done, the only differences existing being that the bill is slightly deeper and the 3rd quill a little shorter; I have therefore removed it into the former genus. The wing, in an example of *L. subrufa* in the national collection, measures 3·5 and the tail 5·0 inches.

Distribution.—This Babbler was discovered by Dr. Templeton, R.A., a gentleman who, as before remarked, did considerable work in the ornithology of the island during his tour of service in it prior to 1850. Its range is somewhat restricted, extending over the western and damp portion of the Southern Province, and through the western highlands to the main range. In the Colombo district it is not found nearer the sea than Killapana, at which point the country becomes wooded; from there, throughout the whole interior of

the province, to Saffragam, and thence through the Kukkul and Morowak Korales to the subsidiary hills, through which the Gindurah and Niwelle rivers flow, it is very common. It ascends the slopes of the wilderness of the Peak to the extreme limits of the forest, and ranges through the vast jungles reaching thence to Horton Plains and Nuwara ELLIYA, throughout which latter district it is tolerably common. Mr. Holdsworth only observed it there in the cool season; but I am inclined to think it is resident there, as I have obtained it in a state of breeding at the top of Totapella, and in the Peak forests I have shot it at great altitudes in the height of the south-west monsoon. It is very abundant about Kaduwella and Hanwella, and in the bamboo-scrubs of the Raygam and Hewagam Korales; but north of the Kelaniganga its numbers begin to diminish, and I do not know of its occurrence beyond Kurunegala. I have never seen it in any of the eastern highlands, nor in the low country south of Haputale, its range on that side not extending beyond the limits of the wet south-west hill-region at Tangalla.

Habits.—The Red Jungle-Thrush frequents thickets in the vicinity of cultivation, bamboo-scrub (to which it is as much, if not more, partial than any of our Babbler), thick jungle, and primeval forest. At times it associates in large troops, and, as a rule, lives in parties of not less than a dozen, resembling, in these respects, the Laughing Thrush more than its other congeners. It is very sociable, actively working about the lower limbs of trees, and threading its way through the branches of low jungle in close fellowship, keeping up a conversational, harsh chattering, and moving on from tree to tree without separation. It has the quick movements of the last species, jerking up its wings and tail, and restlessly jumping to and fro on its perch, when engaged in parleying with its companions. Its notes resemble those of *Garrulax* more than *Malacocercus*, and it seems not to indulge in long periods of silence, as does the latter; but a continual low babble proceeding from the flock usually betrays its whereabouts in the jungle. Its flight is not quick, and is performed with vigorous beatings of the wings, simply to enable it to proceed about in search of its food from tree to tree. I found the stomachs of several examples killed in the month of August to contain portions of a large black beetle which was affecting the jungle in great numbers at the time. When located in damp timber-forest, such as the Peak, Pasdun-Korale, and Kukkul-Korale jungles, it appears not to associate with any other species: a solitary flock is often met with after walking through the forest for some distance without seeing a single bird or even hearing a note; notwithstanding the little troop is all life and animation, isolated as it is in the gloomiest recesses of the primeval wood, its members busily engaged in twitting from branch to branch, while they keep up a sociable chattering as if they rejoiced in the loneliness of their retreat.

Nidification.—This bird breeds in the Western Province in March, April, and May, and constructs a nest, similar to the last, of grass and small twigs, mixed perhaps with a few leaves, and placed among creepers surrounding the trunks of trees or in a low fork of a tree. It conceals its habitation, according to Layard, with great care; and I am aware myself that very few nests have been found. It lays two or three eggs, very similar to those of the last species, of a deep greenish blue, and pointed ovals in shape—two which were taken by Mr. MacVicar at Bolgodde measuring 0.95 by 0.75 inch, and 0.92 by 0.74 inch.

The figure in the Plate accompanying this article represents a male bird of this species from the Western Province.

Genus GARRULAX.

Bill straighter than in the last genus; culmen straight at the base, gonys-angle pronounced. Nostrils oval, placed well forward and exposed. Wings longer than in *Malacocercus*, the 3rd quill much shorter than the 4th, the 5th and 6th the longest. Tail rather long, graduated and lax. Legs and feet very stout. Tarsus shielded with three wide scutæ. Hind toe and claw very large.

GARRULAX CINEREIFRONS.

(THE ASHY-HEADED BABBLER.)

(Peculiar to Ceylon.)

Garrulax cinereifrons, Blyth, J. A. S. B. 1851, xx. p. 176; Kelaart, Prodrömus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 270; Blyth, Ibis, 1867, p. 300; Holdsw. P. Z. S. 1872, p. 448; Legge, Ibis, 1874, p. 20.

Laughing Thrush, The Ashy-headed Garrulax, Kelaart.

Ad. supra brunneus, alis dorso concoloribus; primariis externis grisescenti-brunneo lavatis: reatricibus brunneis, extüs rufescenti marginatis: pileo nuchâque cinereis, hâc brunneo lavatâ: loris et facie laterali totâ cinereis: genis et corpore subtüs toto rufescenti-fulvis, abdomine pallidiore: mento ipso albido: subalaribus rufescenti-fulvis: remigibus infra brunneis intüs fulvescentibus: rostro nigro: pedibus plumbescenti-nigris: iride albâ.

Adult male and female. Length 9.6 to 10.0 inches; wing 4.4 to 4.8; tail 4.0 to 4.3; tarsus 1.4 to 1.5; mid toe and claw 1.25 to 1.3; hind toe 0.6, claw (straight) 0.45; bill to gape 1.25.

Iris white; eyelid plumbeous; bill black, inside of mouth greenish yellow; legs and feet plumbeous brown; claws dusky horny; posterior part of tarsus bluish.

Lores, face, and head ashy or cinereous grey, blending at the nape into the rufous-brown of the sides of the neck, upper surface, wings, and tail; the first 3 or 4 primaries with a pale edge, and the inner webs of the quills brown; tail deeper in hue than the wings; chin albescent, blending into the fulvescent rufous of the fore neck and under surface; abdomen more fulvescent than the breast, the concealed portion of the feathers there being albescent; flanks and under tail-coverts dusky rufescent brown; lower feathers of the thighs cinereous, under wing-coverts rufous. On the centre of the throat the colour is brighter than elsewhere.

Young. Iris dull grey, with a dark outer circle; bill black, the gape and base of lower mandible yellowish; eyelid greenish yellow; legs and feet olivaceous brown, soles yellowish fleshy, claws yellowish horn.

Forehead and head as in the adult, the nasal plumes dark, and the grey of the crown not continued so far back; the back is deeper rufous than the adult, and the wing-coverts likewise are more intense; chin not so white and the throat and under surface more fulvescent. In the first plumage the feathers of the chest and breast are fluffy. This dress appears to be quickly put off, and in the next stage or yearling plumage the iris is pearly grey or in some white, with a tinge of reddish; gape and eyelid yellow; legs and feet bluish brown. There is scarcely any perceptible difference in the grey of the occiput, but the fore neck is paler or more fulvescent.

Obs. *G. delesserti*, the Wynaad Laughing Thrush, is allied to the present species. Mr. Bourdillon's dimensions of a specimen in the flesh are:—Length 9.0 inches, wing 4.3, tail 4.0, tarsus 1.45. It differs from *G. cinereifrons* in having the under mandible yellow at the base, and the fore neck and breast white, changing into cinereous grey on the flanks.

Distribution.—The Ashy-headed Babbler was discovered by Dr. Kelaart; it is not recorded in what district he found it first, for Layard only writes of it as follows:—"I do not know where he (Kelaart) found it; but I obtained several specimens along the banks of the Kaluganga, about forty miles inland from Kalatura,

and one at Pallabaddoola in the Peak range." I infer, however, that the Doctor first made its acquaintance in the Central Province, in the damper forest of the western portion of which it is found. I have seen it in the Deltota district and in the Peak forests, and I have no doubt it occurs in Dumbara and many places between Kandy and the Peak range; but being an inhabitant of humid inaccessible jungles, it is less often met with than any of its family. I have not seen it above 3500 feet; but Kelaart speaks of it as being found at Nuwara Eliya; but whether it has erroneously found a place in his list of birds from that place I do not know; suffice it to say that no one else, that I am aware of, has heard of it from so high an elevation, although there is no reason why it should not be found there as well as the Rufous Babbler (*Malacocercus rufescens*). It inhabits the forests of the southern ranges, and all the heavy jungles from the Kukkul Korale to the Kaluganga. I have procured it in the Singha-Rajah forest, in the Pasdun Korale, and also in the Ikkade-Barawe forest, which is only 18 miles from Colombo; there are likewise specimens in the British Museum collected by Mr. Chapman at a place called Dusiwella, which I believe is in the Western Province. It does not appear to inhabit the jungles of the south-eastern portion nor the eastern and northern divisions of the island: the Kurunegala district, as far as is known at this time, forms its northern boundary; and therefore its distribution is one of the most restricted of any of the peculiar Ceylonese species.

Habits.—This Laughing Thrush has a similar disposition to the Wynaad species, loving the gloom and shade of the dampest forests in the island, and delighting in the seclusion afforded by the thick underwood and not unfrequently dense bamboo-thickets with which such localities abound. I once met with it in a dark ravine in the very gloomiest recesses of the lofty timber-jungles of the Kukkul Korale; not the least daunted by the tremendous downpour of rain which was falling at the time, the whole troop were darting hither and thither about the dripping vegetation in search of food, and indulging in their wonted spasmodic cries, as if rejoicing in the brightest sunshine on a pleasant lawn, instead of being imprisoned in the darkest, most dripping, leach-infested glen in Ceylon! It always associates in scattered troops of ten or twenty, and feeds amongst tangled underwood, in spots which are covered with dead leaves, the product of many years' dropping from the monarchs of the forest, and delights in exploring the mossy recesses of fallen trunks, in which humid spots it finds an abundance of caterpillars, bugs (*Hemiptera*), and coleopterous insects. It breaks out constantly into a harsh chattering, which is taken up in turn by all the members of the troop, and as suddenly stopped, when all is silent again, until some trifling alarm sets the garrulous converse loose. This chattering is usually finished up with a hurried sort of scream. Like the last species, it is very active in its gestures and not at all shy, being very loath to break up its party when fired at, some members of it being occasionally bold enough to fly down to and hop about their fallen comrades with loud cries and vigorous flapping of their wings, while the rest mount on to the topmost branches of low trees, and jerk themselves to and fro, peering down on their assailant, and executing a series of spasmodic antics. It shuns the society of other birds, appearing to affect spots so gloomy and damp as to be avoided by all species, except, perhaps, the Rufous Babbler and the little Quaker-Thrush; and in these sylvan retreats it would no doubt often be passed over unnoticed, were it not for its garrulous habit, which is usually provoked when it hears the approach of danger. The stomach of this bird is very muscular, and I have often found it contain a quantity of foul black liquid.

Nidification.—The breeding-season of this bird is from April till July. Full-fledged nestlings may be found abroad with the parent birds in August; and from this I base my supposition, for I have never found the nest myself. Intelligent native woodmen, in the western forests, who are well acquainted with the bird, have informed me that it nests in April, building a large cup-shaped nest in the fork of a bush-branch, and laying three or four dark blue eggs. Whether this account be correct or not, future investigation must determine.

The lower figure in the Plate accompanying the next article represents a female of this species, shot in the Ikkade-Barawe forest.

Genus POMATORHINUS.

Bill long, curved, compressed from the nostrils to the tip, which is entire. Nostrils lengthened, the membrane overlapping them. Wings short, rounded, the 5th and 6th quills the longest, the 1st about half their length. Tail moderately long, lax, and graduated. Legs and feet stout. The tarsus longer than the middle toe, the scutæ smooth and large. Middle toe considerably longer than the laterals; hind toe and claw large.

POMATORHINUS MELANURUS.

(THE CEYLONESE SCIMITAR-BABBLER.)

(Peculiar to Ceylon.)

Pomatorhinus melanurus, Blyth, J. A. S. B. 1847, xvi. p. 451; id. Cat. B. Mus. A. S. B. p. 146 (1849); Kelaart, Prodromus, Cat. p. 122 (1822); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 271; Blyth, Ibis, 1867, p. 301; Legge, J. A. S. (Ceylon Branch) 1870-71, p. 41; Holdsw. P. Z. S. 1872, p. 447; Hume, Str. Feath. 1873, p. 437; Legge, Ibis, 1874, p. 18, et 1875, p. 395; id. Str. Feath. 1876, p. 245; Whyte, ibid. 1877, p. 202; Ramsay, Ibis, 1878, p. 132.

The Black-tailed Scimitar-Babbler, *The Ceylon Pomatorhinus* (Kelaart); *The Gamut-bird* in Planting-districts.

Batitchia, Sinhalese, Galle district; *Parandeliya*, Western Province.

♀ *ad.* suprà rufescenti-brunnea, pileo obscuriore, fronte et verticis lateribus nigricantibus: tectricibus alarum dorso concoloribus: majoribus remigibusque saturatè brunneis, extùs rufescenti-brunneo marginatis, secundariis latius: rectricibus chocolatinis, rufescenti-brunneo marginatis: strigâ superciliari latâ a basi rostri usque ad nucham lateralem productâ: palpebrâ albâ: loris, plumis infraocularibus et regione paroticâ nigris: colli lateribus castaneo lavatis: genis et corpore subtùs albis, lateribus et subcaudalibus rufescenti-brunneis: tibiis cinerascens: subalaribus cinerascens-brunneis, axillaribus albis apicaliter brunneis: remigibus infrâ brunneis, intùs pallidè rufescentibus: rostro flavo, ad basin mandibulæ nigricante: pedibus fusciscenti-schistaceis: iride brunneâ.

Adult male. Length 8·6 to 8·9 inches; wing 3·5 to 3·8; tail 3·5 to 3·7; tarsus 1·2; middle toe and claw 0·95 to 1·05; hind toe 0·6, its claw (straight) 0·4; bill to gape (straight) 1·13 to 1·23.

Adult female. Length 8·5 to 8·7 inches; wing 3·2 to 3·6; tail 3·4 to 3·6; tarsus 1·2; bill to gape (straight) 1·1 to 1·2. Examples vary *inter se* in size, but there is no constant difference between low-country and hill birds. Dimensions of various specimens are as follows:—♂ (Karawita hills, Saffragam), wing 3·6, bill to gape (straight) 1·26; ♂ (Dumbara), wing 3·6, bill to gape (straight) 1·2; ♂ (Horton Plains), wing 3·65, bill to gape (straight) 1·15; ♂ (Banderawella, Uva), wing 3·61, bill to gape (straight) 1·2; ♂ (Borella, Colombo), wing 3·55, bill to gape (straight) 1·2.

The bill varies in length and curvature according to age.

Iris brownish red, dull red, or reddish brown; orbital skin and eyelid dull blue; bill gamboge-yellow, more or less blackish from the forehead to a short distance in front of the nostril; legs and feet plumbeous or greenish plumbeous; feet generally more bluish than tarsi; claws dusky, pale horn at base.

Lores, region beneath the eye, ear-coverts, forehead, and plumes bordering the supercilium above black, fading into the dark olivaceous of the head and occiput, the crown-feathers having black shafts; a conspicuous superciliary stripe extending from the nostril to beyond the nape, throat, fore neck, chest, and breast pure white, passing up behind the ear-coverts; hind neck, upper surface, wing-coverts, flanks, and under tail-coverts ferruginous brown, more intense on the back of the neck than elsewhere; in many examples the feathers on the sides of the neck and chest at the

junction of the white with the brown hue are centred with the former; quills with the outer webs more olivaceous than the back, and the inner webs blackish brown; tail blackish brown, edged at the base with the hue of the upper tail-coverts, and deepening to blackish at the extremity; there are indications of cross rays on the terminal half, which show plainer beneath; abdomen rusty olivaceous. In some examples the hue of the nape blends imperceptibly into that of the hind neck, in others the line of demarcation is plain.

The above is a description of the generality of examples from the Western Province, the south-west corner of the island, the Pasdun-Korale hills, and the lower parts of the Peak forests, where a ferruginous hue predominates.

As this bird ascends from the low country to the hills and to a cooler and drier climate than exists in the south and west, the rusty hues gradually vanish, giving way to olivaceous tints; and examples from the upper zone, and likewise from the Uva patna-district, are clothed as follows:—Upper parts, flanks, and wings (that is, those parts which in the low country are ferruginous) olivaceous brown, faintly tinged with rusty on the sides of the hind neck and on the rump. The same white-centred feathers on the sides of the chest exist in some hill specimens. Soft parts the same, the legs, perhaps, slightly greener. The most ferruginous birds come from the damp districts of the south, where moist climate and heat are combined; and the gradation from their plumage to that of hill birds from the upper zone is very perfect, a complete sequence being obtainable on going up through the wilderness of the Peak from the low-lying portion of Saffragam to the Horton Plains. Examples, however, vary in the olivaceous character of the brown tints *inter se*. It must not be supposed that the greenest birds come from the highest elevations: a specimen from Totapella, 7800 feet, is very strongly tinged with rusty, and so is another from Kandapolla, 6300 feet, while an individual from Banderawella and another from Dumbara are more olivaceous than either. In like manner the ferruginous birds of the Western Province do not vary regularly according to elevation, the most intensely-coloured bird in my collection being from the neighbourhood of Gillymally. Birds from the forests of the north are very similar to Central-Province specimens, not in any way partaking of the rusty character of those from the south-west.

Young. A bird in nest-plumage, shot at Nuwara Eliya, is very ferruginous above, and likewise on the sides of the chest and flanks: the head and ear-coverts are not so black as in the adult, and the white of the chest is very much contracted, and does not extend so far down upon the breast. The bill is much straighter than in an adult.

Obs. The difference between the Western-Province and the hill race of this bird (if I may use the term) has been the subject of some attention. Mr. Holdsworth was almost of opinion that they merited specific distinction; and Lieut. Wardlaw Ramsay, in his synopsis of the genus *Pomatorhinus*, published in 'The Ibis,' April 1878, has likewise made some remarks on the subject, based on an examination of the specimens (probably a small series) in Lord Tweeddale's collection; he writes that "the small race which is found at Nuwara Eliya has the back olive-brown, without being in the least rufescent, whilst the larger race," found in the Western Province, "has a few of the lateral breast- and flank-feathers partially white or centred white." But I have shown that the hill race is not smaller than the low-country, and that the white-centred feathers exist in both. This latter is, I imagine, merely a transition-feature towards an extended development of the white of the chest. A specimen in my collection has white feathers even in the wing-coverts and on the hind neck. The example measured by Lieut. Ramsay from Nuwara Eliya, with the wing 3.2 inches, must have been a female, which is no smaller than a low-country bird of the same sex. The most pointed difference between the two races lies, perhaps, in the more plainly contrasted black of the head of the up-country bird with the olivaceous of the hind neck. The same variation in the brown tinting of these Babblers is to be found in the case of the smaller relative (*Alcippe nigrifrons*) of the present bird, and likewise in another bird of the same family (*Pellorneum fuscicapillum*). The Ceylonese Scimitar-Babbler is allied to the South-Indian species (*P. horsfieldi*); this latter is larger, with the wing 3.8 to 3.95; it is not so black on the forehead, and the upper surface and wings, together with the sides of the breast, are brownish olivaceous; the white of the chest does not descend further than the upper part of the breast, suddenly narrowing to a point; the sides of the breast are black. Lieut. Wardlaw Ramsay, in his above-mentioned synopsis of this genus, remarks that our bird is intermediate between *P. schisticeps* and *P. montanus* of Java. It is not, however, so closely allied to either as to *P. horsfieldi*. The Javan bird is a different type of *Pomatorhinus* from ours, being characterized by the sudden contrast between the plumage of the head and back. It has the head and nape dark slate, most intense on the forehead, while the sides and lower part of the hind neck, together with the scapulars, are rich rust-colour; tail dusky brown; the throat, fore neck, and breast are white, and the flanks concolorous with the back. Examples from Java, in the British Museum, measure 3.4, 3.35, 3.5 in the wing. The Bornean race has been separated by Cabanis, as being smaller than the Javan, and having the secondaries and tail not so rusty-coloured. I have examined specimens of this species, and believe it to be only entitled to rank as a local race. One example measures 3.45 inches in the wing, which exceeds two of the above dimensions of *P. montanus*.

P. schisticeps, from the Himalayas, has the head and nape dark slate-colour, and the upper surface olive-green; the throat and breast are white, and the sides of the fore neck rusty-coloured, with white streaks.

Distribution.—The Scimitar-Babbler, one of the most interesting Ceylonese species, is widely distributed throughout the central and southern hills, but is by no means a mountain bird, being equally common in the interior of the Western Province, more especially in the bamboo-district of Saffragam and the circumjacent country, and likewise in the south-west hilly region. As regards the Kandyan Province, it is a very abundant bird in the main range up to the highest altitudes, and is one of those comparatively few species met with in the woods on the Horton Plains. The same may be said of all the intermediate coffee-districts and the wooded patnas throughout the Province. It is common in the forests of the south-east and on the Batticaloa side, and is scattered pretty freely throughout all the northern forest-tract, its numbers diminishing along the central road, when the latitude of Kokelai on the east and Manaar on the west is reached. I have obtained it as close to Colombo as the neighbourhood of Borella.

Habits.—This wood-loving bird frequents shady dark forests, patna-woods (particularly in the vicinity of streams), bamboo-cheenas, low jungle, and almost every variety of thick cover. It usually associates in pairs, but occasionally fraternizes, and goes about in small companies, searching for its insect-food on low branches, or clinging, Woodpecker fashion, to the trunks or large limbs of trees, about which it jumps and twists itself with considerable agility, proceeding easily upwards with active hops. Early in the morning, while searching among thick underwood for its food, it repeatedly gives out its far-sounding, melodious call, which must be familiar to all who have travelled in the Ceylon jungles, although few are acquainted with the owner of the remarkable voice, proceeding, as it usually does, from dense thickets. The note may be likened to the words *chock off you poor boy*, or *wok wok ek ek wok*, which is answered by the female with a more hurried scale resembling *wok off*. While pouring out these voluble notes, the birds are all the time on the move, attentively scrutinizing every dead leaf or rotten stick in their way. Mr. Bligh has observed them in the breeding-season puffing out the feathers of the chest and bowing to each other; and I have noticed that they were of an inquisitive nature, alighting close to me when they have chanced to espy me watching them in the stillness of the forest, and stretching out their heads for a closer inspection of such an unexpected intruder! Mr. Holdsworth remarks that they are very noisy in the pairing-time, and refers to the powerful notes of the male as having acquired for the species the name of "Gamut-bird."

I subjoin the following note on the habits of this bird, which Mr. Bligh has sent me from Haputale:—"A family reared near my bungalow roost in the thick fir-tree near the bedroom-window. At early dawn I often see them 'getting-up;' they hop from out of the thick tree to the open branches of a large oleander, and, like a higher order of beings, commence to dress themselves, preening and ruffling out their feathers all the time, chattering a little, as if of arrangements for the day: the male often repeats something like *twoi, twoi, twoi*, in various keys, swelling out its beautiful white throat considerably each time. The young ones have a plaintive mew-like call when following the old ones for food, and they often make a great clamour when being fed. I once came upon about ten adults, having been attracted by a great noise they made, and found them in a group on the bole of a large tree felled in the jungle. It was a most comical sight to see these excited birds with throats extended like a pigeon, wings lowered and spread, and tail the same, but often elevated, all advancing to a common centre by a quick jerking hop, then retreating backwards, and bowing their bodies the whole time; this went on for a few minutes until I disturbed them; it was a veritable *Pomatorhinus*-quadrille!"

Nidification.—This Babbler breeds from December until February. I have observed one collecting materials for a nest in the former month, and at the same period Mr. MacVicar had the eggs brought to him; they were taken from a nest made of leaves and grass, and placed on a bank in jungle. Mr. Bligh has found the nest in crevices in trees, between a projecting piece of bark and the trunk, also in a jungle path-cutting and on a ledge of rock; it is usually composed of moss, grass-roots, fibre, and a few dead leaves, and the structure is rather a slovenly one. The eggs vary from three to five, and are pure white, the shell thin and transparent, and they measure 0.96 to 0.98 inch in length by 0.7 in breadth.

The figures in the Plate accompanying this article represent the hill olive-coloured form and the low-country rust-coloured one. The former is from the Horton Plains, and the latter from the Kuruwite hills in Sadragam.



Genus DUMETIA.

Bill high at the base, compressed, the culmen curved gradually to the tip. Nostrils oblong ; a few loreal bristles present. Wings short, rounded ; the 5th and 6th quills subequal and longest. Tail broad, cuneate at the tip. Tarsus rather short ; toes slender, the lateral ones subequal.

Of small size.

DUMETIA ALBOGULARIS.
(THE WHITE-THROATED WREN-BABBLER.)

Malacocercus albogularis, Blyth, J. A. S. B. 1847, xvi. p. 453.

Dumetia albogularis, Blyth, Cat. B. Mus. A. S. B. p. 140 (1849); Layard & Kelaart, Prodromus, Cat. App. p. 58 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 272; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 403 (1854); Jerdon, B. of Ind. ii. p. 26 (1863); Holdsworth, P. Z. S. 1872, p. 447; Hume, Nest and Eggs, ii. p. 247 (1874); Butler, Str. Feath. 1875, p. 471; Bourdillon, *ibid.* 1876, p. 399.

Timalia hyperythra, Jerdon, Cat. B. S. India, Madr. Journ. 1839, x. p. 261.

Pellorneum albogulare, Blyth, J. A. S. B. 1852, xxi. p. 357.

“Pig-bird,” in India; *Batitchia*, Sinhalese.

Adult male and female. Length 5·6 to 5·7 inches; wing 2·1 to 2·25; tail 2·2; tarsus 0·8; middle toe and claw 0·65; bill to gape 0·65.

Iris greenish white or white; bill, upper mandible dusky or pinkish brown with fleshy margin, lower mandible fleshy, tip dusky; legs and feet reddish fleshy, toes slightly dusky, claws brownish.

Above olivaceous brown, the forehead and front of crown rufous, and the hind neck slightly fulvescent or paler than the back; wings and tail brown, the primaries and rectrices slightly edged pale; upper tail-coverts in some covered with a yellowish hue; lores and orbital feathers whitish; beneath rufous, with the chin, upper part of throat, and centre of breast white; under tail-coverts and wing-coverts paler than the flanks.

The rufous of the lower surface seems to be brighter in the breeding-season, with the white of the throat and breast more sharply defined against it.

Young. Iris pale olive-greyish. The forehead wants the ferruginous tint, and is concolorous with the head.

Obs. Several examples in the British Museum are somewhat darker in the tint of the upper surface than most Ceylonese specimens that have come under my notice; the rufous colour of the forehead is slightly darker in my insular series than in the aforementioned, but the coloration of the under surface is similar. They measure in the wing from 2·05 to 2·2 inches. Mr. Bourdillon records the dimensions of a South-Indian specimen, measured in the flesh, as—length 5·62 inches; expanse 6·25; wing 2·12; tail 2·25; tarsus 0·73; bill from gape 0·57.

Distribution.—This interesting little bird is tolerably common in Ceylon, being found in nearly all parts of the low country and on most of the open, bushy patnas of the hill-region up to an elevation of 5600 feet or thereabouts. It is of frequent occurrence in the Western Province, being very partial to the damp sedgy parts of the cinnamon-gardens of Colombo; in the extreme south it is, perhaps, rarer, but in the south-east flat region between Haputale and the sea, and in many parts of the eastern portion of the island, it is a common bird. In the northern parts, again, it is not so frequent. In the great patna-districts of Uva, in similar localities in Hewahette, Dumbara, and on the slopes of the Knuckles, as well as in other open waste portions of the Kandyan Province, it is as plentiful as in most parts of the low country, and especially so in the patna-basin of Uva, being found there along the Badulla and Nuwara-Elliya road up to the vicinity of Hakgala. In the southern ranges it is likewise not unfrequent.

Jerdon has the following short paragraph on the distribution of this little bird in India:—“It is found throughout Southern India in suitable localities, in bushy jungle, ravines, thick hedge-rows, &c., but is entirely absent in the forest-districts of Malabar.” Mr. Bourdillon writes of it as common in the Travancore hills from 1000 to 2000 feet elevation. Dr. Fairbank records it from Khandala and Mahabaleshwar, but not from Ahmednagar. The only other mention which I can find of it being found to the north of the Deccan is that by Captain Butler, who says it is not uncommon at Mount Aboo, and is occasionally seen in the plains of that district; Mr. Hume adds that this is by far the most northerly point reached by the species.

Habits.—The little “Pig-bird” (as it is not very aptly called by some of the natives in India) frequents bushy patnas, low scrub, grass-fields dotted with shrubs, detached woods, and waste land in the vicinity of jungle, associating in little troops, and keeping mostly out of sight in the lower parts of bushes and thick underwood; from such haunts it seldom strays, except when alarmed or when roaming hither and thither in the mornings and evenings, when little companies may be seen making their way from one piece of cover to another, in quite “follow-my-leader” fashion, each bird following its companion with a straight low flight and a weak, plaintive *wheet* note. When hunted out from a shrub or clump of brambles it endeavours to remain as long as possible under cover, hopping timidly from branch to branch, and cautiously peering out at its enemy, until it is time to beat a retreat, when it betakes itself off in the above methodical manner. Its food consists of the larvæ of various insects and minute Coleoptera, and in feeding it possesses much the manner of *Alcippe*. On one occasion I observed a little flock, which was assembled at the base of an umbrageous tree in thick jungle, indulging in a series of quaint antics; they were hopping spasmodically about, jerking up their wings with a puffing out of their breast-feathers, and every now and then dropping like balls of fluff on to a bed of dry leaves, where they seemed to have discovered a welcome supply of food.

Nidification.—The breeding-season lasts from March until July, the nest being built in a low bush sometimes only a few inches from the ground. It is globular in shape and loosely constructed of grass, stalks, and dry blades or bents, sometimes interwoven with fibrous or caterpillar-eaten leaves, the interior being composed of the same but finer material than the body. The eggs are usually three in number, dull white, closely freckled throughout with small ferruginous spots; in some there is a well-formed zone round the obtuse end. They are rather small for the bird, measuring 0·7 to 0·72 inch in length by 0·51 to 0·53 inch in breadth.

In South India this bird breeds in June. Mr. Hume thus describes a nest sent him by Miss Cockburn, and taken from a coffee-bush in the Kotagherry district. It was “small and nearly globular, composed entirely of broad flaggy grass, without any lining or any admixture whatsoever of other material; it was loosely put together, and had a comparatively narrow entrance at the top.” This nest contained three eggs; and mention is made of another one with the same number. The ground-colour of these eggs was china-white, marked with a profusion of specks and spots, which, though spread over the whole surface, were “gathered most intensely into an imperfect, more or less confluent, cap or zone at the larger end, where, also, a few purplish-grey spots and specks, not found on any other part of the egg, were noticeable.” They vary from 0·7 to 0·75 inch in length by 0·5 to 0·53 inch in breadth.

Genus *ALCIPPE*.

Bill stout; culmen curved from the base, commissure curved throughout; tip distinctly notched. Nostrils oval; rictal bristles small but stout. Wings rounded; the 5th quill generally the longest. Tail short and rounded. Tarsus longer than the middle toe and claw.

Of small size.

ALCIPPE NIGRIFRONS.

(THE CEYLON WREN-BABBLER.)

(Peculiar to Ceylon.)

Alcippe nigrifrons, Blyth, J. A. S. B. 1849, xviii. p. 815; id. Cat. B. Mus. A. S. B. p. 340 (1849); Kelaart, Prodrömus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 269; Blyth, Ibis, 1867, p. 302; Legge, J. A. S. (Ceylon Branch) p. 42 (1870-71); Holdsworth, P. Z. S. 1872, p. 446; Legge, Ibis, 1874, p. 18; id. Str. Feath. 1875, p. 367.

The Mountain-Thrush, Kelaart; "*Quaker-Thrush*," popularly in India.

Batitchia, Sinhalese.

Similis *A. atricipiti*, sed minor, et fronte tantum nigrâ distinguenda.

Adult male and female. Length 4.9 to 5.3 inches; wing 2.15 to 2.3; tail 1.7 to 1.9; tarsus 0.8 to 0.9; mid toe and claw 0.7 to 0.75; bill to gape 0.65 to 0.7.

Females are the smaller of the sexes.

Iris yellowish white or very pale yellow; bill, gape, and culmen dark brown, margins of the upper and lower mandible fleshy; legs and feet fleshy lavender, claws dusky.

Forehead, face, and ear-coverts dull black, blending into the rusty brown of the occiput, upper surface, wings, and tail; outer primaries pale-edged; tail nigrescent towards the extremity and distinctly cross-rayed; beneath, the throat, neck, breast, and abdomen sullied white, with a dusky shade on the sides of the chest; flanks and under tail-coverts olivaceous rufescent; under wing-coverts and inner edges of quills beneath fulvescent buff.

The amount of black on the head varies, being continued further back in some specimens than in others.

Obs. There is a marked difference in the tint of the upper surface of this species according to the locality it inhabits. Examples from the south of the island and from the Western Province are, as described above, rusty brown, while those from the colder climate of the upper hills are decidedly olivaceous on the back and wing-coverts; specimens from the north of Ceylon are, as a rule, intermediate between the two. Although individuals vary *inter se* in the amount of ferruginous tint present on the back, the up-country race will be found, as a whole, to be decidedly less rust-coloured than the low-country birds. The same character, as already observed, is exemplified in the Scimitar-Babbler, *Pomatorhinus melanurus*.

Young. The nestling has the iris olive, but in plumage almost entirely resembles the adult, the forehead only differing in being less nigrescent.

Obs. The Ceylonese species is allied to the South-Indian *A. atriceps*, Jerdon, to which another closely affined race has lately been discovered by Mr. Bourdillon and described by Mr. Hume under the name of *A. bourdilloni*. *A. atriceps* has the head, face, and nape black, in addition to the forehead; the wings and tail are brownish olive (resembling in this particular our up-country birds, but paler even than they are), and the species is somewhat larger than ours. Specimens in the national collection measure 2.3 inches in the wing. *A. bourdilloni* has the black cap replaced by a brown one, and has the bill and tarsi stouter than in the last mentioned; the wing measures 2.4 inches. The Nilghiri Quaker-Thrush (*A. poiocephala*) is larger than any of the foregoing; wing 2.7 inches: it has the same style of coloration, but with the "head and nape dusky cinereous; back and rump greenish olive."

Distribution.—This little Wren-Babbler, which is the smallest of the Babbling Thrushes found in Ceylon, was discovered by Layard in 1848, and described, *loc. cit.*, by Blyth. It is one of the commonest and most widely distributed of our jungle-birds, being found throughout the whole island up to the jungle-clad summits of the peaks of the main range. It is common throughout the Kandyan and southern hills wherever there

is either forest, low jungle, or even scrubby copse; and the same is true of the low country, where even small detached woods, containing any underwood at all, are tenanted by it. In some portions of the sea-board which are clothed with dry, arid scrub, such as on the south-east and north coasts, it is rare; but even in these it is met with in spots sheltered by tall trees from the blazing heat of a tropical sun. It is especially numerous in those portions of the Western and Southern Provinces in which the forests and jungle contain bamboo undergrowth.

Habits.—This modest but active little bird frequents underwood, thickets, and tangled jungle in little parties of from six to a dozen in number, feeding among fallen leaves which have become lodged among bushes, or about prostrate trunks of trees, and on the ground itself, subsisting entirely on various insects and their larvæ. It keeps up a constant little rattle-note as it threads its way about in the dense undergrowth, dropping, perhaps, suddenly from a branch on to some large Bairoo-leaf (*Sarcoclinium longifolium*) with a startling noise, or flitting through matted bamboos across the closely begirt jungle-paths, each little member of the troop following its mate in true Babbler fashion. It is most active in its movements; I have rarely seen it in a state of quiescence, except when, in the heat of the day, I have chanced to espy a little row seated in close proximity on some horizontal twig or bamboo-stalk, silently feathering themselves after their morning's exertions in search of food. They display much inquisitiveness, flitting round any one who may be standing still in thick jungle, jumping to and fro about the twigs and dead leaves, and stretching out their heads while they utter their shrill little rattle.

Nidification.—The breeding-season in the north of the island lasts from November until March, and in the south, where most of our birds nest during the rains, from March until August. Mr. Parker writes me that in the Seven Korales they breed mostly in May. The nest, as stated in my note, 'Stray Feathers,' 1875, p. 368, "is generally placed in a bramble or straggling piece of undergrowth, often in a prominent position near a jungle-path, at a height of from 2 to 4 feet from the ground." It is almost invariably made of dry leaves placed horizontally or in layers one on the other, the top being supported by the intermixture of a few twigs, and the opening being a wide unfinished orifice almost on a level with the bottom of the interior, which is composed of the same material as the outside. The structure thus formed is a shapeless, globular mass, sometimes of one foot in diameter at least, and from its large size and generally exposed situation is one of the first nests which meets the eye in the Ceylon jungles.

The birds construct these nests with great rapidity, picking up the leaves one after the other from just beneath the spot in which they are building. As mentioned in my notes in the 'Ibis,' 1874, I have seen them, from a place of concealment, sticking the leaves into the structure at the rate of two or three a minute. From the number of these leaf-nests that one finds in the forests of Ceylon it would appear that probably several are constructed by the same birds before the eggs are deposited in the one finally chosen by the little architects. They are used as a roosting-place by the young brood, who resort to them at nights after they have reached their full size and are abroad with their parents. The eggs are invariably two in number, stumpy ovals in shape, and of smooth texture. The ground-colour, before they are blown, is a clear fleshy white, spotted openly all over, or in some chiefly at the large end, with rounded spots of dull red and brownish red underlaid by a few specks of bluish grey. They measure 0·74 to 0·75 inch by 0·55 to 0·56 inch.

In the Plate accompanying the next article will be found two examples of this species—the one from Nuwara ELLIYA, showing the olivaceous character of the hill-birds, the other from the low country, exhibiting the same rusty-coloured tints which characterize the lowland form of *Pamatorhinus*.





ALCIPPE. NIGRIFRONS.
PALLIUM FULGIDUM.

Genus PELLORNEUM.

Bill longer than in the last, straighter; the nostrils more linear; rectal bristles feeble. Wings rounded; the 5th, 6th, and 7th quills nearly equal and longest. Tail not shorter than the wing, rounded at the tip and graduated. Tarsus lengthened, its scales obsolete; toes stout, the lateral ones subequal.

PELLORNEUM FUSCICAPILLUM.

(THE WHISTLING QUAKER-THRUSH.)

(Peculiar to Ceylon.)

Drymocataphus fuscicapillus, Blyth, J. A. S. B. 1849, xviii. p. 815; id. Cat. B. Mus. A. S. B. p. 340 (1849); Kelaart, Prodromus, Cat. p. 122 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 269.

Pellorneum fuscicapillum, Blyth, Ibis, 1867, p. 301.

Drymocataphus fuscicapillus, Holdsw. P. Z. S. 1872, p. 447; Legge, Ibis, 1874, p. 19, et 1875, pp. 393, 410.

Batitchia, Sinhalese.

♂. Suprà brunneus, supracaudalibus paullò rufescentibus: alis brunneis, tectricibus et remigibus angustissimè rufescenti marginatis: rectricibus brunneis, extimis rufescenti terminatis: pileo nigricanti-brunneo, fronte vix rufescente lavatâ, scapis plumarum omnium rufescentibus: loris, supercilio distincto, facie laterali et colli lateribus, et corpore subtùs toto cervinis, abdomine pallidiore fulvescente, hypochondriis brunneo lavatis: subalaribus pectori concoloribus: remigibus infrà brunneis, intùs rufescenti lavatis: rostro saturatè brunneo, mandibulâ carneâ: pedibus rufescenti-carneis: iride rufescenti-brunneâ.

Adult male and female. Length 6·4 to 6·8 inches; wing 2·5 to 2·8; tail 2·4 to 2·6; tarsus 1·0 to 1·1; mid toe 0·7 to 0·75; claw (straight) 0·3; bill to gape 0·8 to 0·85.

Iris varying from light reddish to dark red; eyelid olivaceous; bill, upper mandible deep brown with a pale margin, lower flesh-colour; legs and feet brownish fleshy, toes darker than tarsi, claws pale brownish.

There are two races of this little bird in Ceylon—a dark and a pale, the latter inhabiting the north of the island only, the former being found in the south-west and central portions of the island.

Dark race. Forehead, crown, nape, and upper part of hind neck dark glossy sepia, almost black, the feathers with fulvous shafts; lower part of hind neck, back, wings, and tail brownish olivaceous, with pale shafts to the feathers of the back; wing-coverts edged fulvous; outer primaries with pale edges; tail tipped with fulvous, most deeply on the lateral feathers; lores, supercilium, face and throat, and all beneath light sienna-brown, palest on the chin and abdomen, and with flanks dusky; the cheeks, ear-coverts, and sides of neck of a deeper or more rufous hue than the throat.

Birds from the Southern and Central Province districts, which constitute the dark race, vary very much in depth of colouring. Some have the head very dark and the feathers of the back dark-edged, the entire plumage being at the same time of a deeper hue; in such examples the feathers at the sides of the chest are centred with brown.

Pale race (from the whole of the northern and north-eastern parts of the island). The head and nape are light sepia-brown, with the edges of the feathers distinctly darker; the upper surface, wings, and tail pale olivaceous, with a greyish hue, and the shafts of the clothing-feathers very light; the wing-coverts and rectrices more conspicuously tipped, and the under surface very pale throughout.

Young. Birds of the year have the iris browner than adults, and the rump paler than the back; the drop-marks on the sides of the chest are likewise more distinct, and the tail but faintly tipped fulvous.

Obs. This bird was placed by Blyth in the genus *Drymocapthus*, which was instituted for a Malaccan species, *D. nigrocapitata*, differing slightly in the proportion of its longer quill-feathers, and having a slightly different type of plumage from *Pellorneum*. I have compared our bird with *Pellorneum ruficeps* of Southern India, and the quills are the same, and also the bill. The proportion of the longer quills in any given species appears, in many cases, to be an unsafe character, and certainly not worthy of consideration in the creation of genera, unless it be thought desirable to burden ornithology with a still greater multiplicity of genera than it is at present hampered with! In the present case, for instance, the 7th quill is subject to variation in individuals, some having it equal to the 6th and some shorter. In the type species of *Drymocapthus* the tail is shorter than the wing by about the length of the bill, and in this it therefore differs from our bird and from typical *Pellorneum*: the wing is, however, much the same in both forms; and I scarcely think that the genus *Drymocapthus* is a good one, unless the character of the head-plumage, as exemplified in the several species forming this little group, be allowed consideration enough to justify its establishment. The present species was subsequently classed by Blyth as a *Pellorneum*, and Mr. Holdsworth again restored it to its position as a *Drymocapthus*.

Distribution.—This little bird, one of the most interesting species peculiar to the island of Ceylon, was discovered by Layard. He writes:—"But two specimens fell under my notice. One I killed with a blow-pipe in my garden in Colombo, the other I shot in the Central Road." Mr. Holdsworth procured but one specimen, shot in the north of the island, and, in common with Layard, conceived it to be a rare species, its very shy and retiring nature, and its habit of only frequenting thick underwood, obviously giving rise to this idea. On the contrary, however, it is a common and widely distributed bird, being found as a resident more or less over the whole low country, with perhaps the exception of the Jaffna peninsula and some of the open coast districts in the north-west. It is most numerous in regions covered with large tracts of jungle, occurring in such places everywhere, and least so in cultivated portions of country, in which it is confined to wooded knolls or overgrown waste land. It is, accordingly, scattered through all the jungle-clad low hills of the Galle district, the flat forests of the south-east, and the wilds of the Eastern Province, as well as through the entire forest-region of the north, across from Trincomalie (where it is numerous) to the confines of the open country on the north-west, and thence down to the Chilaw and Kurunegala districts. In the Western Province its distribution is partial, it being there most numerous in the jungles of the interior, of Saffragam, and in the region lying at the base of the mountains. In these latter it is found, as also in the southern ranges, ascending in the Kandyan Province to an altitude of about 5500 feet. In the district of Uva and in most of the deep wood-dotted valleys below the coffee-estates it is common, frequenting likewise the intermediate belts of forest above them in Haputale and the main range.

I would here remark that there is no bird in Ceylon concerning the distribution of which my predecessors in ornithological work appear to have been so misled. Scarcely any species shows itself less, but, on the other hand, none make more noise from their place of concealment. An acquaintance with its note, therefore, was required, and failing this one could not but pass it by completely. For my own part I imagined it, during the first three years of my labours in Ceylon, to be one of the rarest of birds, for I could never meet with it in the Western Province. Shortly after I went to Galle, while collecting one morning in the vicinity of the Bonavista Orphanage (to the hospitable and kind superintendent of which I am indebted for the passing of many a pleasant hour in one of the most charming little bungalows in the low country), I was attracted by a bird-note which I remembered often to have heard, and on procuring its owner was surprised to find that I had at last obtained this much-looked-for species. In the same manner I captured it very soon afterwards near Wackwella, and then in other copses in the neighbourhood, and soon ceased to pay any attention to its whistle. On going to Trincomalie my first day's trip into the jungle renewed my acquaintance with my little friend, and so on wherever I travelled I continued to hear the garrulous bird, until it had to be noted in my catalogue as a common and widely distributed species, and as such was spoken of in my account of the birds of the south-west hill-region ('Ibis,' 1874). To this Mr. Holdsworth, who had not made the acquaintance of its note, somewhat naturally took exception in his comment on my paper published in the following number of the 'Ibis.' Mr. Bligh, however, knows it to be a common bird in the Haputale jungles; and those who hereafter work in the ornithological field of Ceylon will, I doubt not, substantiate my experience.

Habits.—This Babbler, as has just been remarked, is a very shy and retiring bird, and a denizen, for the

most part, of forests and cheena-woods, but likewise frequents scrub, brushwood, low jungle, or overgrown land in the vicinity of native cottages. It dwells entirely in the seclusion of such vegetation, feeding near the ground in dense thickets or picking up beetles and insects from amongst decaying herbage; it rarely shows itself in the open except to flit across a jungle-road or forest-path. It is usually found in pairs, except after breeding, when it combines with its newly-reared family to form a little troop, which comport themselves much as *Alcippe*. Its note, which is one of the characteristic sounds of the Ceylon jungles, is a persistently repeated whistle, resembling the words "to-meet-you." This is varied, on the part of the male in the breeding-season, by a combination of ascending and descending bars, which form a pleasant little warble. In the short note there is a peculiar intonation which partakes of the power of ventriloquy, and which renders, at times, the determining of the bird's position a difficult matter. The Whistling Babbler is especially noisy in wet weather, and during the breeding-season utters a low purr when the vicinity of its nest is approached. At this period I have observed a pair seated on a low branch, bowing and courtesying to each other, with their tails carried erect, and appearing to be most intent on rendering themselves mutually attractive. The stomach in this species is muscular; and I have found large beetles therein, proving its digestive powers to be considerable.

Nidification.—The nest of this species is exceedingly difficult to find, and scarcely any thing is known of its nidification. Mr. Bligh succeeded in finding it in Haputale at an elevation of about 5500 feet. It was placed in a bramble about 3 feet from the ground, and was cup-shaped, loosely constructed of moss and leaves; it contained three young. I found what I have reason to believe was a nest of this species at Agalewatta, which was constructed chiefly of the dead leaves of a recently felled shrub, in which it was placed about 2 feet from the ground; it was large and loosely made, resembling the nest of *Alcippe*, but lined with fine dry roots. Although it contained no eggs, I observed the birds frequenting it, and have no doubt, therefore, as to its ownership. Mr. Bligh writes me concerning a brood of four or five young which he found in the Central Province; they had just left the nest and were frequenting some thick brambles, in which he caught several of them with ease. The parent birds, he remarks, "seemed as if they would have died of distress, trying to draw me away by tumbling and fluttering about on the ground as if badly wounded, and nearly buffeting me when I had the young in my hand."

The figure in the Plate accompanying this article is that of a dark-coloured Western-Province specimen, which was shot in the Three Korales.

Genus PYCTORHIS.

Bill short, curved, high at the base, tip entire. Nostrils rounded; rictal bristles strong; orbits nude. Wings rounded, the 5th to the 7th quills subequal and longest. Tail long and graduated. Legs and feet stout. The tarsus shielded with broad smooth scutæ, anterior toes moderately short; hind toe and claw lengthened.

PYCTORHIS NASALIS.

(THE BLACK-BILLED BABBLER.)

(Peculiar to Ceylon.)

Chrysomma sinensis, Blyth, Cat. B. Mus. A. S. B. p. 150. no. 860, spec. *c* (1849); Kelaart & Layard, Prodromus, App. p. 58 (1853); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 272.

Pyctorhis sinensis, Jerdon, B. of Ind. ii. p. 15 (1863, in pt.); Holdsw. P. Z. S. 1872, p. 448; Legge, Ibis, 1875, p. 290.

Pyctorhis nasalis, Legge, Ann. & Mag. Nat. Hist. 1879, iii. p. 169.

Batitchia, Sinhalese.

Similis *P. sinensi*, sed saturatio, et remigibus haud rufo marginatis, supercilio albo longiore et naribus nigris nec flavis distinguenda.

Adult male and female. Length 6.2 to 7.0 inches, average about 6.5; wing 2.5 to 2.85; tail variable, extreme length about 3.5, centre feathers 1.25 longer than the outermost; tarsus 0.95 to 1.1; middle toe with its claw 0.85; bill to gape 0.65 to 0.7. The average length of wing is 2.6; the limit above given relates to an exceptionally large specimen shot in Uva.

Iris golden yellow; eyelid chrome-yellow; loreal skin, which is perceptible through the feathers, greenish yellow; bill and nostril black; legs and feet dull yellow, extremities of toes dusky; claws dusky horn-colour.

Above ruddy earth-brown, the head darker than the hind neck; wings brown, the primaries at the base only edged outwardly with ruddy brown, elsewhere with greyish; wing-coverts concolorous with the bases of the primaries; tail greyish brown, the feathers edged pale; lores, a conspicuous supercilium, throat, and under surface white; the flanks, lower parts, and under tail-coverts tinged with buff; under wing-coverts buff-white.

Some examples, probably immature birds, are more deeply tinged on the lower parts than others, and some have a brownish spot immediately below the gape.

Obs. A comparison of a series of *Pyctorhis sinensis* from various parts of continental India, with a number of Ceylonese specimens of the species, which has hitherto been united with it, induced me to separate the latter as a subspecies or local race, differing in the absence of both the yellow nostril and the reddish wing-coloration from its Indian congener. Examples from Kamptee, Kattiawar, Behar, Nepal, N.W. Himalayas, and the North-west Provinces have a smaller eye-stripe and the upper surface of a ruddier hue than our bird; the head, in particular, displays this character; some specimens (Futteghur and Kattiawar) are more sandy than others, and have the rump and tail-feathers markedly pale. A Bhotan-Doars example, however, differs from all others I have seen in being very dark on the head and back; in all, the outer webs of the quills, except near the tips, are dull cinnamon-red, and the coverts are chestnut-brown, that is, not quite so red as the quills. The nostril membrane is deep yellow, while that of the Ceylonese race is as black as the bill; and this singular character forms, perhaps, the chief distinction between the birds of the two localities. As regards size, the Indian bird appears to measure somewhat less in the wing (2.35 to 2.6) and more in the tail (3.3 to 3.7 inches).

I have not had the opportunity of extending my examination to specimens from the south of India; and, in so far as I have not done this, I still consider my determination of the Ceylonese species as peculiar to the island open to correction. It may be that the race inhabiting the extreme south resembles the Ceylonese in coloration more closely than does that from *continental India*; but I have not yet seen any peculiarity in the colour of the nostril spoken of by recent observers. Blyth, in the first mention of the Ceylonese race which he received from Layard, says, "less rufous variety from Ceylon;" but in this he compares it with specimens from Lower Bengal.

Distribution.—The Black-billed Babbler is widely distributed throughout the island, particularly as regards the southern half; but at the same time it is a local bird, being altogether absent from some parts, while it is tolerably common in others. Commencing with the Western Province, it is not uncommon in the sedgy

overgrown portions of the Colombo cinnamon-gardens, and occurs in such-like situations throughout the more open parts of the interior; further south I have found it at Amblangoda and near Galle and Matara; but it does not become common until the dry low-lying south-eastern country is reached, of nearly all parts of which it is an inhabitant. The open elevated regions of Madulsima and Uva are, perhaps, its head-quarters, in all the patnas of which it is a very common bird, extending up to the vicinity of Hakgala, which has an elevation of 5800 feet. In the eastern portions of Dumbara, and in the country lying between Bintenne and Batticaloa, it is also found, occurring likewise in low cheena-copses throughout the north-east, or the country on the right bank of the Mahawelliganga. Layard writes that he obtained a few specimens in the Anaradhapura Vanni, and I have no doubt that it is found in places as far north as Elephant Pass.

Habits.—Swampy fern-brakes, grass-fields interspersed with bushes, low jungle in cheenas, and patnas covered with maana-grass, lantana, and thick cover are the localities chiefly frequented by the present species. It is a shy bird, except in the breeding-season, resorting to underwood or long grass during most of the day, and not showing itself to any extent until evening, when it perches on the top of a bush, and gives out its loud far-sounding, rather plaintive whistle of two notes, varied with a peculiar mewing call. It is generally found in pairs, in which habit it differs from most of its family, and when disturbed from its haunts flies quickly out, and, settling for a moment on a tall grass-stalk or prominent stick, drops into the nearest bush at hand. A little group of three or four are, however, sometimes seen together; but, in general, I imagine that they consist of a young brood with their parents. It proceeds swiftly through the thickest grass, and when wounded or winged runs with great speed on the ground, and inevitably escapes into the tangled undergrowth. In the breeding-season it is a lively bird, with all the manners of a Warbler, flying hither and thither, the male continually alighting on some prominent position and uttering a strong and rather pretty warble. I have always found its food to consist of small Coleoptera and various minute insects. The district of Uva is the only locality where I have seen small parties of this bird, and then not more than three or four together, which were probably, as previously remarked, a young brood accompanied by their parents.

Jerdon writes of its Indian ally, "It frequents low jungles on the skirts of forests, long grass, hedge-rows, and even comes occasionally into gardens. Though sometimes to be met with singly, it is generally seen in small parties of five or six, flying from bush to bush before you, and trying to conceal itself in some thick clump. It has a low chattering note when at rest, and when flying from bush to bush a loud sibilant whistle. I have on several occasions heard one, perched conspicuously on a high bush, pour forth a remarkably sweet song." In this latter habit the Indian species exactly resembles ours.

Nidification.—In the Western Province this Babbler commences to breed in February; but in May I found several nests in the Uva district near Fort Macdonald; and that month would thus seem to be the nesting-season in the Central Province. The nest is placed in the fork of a shrub, or in a huge tuft of maana-grass, without any attempt at concealment, about 3 or 4 feet from the ground. It is a neatly-made compact cup, well finished off about the top and exterior, and constructed of dry grass, adorned with cobwebs or lichens, and lined with fine grass or roots. The exterior is about $2\frac{1}{2}$ inches in diameter by about 2 in depth. The eggs are usually three in number, fleshy white, boldly spotted, chiefly about the larger end, with brownish sienna; in some these markings are inclined to become confluent, and are at times overlaid with dark spots of brick-red. They are rather broad ovals, measuring, on the average, from 0.76 to 0.79 inch in length by 0.56 to 0.59 in breadth.

The figure of this species in the Plate accompanying the next article is that of a female shot in the Madulsima district.

Genus ELAPHRORNIS*.

Bill straight, compressed, rather slender; culmen straight at the base, the tip notched. Nostrils oblong and oblique; rictal bristles feeble. Wings short and rounded, the 5th, 6th, and 7th quills subequal and longest, the 1st about half their length. Tail exceeding the wing by the length of the hind toe, of 12 feathers, lax and graduated. Tarsus longer than the middle toe and its claw, and covered with long obsolete scales; anterior toes slender, the hallux stout.

Plumage lax and soft; the feathers of the back much lengthened. Nape furnished with abnormal hair-like feathers.

ELAPHRORNIS PALLISERI.

(PALLISER'S ANT-THRUSH.)

(Peculiar to Ceylon.)

Brachypteryx palliseri, Blyth, J. A. S. B. 1852, xx. p. 178; Kelaart, Prodrömus, Cat. p. 102 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 269; Holdsworth, P. Z. S. 1872, p. 443, pl. xviii.

Kelaartia palliseri, Gray, Hand-l. B. i. p. 312. no. 4668 (1869).

♂ *ad.* suprà brunneus, pileo saturatiore et magis olivascens: tectricibus alarum brunneis dorsi colore lavatis: remigibus brunneis, extùs olivascens: caudà saturatè brunneâ, rectricibus clariore brunneo lavatis: loris cinerascens: albis: lineâ superciliari cinerascens indistinctâ: regione parotica et plumis infraocularibus brunneis, angustè albido lineatis: gulâ pallidè cervino-rufâ: pectore olivascens flavo lavato, lateraliter cineraceo adumbrato: corporis lateribus, tibiis et subcaudalibus brunneis: abdomine medio pallidè flavo: subalaribus olivascens-brunneis: remigibus infrâ brunneis, intùs pallidè marginatis: rostro nigro, mandibulâ pallidiore: pedibus purpurascens-brunneis: iride ♂ pallide rubrâ, ♀ flavescens-cervinâ.

Adult male and female. Length 6.4 to 6.75 inches; wing 2.35 to 2.65; tail 2.5 to 2.7; tarsus 1.0 to 1.1; middle toe and claw 0.8 to 0.85; bill to gape 0.73 to 0.87. The female is the smaller of the sexes.

Male. Iris clear red; bill black, slate at the base beneath; legs and feet deep neutral brown or purplish brown, claws pale brownish horn.

Female. Iris buff.

Above olive-brown, darkest on the forehead, and changing to rusty brown on the rump, upper tail-coverts, and tail, the centre of the tail-feathers darker than the margins; wings dark brown, the outer webs of the quills rusty olive-brown; lores just beneath the eye, as also the ear-coverts, blackish brown, the latter with pale striæ; a faint light stripe passing from the bill over the eye; orbits greyish; chin whitish, changing into buff-yellow on the gorge and upper part of throat, which blends into the olivaceous slate-colour of the chest and sides of breast; lower flanks and under tail-coverts rusty brown; centre of the breast and the belly flavescent, blending into the surrounding colour.

Young. Iris, in the male pale reddish buff; in the female white.

Obs. A question to be decided by future observation is whether the iris of the female ever turns red. I have one specimen with a faint inner reddish circle; but I have never shot one with a red iris like that of the male, the

* From ελαφρός, nimble, active.



— ELANOIDES NADALII —
ELANOIDES NADALII —

invariable colour being buff. As the iris in the male turns from buff to red, and that of the female from white to buff, the inference is that, in the end, the latter may possibly become as dark as that of the male.

Chin dusky greyish, the centres of the feathers whitish, and a slight wash of buff across the centre of the throat; breast and underparts more greenish than in the adult, the chest being devoid of the slaty hue.

Obs. This curious bird is quite a *Timaline* species, both as regards its habits and its external structure. Its wings and legs are essentially those of the present family, and the texture of its plumage is not unlike that of *Pomatorhinus*, although it is considerably more lax. It has, however, its abnormal characteristics, such as its slender bill and its highly developed nuchal hair-like plumes, which ally it to the *Drymœcinæ*. These plumes possess the remarkable structure of dividing at the tip into three or four branches, each of which is furnished with a scanty web; it likewise differs from most of the *Timaliinae* in its non-gregarious propensity, resembling also, in this respect, the *Drymœcinæ*. Notwithstanding, it seems to me to take a better station among the Babblers, to which its active habits, wing- and tail-structure ally it, than among the Wren-Warblers; and I accordingly place it at the end of the *Timaliinae*.

It was placed by Blyth in the genus *Brachypteryx*, which is located by Jerdon and others among the Thrushes in the subfamily *Myiotherinae*. With the exception of the short wing, it does not appear to have any thing in common with this genus, one of the principal characters of which is the very short tail, *much exceeded by the wing* in all the species I have examined. In some, such as *Brachypteryx poliogenys*, Wallace, the tail falls short of the wing by the length of the tarsus, whereas in the present bird the tail considerably exceeds the wing, and the gape is bristled and not smooth. I have accordingly founded for its reception the genus *Elaphrornis*, which title I conceive to be not inappropriate, owing to its active manners.

Distribution.—This singular and little-known bird was discovered by Kelaart, who suggested its present specific name in honour of a friend, Mr. Palliser of Dimbulla; he procured it at Nuwara Eliya and Dimbulla. But few naturalists have met with it, owing to its propensity for inhabiting dense thickets in thick jungle. It is confined to the upper hills and higher ranges in the outlying districts, in all of which it is found above an elevation of about 5000 feet. It is a common bird in all the forests of the main range, from False Pedro to the Horton Plains, and thence along the Peak forest to Maskeliya. It is found on Namooni-kuli mountain and on the Haputale hills. Mr. Bligh, however, writes me that for the past three years he has not met with it in the higher jungles of this district, in which it used formerly to be common during the autumn months. For my own part I do not believe much in its moving about; it may be more silent at one time than another, and consequently may chance to be overlooked, for it shows itself but little, except during the early morning, and an acquaintance with its singular note is requisite to a knowledge of its whereabouts. It is, perhaps, more numerous on the Horton Plains than any other part of the Nuwara-Elliya plateau; the woods there are overgrown with elephant-grass (*Arundinaria debilis*?), its favourite haunt, and in this it dwells securely. It must be looked for in the upper jungles of the Knuckles range: when I visited them I was unacquainted with its note, and consequently it found no place in my catalogue of the birds of that district; but the conditions of climate and vegetation are similar there to those of other parts.

Habits.—This Ant-Thrush dwells entirely in the damp close underwood with which the upper Ceylon forests are overgrown; it delights in the nilloo-scrub and the densely matted "elephant-grass," which I have just referred to, both of which form the chief part of the undergrowth in the Nuwara-Elliya district: equally favourite haunts, however, are the numberless little nullahs leading to the mountain-streams, and which are generally blocked up with fallen timber of all sizes, and a tangled mass of dead nilloo-sticks, thorns, decaying boughs, and such like; and here this little retiring bird passes a quiet though active existence, nimbly searching about the mossy trunks, quickly hopping and running along the ground beneath the tangled thickets, through which it threads its way with astonishing rapidity, or darting about the bases of standing trees in the pursuit of ants and other minute insects. It likewise partakes, to some extent, of small seeds, some of which I have occasionally found in its stomach. To the ordinary observer, therefore, it is likely, with such habits, always to remain a stranger; but those to whom its insect-like note, which sounds like the syllable "*quitze*," sharply uttered at moderate intervals, is familiar may frequently detect it in the vicinity of forest-paths, at the sides of which it often appears for a moment, quickly darting across and clinging to the upright trunk of a tree, while it utters a rapid little warble, and then darts into the surrounding vegetation.

As with other birds in Ceylon which are denizens of thick jungle, I find that scarcely any Europeans are

acquainted with the Ant-Thrush, although it is, in the limit of its range, quite a common bird, but at the same time of such retiring manners, and so difficult to hunt into the open, that its presence is overlooked by those who are unacquainted with its voice; while, on the contrary, those who are familiar with it will recognize its sharp little *quitze* at every 100 yards in such quiet solitudes as the jungles of the Horton Plains and other similarly elevated regions. It is chiefly astir in the early part of the day; and its lively little song is at that time oftenest heard. It feeds entirely on the ground and among fallen timber, its strong, curved, hind claw enabling it to cling to wood in any position, and its stout legs affording it the power of threading its way quickly through the densest brakes. It is of unsociable habit, shunning the companionship of any species but *Alcippe nigrifrons*, with which I have once or twice found it associating.

Mr. Holdsworth's experience of its habits corresponds well with my own. He writes, "Frequently it betrays its close neighbourhood by its '*cheep*' once or twice repeated; and it will show itself for a moment within two or three yards of one; then it is lost again in the thick jungle. When on the ground it often jerks up its tail after the manner of the Robins; but I have not observed this habit when it has been on the stems of the jungle plants or creeping about the dry sticks."

Nidification.—The Ant-Thrush breeds in March and April. Mr. Bligh writes me, "I found a nest at Nuwara Eliya in April 1870; it was placed in a thick cluster of branches on the top of a somewhat densely-foliaged small bush, which stood in a rather open space near the foot of a large tree; it was in shape a deep cup, composed of greenish moss, lined with fibrous roots and the hair-like appendages of the green moss which festoons the trees in such abundance at that elevation. It contained three young ones, plumaged exactly like their parents, who kept churring in the thick bushes close by, but would not show themselves much."

The figure in the Plate accompanying this article is that of a male shot at Horton Plains.

PASSERES.

TIMALIIDÆ.

Subfam. DRYMÆCINÆ.

Bill more or less straight, acute at the tip. Wings rounded, with the 1st quill about half the length of the longest. Tail as long as, or longer than, the wing, graduated, the feathers lax. Legs and feet stout; the tarsus lengthened and shielded with moderately developed scutes; hind toe and claw large.

Of small size. Nape mostly furnished with "hairs."

Genus ORTHOTOMUS.

Bill long and slender, straight, tip entire. Nostrils basal, lateral, and somewhat advanced; rictal bristles minute. Wings short and rounded; the 1st quill more than half the length of the 2nd; the 4th and 5th the longest. Tail very narrow, the centre feathers, in some, elongated at the breeding-season. Tarsus long, stout, and scutellate in front. Toes slender, claws much compressed.

Nuchal "hairs" moderate.

ORTHOTOMUS SUTORIUS.

(THE INDIAN TAILOR-BIRD.)

Orthotomus sutorius, G. R. Forster, Ind. Zool. p. 17 (1781).

Motacilla sutoria, Penn. Ind. Zool. p. 17, pl. 8 (1790).

Motacilla longicauda, Gm. Syst. Nat. i. p. 954 (1788).

Orthotomus longicauda (Gm.), Strickl. Ann. & Mag. Nat. Hist. 1844, xiii. p. 35; Blyth, Cat. B. Mus. A. S. B. p. 144 (1849); Kelaart, Prodromus, Cat. p. 120 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 262; Moore, P. Z. S. 1854, p. 81; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 317 (1854); Jerdon, B. of Ind. ii. p. 165 (1863); Holdsw. P. Z. S. 1872, p. 455; Hume, Nests and Eggs, ii. p. 331 (1874); Oates, Str. Feath. 1875, p. 135; Butler & Hume, *t. c.* p. 479.

Orthotomus sutorius (Forst.), Hodgs. in Gray's Zool. Misc. p. 82 (1844); Walden in Blyth B. Burm. p. 120 (1875); Fairbank, Str. Feath. 1877, p. 406; Davison & Hume, *ibid.* 1878, p. 345.

Le petit Figuier à longue queue de la Chine, Sonn. Voy. Ind. ii. p. 206; *Long-tailed Warbler*, Lath.; *The Rufous-headed Tailor-bird*, Kelaart. *Phutki*, Hind.; *Tuntuni*, Beng.; *Patia*, lit. "Leaf-bird," Nepal.; *Likku jitta*, Telugu.

Tavik, Sinhalese, from the note.

Adult male. Length 4.2 to 5.0 inches (according to length of tail in breeding-season), average normal length 4.3; wing 1.8 to 1.9; tail 2.0 to 2.5, centre feathers 0.75 to 0.8 longer than the rest; tarsus 0.75; middle toe and claw 0.55; bill to gape 0.65 to 0.7.

Adult female. Smaller than male; length 4.1 to 4.2 inches; wing 1.7.

Iris pale reddish; eyelid rufescent yellow; bill fleshy, with dusky culmen; legs and feet fleshy reddish or "flesh-colour."

Forehead and crown rufous, changing into ashy on the nape, and thence into the olive-greenish of the hind neck, back, scapulars, and lesser wing-coverts; quills and tail light brown, the latter tipped pale and with a subterminal bar of darker brown; tail-feathers towards their bases, and the wing-coverts and tertials, edged with the hue of the back; the primaries edged with olivaceous; throat, face, and under surface whitish, purest on the lower breast; the flanks and sides of chest ashy grey; a dark patch (usually concealed) on either side of the throat, formed by the bases of the neck-feathers and the blackish skin of that part; under wing-coverts rufescent yellow, and the thighs brownish rufous. The elongated centre tail-feathers are yellowish olive-green, and they are indistinctly tipped and banded like the rest. The nuchal hairs are small in this species.

Young. Birds of the year have the under mandible dusky and the legs brownish fleshy.

The forehead and crown are dusky rufous; the upper tail-coverts and margins of tail-feathers near the base are slightly rufous; otherwise as in the adult.

Obs. Jerdon has pointed out that in specimens from Ceylon "the ashy nape is inconspicuous, being nearly overlaid with rufous, and passing into the green of the back." A comparison of my specimens with various examples from different parts of India demonstrates that, as a rule, the latter are of a darker green on the back, and have the forehead a deeper rufous, this colour not receding so far back as in the island birds, and also that frequently the ashy nape extends more forward. Then, again, as a rule, in the Indian birds the central tail-feathers are longer, consequently projecting further beyond the adjacent pair. These differences, however, are by no means constant, some examples from various parts of India coinciding exactly with ours. A Malabar example in my collection is in all respects the same, having the ashy nape similar to Kurunegala specimens, and the forehead and upper surface of precisely the same tint; its measurements are:—wing 1.9 inch; tail 2.5, central feathers 0.65 longer than the next; bill to gape 0.65. A Deccan specimen has the tail 2.8 inches; but this is exceptional, for one from Darjiling measures 2.4 inches, central feathers 0.65 longer than the next, bill to gape 0.65: one from Behar, tail 2.4, central feathers 0.5 longer than the next; another from Tenasserim 2.5, central feathers 0.5 beyond the rest. In the latter the rufous of the forehead does not recede so far back as in some Ceylonese birds, but the nape is not more cinereous than in them. In the Darjiling specimen the nape is *slightly* darker than in most island birds, and in that from Behar it is considerably so.

O. alba, Temm., from Java, is allied to the present species, and differs in having the cheeks and ear-coverts rufous as well as the forehead, and the upper surface greyish green; wing 1.7 inch.

Distribution.—The Tailor-bird is ubiquitous in Ceylon, inhabiting the whole island, without regard to the nature of the locality, from the sea-coast to the highest parts of the upper hills. It is uniformly diffused through the low country, being quite as common in the north and east as it is in the south. In the Kandy district and throughout the Central Province it is a well-known bird, and about Nuwara Eliya it is not uncommon. I found it in the Horton-Plain jungles and on the surrounding mountains, and have met with it in all parts of the main range that I have explored.

In India this little bird is spread throughout the whole country to the Himalayas and thence into Burmah and Tenasserim, in which latter province Messrs. Hume and Davison say that it is generally distributed where the country is cultivated; they procured it as far south as Mergui. It ranges into the hills of the southern part of the peninsula, but not to so great an altitude as in Ceylon. Miss Cockburn, in writing from the Nilghiris to Mr. Hume, remarks that it is seldom met with on the highest ranges, but appears to prefer the warmer climates at about 3500 or 4000 feet. Mr. Fairbank, however, observed it at 5500 feet in the Palanis. In the Himalayas it breeds up to 4000 feet. In Guzerat and the Mount-Aboo district it is common, and in Sindh it has likewise been procured.

Habits.—This interesting little bird, which is a great favourite among Europeans in Ceylon, appears to have no choice of situation, frequenting gardens, cultivated districts, and open country, as well as thick jungle and the depths of the forest. In the vicinity of habitations, however, it is particularly at home, occupying the grounds of European and native houses, and therein delighting in the broad foliage of the "Lettuce"-tree and other umbrageous shrubs, about which it hops during the heat of the day, swaying its tail to and fro and repeating its continued and rather tiresome notes. The male during the breeding-season is most persistent in giving forth his sharp *te-wike, twike*, and his well-known metallic-sounding call somewhat like the sharpening of a saw, which he reiterates close to one's verandah in some adjacent tree till it becomes deafening. The muscular action consequent on the display of these vocal powers exposes the naked black skin (otherwise concealed) at the side of the throat, giving the appearance of a dark stripe at this part. Jerdon likened its call to the syllables *to-wee, to-wee, to-wee*. Although it usually consorts in pairs, it is not strictly a sociable bird, its companion being, for the most part, seen at some little distance off, now and then answering the notes with which it is hailed. After rearing its young brood, however, the little family go about in company for some months, flitting actively around and feeding on larvæ and insects which they secure among the leaves of trees. It is a bird of very restless habit, particularly in the breeding-season, and when watched at that period quickly disappears into the nearest thick foliage.

Nidification.—The breeding-season in the west and south of the island lasts from about March until November, during which period probably more than one brood is reared; in the Central Province it commences somewhat later, and in the north it is during the cool season or north-east monsoon. In the low

country an umbrageous tree with large leaves, more especially its favourite habitation the "Lettuce"-tree, is usually chosen in which to construct its ingenious nest, while in the Central Province it frequently builds in a coffee-bush, sewing four or five leaves together. Layard speaks of one being constructed of a dozen oleander-leaves; but the usual number of which it makes use is two. I have found beautiful nests constructed in a single leaf, the edges of the lower half being brought close together, sewn firmly, and the nest built into the cone thus formed, the back of the leaf serving for one half of the egg-cavity; but these are rare exceptions. Two, or perhaps three, adjacent leaves, about 4 or 5 feet from the ground, are selected and their ends brought together and so formed as to make a cavity for the nest, which is built inside it and consists of fine grass, bits of cotton, thread, coir-fibre, wool, small roots, and such like, some of which ingredients are passed through the holes perforated in the leaf casing and then incorporated with the body of the structure, the whole forming a very solid and substantial piece of workmanship. The coir used is mostly pulled from the mats in the verandahs of houses near which the nest is often built. The egg-cavity formed in this skilful manner is about 2 inches in diameter by the same in depth, the lining being simply the finer materials of the body of the nest. The eggs are generally three, sometimes four, in number, of a whitish or greenish-white ground-colour, spotted openly throughout, but chiefly at the large end, with one or two shades of rather light brown and brownish red. In shape they are rather pointed ovals, with but little gloss, and measure about 0.65 inch in length by 0.45 inch in breadth. Naturalists in India appear to differ in opinion as to the Tailor-bird using dead leaves for the formation of its nest. I have found and examined many and I have never seen such a thing. The most likely solution of the problem is that suggested by the late Mr. A. Anderson, and quoted in 'Nests and Eggs,' p. 33, and which is, that the dead leaves sometimes found in the composition of the nest are those which have been pierced to excess, separated from the stalk, and afterwards withered. Writers quoted in Mr. Hume's useful work testify to its building at all times of the year and in very various situations. Mr. Anderson speaks of a nest being taken in his presence from the very top of a high tree and enclosed within a single leaf; another seen by him was composed of seven or eight leaves. Miss Cockburn writes that it builds in coffee-trees in the Nilghiris. Mr. Hume gives the average length of Indian eggs as 0.64 by 0.46 inch.

Genus PRINIA.

Bill shorter, slenderer, and more curved than in *Orthotomus*. Nostrils linear and exposed as in that genus; tip entire. Wings as in the last genus. Tail variable, of 10 feathers in some, 12 in others, much graduated, the feathers lax. Tarsus long, shielded in front, with large but smooth scutes.

Nuchal "hairs" more developed than in *Orthotomus*.

PRINIA SOCIALIS.
(THE ASHY WREN-WARBLER.)

Prinia socialis, Sykes, P. Z. S. 1832, p. 89; Jerdon, Cat. B. S. India, Madr. Journ. 1839, xi. p. 3; Blyth, Cat. B. Mus. A. S. B. p. 143 (1849); Layard & Kelaart, Prodromus, Cat. App. p. 57 (1853); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 263; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 321 (1854); Jerdon, B. of Ind. ii. p. 170 (1863); Holdsw. P. Z. S. 1872, p. 455; Hume, Nests and Eggs, ii. p. 337 (1874); Legge, Ibis, 1874, p. 21, et 1875, p. 397; Hume & Butler, Str. Feath. 1875, p. 479; Morgan, Ibis, 1875, p. 321; Fairbank, Str. Feath. 1877, p. 406; Davidson & Wender, ibid. 1878, p. 83.

Foodkey Warbler, Latham, Hist. viii. p. 125.

Phutki, Hind. (Blyth).

Adult male and female. Length 4.5 to 5.0 inches; wing 1.75 to 1.9; tail 1.8 to 1.9; tarsus 0.75 to 0.85; middle toe and claw 0.55 to 0.6; bill to gape 0.65. Females are smaller, as a rule, than males.

Not. This species has 10 tail-feathers.

Iris pale red or brownish yellow; bill black; legs and feet fleshy reddish, claws dusky.

Male. Head, back, and wing-coverts dark bluish ashy, the colour just encircling the eye and covering the upper half of the ear-coverts; two long hairs spring from the nape on each side; wings and tail *umber-brown*; the tail with whitish tips and a subterminal blackish-brown bar, the central pair of feathers less lightly tipped than the rest, and all the bars showing darker beneath; under surface rufescent buff, paling to whitish on the centre of the breast, and tinged most deeply on the flanks with the rufescent hue; thighs brownish rufous; under wing rufescent. The plumage of the under surface is silky.

Female. Has a buff and more or less conspicuous *stripe above the lores*; under surface not so deeply tinged with buff as in the male.

Young. Similar to the adult, with the exception of the less pronounced hues of the upper surface, and more albescent character of the lower parts.

Obs. For want of South-Indian specimens to compare with those in my possession from Ceylon, I am at present, I regret to say, unable to deal satisfactorily with this species. I believe it will have to be separated as a smaller browner race of *P. socialis*; and I hope to refer to it again in the Appendix. It *may* turn out to be one of those forms which undergo a gradual change of plumage and size as they range south towards Ceylon, making it difficult to define their limits as distinct birds from their northern representatives; but even then I should almost doubt the propriety of not separating the Ceylon race as a subspecies. Sykes's male type of *P. socialis*, which was described from the Deccan, and is now in the India Museum, has the lower part of the back ashy, like the upper part, as in Ceylon birds; but the wings and tail are a decided brownish rufous, and consequently much redder than in the insular bird; the tail measures 2.2 and the wing 2.1 inches: another example (labelled ♀) has the wing 1.85 and the tail 2.3. There is a third example, from the Deccan (but not one of the types), which is similar to the above in coloration, and measures 2.1 inches in the wing and 2.4 in the tail. These Deccan specimens are nearer to our birds than those from more northern parts; but it will be seen at once how much the tail, in particular, exceeds that of the Ceylon birds; and the dark caudal bands are not so broad as in the latter. Travelling northwards we find some examples have the rump ashy, like the back, but with much longer tails than those from Ceylon, and others with the rump brownish rufous, running so much into *P. stewarti* (which species has the back overcast with an olivaceous hue, becoming quite rufous on the rump and upper tail-coverts) that I do not wonder that Mr. Hume considers the two species doubtfully distinct. A Sikhim example collected by Anderson, and labelled *P. socialis*, has the back similar to Sykes's specimens, and the wings and tail rufous-brown, somewhat approaching in colour those of Ceylonese birds; but the secondaries are edged with brighter rufous-brown, and the

tail, besides being very long (2·7), has the subterminal spots very narrow, as in Deccan skins. The determination of this bird appears to be correct, for it is much closer to the true *P. socialis* than to *P. stewarti*. The Ceylonese race might stand as *P. brevicauda*, if proved to be distinct.

Distribution.—This little bird is widely distributed both in the low country and the hills up to 5500 feet, but is nowhere very numerous. In the western and southern parts of the island it is found chiefly in paddy-fields and plots of Guinea-grass in the vicinity of native houses, as well as in other suitable spots in the interior. In the north I have met with it usually either in scrubby jungle interspersed with long grass, or in the dry grassy beds of large tanks, such as Hurullé, Toparé, or on the borders of Minery Lake and other large sheets of water. In the Central Province it is a common bird on the maana-grass patnas; and in Uva, where the large hilly wastes are suited to its habits, it is very frequently met with, and ranges up the Nuwara-Elliya road to within a short distance of Hakgala. I have seen it on the Elephant Plains, between Udu Pusselawa and the Sanatorium, and likewise in Lindula at an almost similar elevation, namely 5500 feet.

Jerdon writes of its range in India that it is only found in the south, and does not extend north of the Godavari; of late years, however, it has been found to inhabit the north-western portions of the empire. At Khandala it is very common, as also in the Deccan, ranging southwards to the Nilghiris and other mountain-ranges, on which it is found, where their sides are grassy, up to 6000 feet. In the Carnatic it is met with among reeds and long grass by the sides of the rivers and tanks, and on the west coast it is, says Jerdon, found in similar situations. Captain Butler remarks that it is common on Mount Aboo; but the race which inhabits the adjoining plains appears to be a variety of *P. stewarti*.

Habits.—In the low country this species exhibits a tendency to wander about in search of localities favourable to its habits. It appears in fields of "Guinea-" and "Mauritius-grass" when they have grown up, rears its brood, and then departs on the field being cut; it finds a permanent home, however, in low grassy jungle, the sedge-covered borders of reservoirs and marshy places, and in the overgrown beds of large tanks. In the south of Ceylon it is a common bird about sugarcane-fields; in fact it is the characteristic Warbler of these localities, and may be seen clinging actively to the tall wavy stalks, energetically jerking its tail about and uttering its twittering little warble until disturbed by the approach of some one, when it drops suddenly into the brake and disappears. Its special delight is in the fields of tall Guinea-grass cultivated near towns and villages on the west coast; and it flits about in the dense cover which they afford, until some fine day its habitation is cut from under its feet and its retreat ruthlessly laid bare! It then vanishes, and takes up its quarters in the nearest favourable locality. I found great numbers of these birds in the long grass covering the dried-up tank of Hurullé, their companions in this thick vegetation being the Common Grass-Warbler and the White-browed Warbler. It is to be found permanently living in the maana-grass of the hill-patnas and on the bushy sides of the hills in the Fort-Macdonald district. Its food consists of insects; but occasionally I have found small seeds in its stomach. Its flight is weak and of short duration, for the tiny rounded wings with which nature has endowed it are not such as to afford it great powers of locomotion; it is very active in threading its way through long grass or reeds, and clings adroitly to upright stalks in its progress onwards. Sykes calls its flight a straggling one, as if it had a difficulty in making its way.

Nidification.—This Warbler breeds, both in the low country and in the hills, during the months of May, June, and July, constructing, as a rule, a very different nest from what is ascribed by some writers to its handicraft in India. There it is said to build generally a fabric resembling that of the Tailor-bird, using, however, more grass in its construction, and not sewing together the leaves with the same neatness as that species. I have found several nests in widely different parts of the island, and watched the birds building them, but in no case was there a single leaf of any kind present. For a description of one of the most remarkable, I quote the words of my note to Mr. Hume, published in 'Nests and Eggs,' Rough Draft, part ii. p. 337:—
"In May 1870, a pair resorted to a Guinea-grass field attached to my house at Colombo, for the purpose of breeding. I soon found the nest, which was the most peculiarly constructed one I have ever seen. It was an almost shapeless ball of Guinea-grass roots, *thrown*, as it were, between the upright stalks of the plant about 2 feet from the ground. I say 'thrown,' because it was scarcely attached to the supporting-stalks at all. It

was formed entirely of the roots of the plant, which, when it is old, 'crop' out of the ground and are easily plucked up, the bottom or more solid part being interwoven with cotton and such like, to impart additional strength. The entrance was in the upper half of the side, and was tolerably neatly made; it was about an inch in diameter, the whole structure measuring 6 inches in depth by 5 in breadth." When this nest was finished and the complete clutch of three eggs laid, I took it; and the following day another was commenced and built in a similar manner. The time occupied in building these nests was about eight days. Other nests found in the Central Province were neat bottle-shaped structures of grass, fixed among the stalks of maana-grass, some of the fine blades being *sewn* through the stalks for stability; the openings were at the side, and the interior was roomy and lined with a finer description of the same material as the body of the nest. The number of eggs is three; they are pointed ovals, and possess a considerable gloss; they are of an almost uniform dull mahogany colour, showing indications of a paler underlying surface in parts, particularly at the small end. They measure about 0.65 inch by 0.46.

My experience, however, of this bird's nesting by no means compasses the question of its habits; for it is a bird which, like some of its congeners, the nearly-allied *P. stewarti* for instance, indulges in a very varied style of architecture. Two observers, Miss Cockburn and Mr. Davison, writing of the same district, the Nilghiris, give accounts of very differently-constructed nests. The former found them neatly built in Tailor-bird fashion, the bird drawing the leaves of the branches on which they were placed close together, and sewing them so tightly that the lining of fine grass, wool, and the down of seed-pods was supported by the framework thus made.

Mr. Davison, again, says that the nest is made of grass, beautifully and closely woven, domed, and with the entrance near the top; a third naturalist, Mr. Wait, found two nests in September—"the one deeply cup-shaped and the other domed; both constructed of root-fibre and grass, 'bents,' and down of thistle and hawkweed, all intermixed." Mr. Morgan says it constructs a very neat pendent nest, which is artfully concealed and supported by sewing one or two leaves round it, which is very neatly done with the fine silk that surrounds the eggs of a small brown spider. The eggs in all these nests are severally described as light red, deep brick-red (darker at the larger end, where there is generally a zone), and deep brownish red (deeper than brick-red), mottled with a still deeper shade. Mr. Hume's average for twenty-one eggs is 0.64 inch by 0.47.

PRINIA HODGSONI.

(THE MALABAR WREN-WARBLER.)

Prinia gracilis (Franklin), Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 3.

Prinia hodgsoni, Blyth, J. A. S. B. 1844, xiii. p. 376; id. Cat. B. Mus. A. S. B. x. p. 143 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 322 (1854); Jerdon, B. of Ind. ii. p. 173 (1863); Hume, Nest and Eggs, ii. p. 342 (1874); Legge, Mem. B. Hambantota, Ceylon Blue-book, 1874, p. 9 (first record from Ceylon); id. Str. Feath. 1875, p. 203; id. Ibis, 1875, p. 397; Oates, Str. Feath. 1875, p. 136; Butler & Hume, *t. c.* p. 480; Bourdillon, *ibid.* 1876, p. 401.

Prinia albogularis, Walden, Ann. & Mag. Nat. Hist. 1870, v. p. 219.

Prinia pectoralis, Legge, Mem. B. Hambantota, *ut supra*, note.

The Small Wren-Warbler, Jerdon; *The Slaty-breasted Wren-Warbler*, Hodgson's *Wren-Warbler*. Phutki, Hind.

Adult male and female. Length from 4.3 to 4.6 inches; wing 1.65 to 1.85; tail 1.85 to 2.0; tarsus 0.7 to 0.75; mid toe and claw 0.52 to 0.57; bill at front 0.55 to 0.58. Females are, on the average, the smaller of the sexes.

Note. This species*, together with *P. gracilis* and *P. cinereocapilla*, has 12 tail-feathers.

Male. Iris reddish yellow; eyelid brownish yellow; bill black; legs and feet fleshy yellow, in some a faint tinge of brown on the tarsus; claws brown.

Head, hind neck, back, and wing-coverts dusky cinereous ashy, with a slight olivaceous tinge on the back, and the rump somewhat pale; wings and tail hair-brown, the latter tipped whitish, with an adjacent blackish bar, showing darkest beneath and almost obsolete on the centre feathers; edges of the quills lighter than the rest of the feather; beneath white, with a broad cinereous ashy pectoral band, above which the throat is tinged with buff; flanks concolorous with the chest; thighs fulvous-brown.

Female. Iris as in the male; tarsus not so clear in colour. Less cinereous above, wings paler brown; a light streak above the lores; the pectoral band about the same width, but *much paler*; flanks the same.

Young. In the nestling just fledged the iris is olive; bill dark brown, yellow beneath at base; legs and feet brownish yellow, claws light yellowish.

Above brownish olivaceous, inclining to rusty on the rump; wings brown, edged with light ferruginous; beneath white, a faint dark band across the chest, and a slight tinge of buff over the whole; edge of wing white.

For some little time the upper parts remain the same, but the pectoral band darkens, the tips of the rectrices are whiter than in the adult, and the soft parts undergo a gradual change; the iris becomes yellow, the bill blackish, with a pale base below, and the legs less brownish. At the end of the first year the head is cinereous as in the adult, but the back is more olivaceous, the wing-coverts and quills still edged rusty, and the pectoral band of not quite the normal depth, with the lower parts tinged still with buff.

During nonage females are distinguishable at all stages by the pectoral band being lighter than in the male, and slightly incomplete in the centre.

Obs. Examples of this species procured by me in Ceylon in 1873 were identified by Mr. Blanford as identical with his Nellore specimens, which he had compared with the types of Lord Walden's *P. albogularis* from Coorg and which corresponded with them. Misled by the omission of all mention of the pectoral band in Jerdon's description, and not possessing Indian specimens for comparison, I had, on first discovering the species in Ceylon, come to the conclusion that it was new, and had named it, in my manuscript for a paper I was writing at the time, *P. pectoralis*. I have been unable to compare South-Indian specimens with mine, as the series of *Prinia*-skins in the British Museum is scanty; but, in addition to the above evidence, Mr. Fairbank writes me that a specimen he got at the base of the Mahabaleshwar hills had a broad dark slaty band across the chest. Captain Butler and Mr. Oates both refer to the dark band across the chest in this species; and therefore I conclude that Ceylon specimens will

* It has been stated that Jerdon erroneously described this species as having 12 tail-feathers. It, however certainly has 12.

compare well with those from all parts. But two or three examples I inspected in the national collection from Bhotan and Burmah, labelled as *P. hodgsoni*, had nothing but a slaty wash over the chest, blending imperceptibly into the surrounding white, and not taking the form of even a pale band; they were rufescent brown above, and the quills were edged with the same colour; the lower parts were likewise washed with buff instead of being pure white; they resembled *P. gracilis* above, but had the chest darker than that species, which may be said to be, in its plumage, an ally of *P. hodgsoni*, and has the upper surface, wings, and tail rufous-brown, and the underparts silky white, shaded with greyish on the sides of the neck.

Distribution.—The present species is of local range in Ceylon, and was unknown in the island until I discovered it in 1873, near Hambantota. I found it subsequently all over the Wellaway Korale, the Magam Pattu, and in other parts of the south-east, as far up the coast as Batticaloa. On the road from that place to Badulla I met with it frequently, and traced it as far up as Passara, between which and the skirts of the Madulsima district, where the range descends suddenly into the Nilgalla country, it was tolerably common. I have not seen it to the north of Vendeloos Bay, nor west of Hatagalla, on the Tangalla road.

In regard to the reference *P. pectoralis* in the synonymy of this article, I may mention that the memorandum of the birds inhabiting the Hambantota district of the south-east of Ceylon was written at the request of my friend Mr. Thos. Steele, C.C.S., Government Agent of that part, to be embodied in the reports of the Ceylon Blue-book for 1874, relating to the district in question; it contained a list of 190 species, with some remarks on their distribution, and was printed at the Government Offices in Colombo.

On the mainland this *Prinia* is, according to Jerdon, to be found "all through the Malabar coast, the Wynaad, the slopes of the Nilghiris, and more rare on the Eastern Ghâts and in wooded valleys at the northern termination of the tableland." As already mentioned, Mr. Blanford has it from Nellore on the east coast; and Mr. Fairbank records it from the base of the Khandala hills. Mr. Ball has procured it at Sambalpur; and to the north-west it is found in the Mount-Aboo district, the avifauna of which is much the same as that of the Western Ghâts, it being, as it were, a northerly but isolated spur of this range. Mr. Hume remarks that it is found in the adjacent hill-ranges of Girwar in Kattiawar and of Koochawun. It extends eastward along the sub-Himalayan region through Bhootan and Nepal (that is, if the species there be identical with the southern form), and is found in Burmah, concerning which region Mr. Oates writes that round Thayetmyo it is common.

Habits.—This tiny Wren-Warbler is more arboreal in its habits than its other congeners of Ceylon; it frequents the edges of low jungle, underwood at the sides of the roads and jungle-paths, and also the tangled vegetation with which badly-cultivated cheenas or deserted forest-clearings are overgrown. It is a more sociable bird than *P. socialis*, little troops of three or four consorting together and following each other from bush to bush, or moving about in the underwood in a restless manner, all the while giving out a feeble sibilant utterance. In the early morning I often found these little families by the sides of the roads and paths in the hot dry jungle of the south-eastern district, and was enabled to procure the young in all stages, from the nestling to the immature bird acquiring the dark pectoral band; their flight was very short and feeble, and, after alighting in a bush or shrub, they had the faculty of quickly threading their way to the further side, from which they again took flight. The food of this bird consists of small insects, which it picks up among the dead wood to which it is so partial. Mr. Bourdillon remarks that it has a feeble twittering song; and Mr. Oates writes that the "male sits on the topmost twig of a bush, and sings a tremendously hearty little song." I have only heard the feeble chirping above mentioned, which I conclude must be the usual call-note of the species.

Nidification.—I never succeeded in finding the nest of this Warbler, but know that it breeds in May and June, from the number of young birds I met with in July in the low country below Lemastotta. Mr. Hume and his correspondents, cited in 'Stray Feathers,' describe its nest as quite Tailor-bird like, composed chiefly of fine grass, with no special lining, carefully sewn, with cobwebs, silk from cocoons, or wool, into one or two leaves, which often completely envelop it, so as to leave no portion of the true nest visible. The ground-colour of the eggs is very delicate pale greenish blue, and the markings differ so much as to divide them into two "distinct types"—the one unspotted, and the other finely speckled throughout with brownish or purplish red, frequently forming a zone towards the large end. They vary from 0.53 to 0.62 inch in length, by from 0.4 to 0.45 in width.

Genus DRYMÆCA.

Bill stouter and shorter than in the foregoing genera of the subfamily. Nostrils linear; rictal bristles stout but few. Wings with the 4th, 5th, and 6th quills the longest, and the 1st more than half the length of the 5th. Tail of 10 feathers, graduated and moderately long. Legs and feet stout; tarsi covered with strong and prominent scutæ, and longer than the middle toe and claw; claws strongly scaled; hind toe and claw large.

Nuchal hairs much developed in some species.

DRYMÆCA VALIDA.

(THE ROBUST WREN-WARBLER.)

(Peculiar to Ceylon.)

Drymoica robusta, Blyth, J. A. S. B. 1849, xviii. p. 812; id. Cat. B. Mus. A. S. B. p. 142 (1849).

Drymæca valida, Blyth, J. A. S. B. 1851, xx. p. 180; Kelaart, Prodrômus, Cat. p. 120 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 262; Blyth, Ibis, 1867, p. 302.

Drymoipus validus, Jerdon, B. of Ind. ii. p. 182 (1863); Holdsworth, P. Z. S. 1872, p. 457; Legge, Ibis, 1874, p. 21, et 1875, p. 397.

Suya robusta, Bonap. Consp. vol. i. p. 281 (1850).

Similis *D. jerdoni*, sed robustior, alis caudæque longioribus, et rostro toto nigro, robustiore et magis curvato distinguenda.

Adult male and female. Length 6·0 to 6·4 inches; wing 2·3 to 2·5; tail (varies much) 2·4 to 2·8; tarsus 0·95; mid toe and claw 0·5 to 0·7; bill to gape 0·7 to 0·75.

Iris light reddish or reddish grey; eyelid and bill* black, in some with the base very slightly pale; inside of mouth black; legs and feet fleshy or fleshy reddish, claws brownish.

Above greyish brown, slightly cinereous on the sides of the neck; wings and tail brown, with rufescent grey edgings to the quills and coverts, and the tail with whitish tips and subterminal blackish-brown bars, indistinct on the central rectrices; these latter have obsolete dark cross rays; lores dark grey, surmounted by a just perceptible streak of whitish; cheeks brownish, the lower parts blending into the colour of the throat and crossed by narrow dark lines; beneath fulvescent whitish, with the buff tinge strongest on the chest and sides of the belly close to the flanks, which darken into cinereous grey; thigh-coverts pale fulvous brownish.

Young. Iris whitish or greyish yellow; bill brown; under mandible fleshy with dusky tip; legs and feet fleshy reddish, or more delicate in hue than the adult.

Above rufescent brown; loreal spot small; wings and tail edged with faded rufous; the tips of the rectrices, which are subeven, fulvous white, and the dark spots lighter than in the adult; cheeks washed with brownish; beneath white, strongly tinged with rufescent buff on the chest and sides of belly; under tail-coverts dusky buff.

Obs. This species has, like many others in Ceylon, a representative form in South India, the Jungle Wren-Warbler, *D. sylvatica*. This bird, which is found in many parts of the peninsula and ranges up the Nilghiris to an elevation of 4000 feet, is paler on the upper surface and has a plainly developed superciliary streak. I have not had an opportunity of examining this species; but it is evidently exceedingly close to the present, as is also the next bird. The *Dymecine* of India, as Mr. Hume has more than once remarked, want reviewing exceedingly; and I trust

* The bill in this species frequently dries in the specimen, so as to leave the base of the under mandible white.

that when he amasses a large enough series he will publish a monographic notice of them, determining once and for all which are and which are not good species. I regret to say that, owing to a want of Indian material, my treatment of the Ceylon members of this genus must needs be very imperfect.

Distribution.—This is one of the many species discovered by our indefatigable ornithological pioneer Layard; he procured it in 1848, and on sending it to Blyth this naturalist named it primarily *D. robusta*, but two years afterwards gave it its present title, the reason for this change of name being because *D. robusta* was preoccupied by another species described by Dr. Rüppell.

Layard does not seem to have become well acquainted with it, for he speaks of it as "rather a rare bird," and as such it was likewise considered by Mr. Holdsworth. It is, however, a common bird, frequenting the cinnamon-gardens in the environs of Colombo, and also every similar locality along the western sea-board; in the interior it is found by the sides of roads and in low scrubby land near paddy-fields or semicultivated native gardens. In the south-west it is of frequent occurrence. In the eastern portion of the island, from Hambantota round the coast to the Trincomalie district, it is usually found in jungle clearings in which low bushes have sprung up; and these are, in fact, its favourite localities throughout the wilder northern half of Ceylon. In the hilly districts of the Morowak and Kukul Korales it is fond of kurrakan-fields, and in the Central Province may usually be seen in the hill paddy and among the long grass of the patnas. In the western portion of the hill-zone I have not detected it above 3000 feet; it is common at a higher altitude between Badulla and Haputale, where the vast stretch of patna-hills affords a considerable tract of country suitable to its habits and nature.

Habits.—As will be gathered from my remarks on its distribution, this species delights in any situation affording the cover which it frequents, such as low grassy jungle, open scrub, brambly wastes, the borders of paddy-fields, rank patna vegetation, the sides of roads through jungle and deserted forest clearings, or rude cultivation near jungle-begirt tanks. It passes most of its time near the ground, searching in thick grass and undergrowth for insects, often flying up to the top of the bush which has afforded it shelter; here it sits motionless for some little time, and commences suddenly to reiterate its loud clear call. It is particularly noisy in the afternoons, and is able, in the stillness of the evening, to make itself heard at no little distance as it sits on the top of a fence or dead stump in a solitary jungle clearing. It has but little pretension to the name of Warbler; but there are perhaps few birds which endeavour to make themselves heard more than it, or which give one the impression of trying to proclaim their whereabouts to all their neighbours. When it desires to give out the singular ringing note of which it is possessed, it invariably mounts to the very top of a bush, and having commenced its call continues lustily with it until disturbed, when it often remounts to an adjacent shrub and prolongs its evening salutation. It is equally noisy throughout the year; and I have no doubt its notes are well known to most of the residents in the handsome bungalows now adorning the cinnamon-gardens of Colombo, as well as familiar to those who take an afternoon's drive round the "Circular," or on the many radiating roads which start from that pretty spot. It often descends to the ground and feeds among grass, and when wounded I have seen it run with considerable facility. Its diet is purely insectivorous; and Layard remarks that it hunts in small parties, and traverses the branches up and down in a similar manner to the Tailor-bird. I have usually seen it solitary, and it is rare to see more than two or three together.

In the Plate accompanying the article on *Drymæca insularis* will be found a figure of the present species, taken from a male example shot in the Kalebokka district, Central Province.

DRYMŒCA JERDONI.

(JERDON'S WREN-WARBLER.)

Drymoica jerdoni, Blyth, J. A. S. B. 1847, xvi. p. 459; id. Cat. B. Mus. A. S. B. p. 142 (1849).

Drymoica inornata (Sykes), Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 328 (1854), in pt.

Drymoipus jerdoni (Bl.), Jerdon, B. of Ind. ii. p. 180 (1863); Holdsw. P. Z. S. 1872, p. 456;

Hume, Str. Feath. 1873, p. 437; Legge, Ibis, 1874, p. 21.

Adult male and female. Length 6·0 inches; wing 2·1 to 2·3; tail 2·45 to 2·6; tarsus 0·75 to 0·85; middle toe and claw 0·75; bill to gape 0·71 to 0·74.

Iris pale reddish or yellowish red; bill, upper mandible dark brown, lower dusky, pale at the base; inside of mouth *flesh-colour*; legs and feet brownish fleshy, claws blackish.

Above olivaceous brown, not so dark as the last species; the lores brownish grey; wings darker brown than the back, the quills edged pale; tail slightly paler brown than the wings, with obsolete transverse striæ, all but the central feathers with a pale tip and narrow subterminal dark bar showing beneath; face and ear-coverts pale brownish, mingled with the albescent hue of the throat; under surface, from the chin to the under tail-coverts, fulvescent whitish, most strongly tinged with buff on the sides of the chest and on the flanks; under wing-coverts and inner edge of quills fulvescent; thighs brownish fulvous.

Young. Iris as in the adult, bill with the under mandible lighter, and the tarsus washed with brownish.

An individual shot in June, and seemingly about two months old, has the upper surface of a more earthy hue than the adult; the quills are edged with fulvous, and the tertials have a broad but indistinct pale cross band formed by the margins of the centre of the feathers being fulvous; tips of the tail-feathers fulvous, and the subterminal dark spot indistinct.

Obs. This species is very close to the last. It may, however, be distinguished from *D. valida* by its having a *straighter, slenderer, and paler bill, and a flesh-coloured mouth*, by the wing being shorter, and the tarsus not so stout and studded with less prominent scutæ. As a rule, the brown of the upper surface is paler, and the lores are lighter, although much stress cannot be laid on this last character, as the lores are variable in the last species, being, in some specimens, nearly as pale as in the present bird. Neither can any dependence be placed on the tint of the under surface, for it is, in many specimens of *D. valida*, quite as much tinged with buff as in this species.

Specimens of this Warbler were sent by Jerdon from Southern India to Blyth, who described it under its present title, but afterwards absorbed it into *D. longicaudata*. Jerdon, however, sent examples to the British Museum, and with these Mr. Holdsworth compared his Ceylonese skins and found them to agree. But little is known of this species in Southern India—that is, as far as we can judge from the experience of late observers, not one of whom mentions it among the collections which have from time to time been described in 'Stray Feathers.' I imagine, therefore, that its distribution must be very local or that it must be a rare species.

Distribution.—Jerdon's Wren-Warbler is widely diffused throughout the low country, but is nowhere very common. It occurs, but only sparingly, according to my experience, in the hill-country up to about 3500 or 4000 feet, at which elevation I have met with it in the Knuckles district. Mr. Holdsworth procured his specimens near Colombo, and I found it commoner there than anywhere else. It frequents the cinnamon-gardens, chiefly affecting those low-lying spots which are overgrown with fern and bracken. I have procured it in the Eastern Province, also in clearings in the Kukkul Korale, and I have no doubt that some of the many birds of this genus which I have seen in the south-eastern region and the Northern Province may have belonged to the present species. It is not possible to distinguish it from the last bird when at large, and it may not, therefore, be so sparsely diffused through the island as I suppose; at the same time, however, I may mention that the majority of specimens of these large Wren-Warblers which fell to my gun in various parts of Ceylon belonged to the last-named, *D. valida*.

Concerning its distribution in South India I am unable to give particulars. I conclude it occurs in suitable localities in the low country of Madras, and probably on the slopes of such ranges as the Palanis.

Habits.—This bird frequents fern-brakes, the sides of overgrown ditches, long grass, and “hill-paddy” fields. It is of a sneaking disposition, keeping as much as possible under cover, and when roused from its haunts it flies along near the ground and quickly reestablishes itself in some thick vegetation. It has none of the bold habits of the Ceylon Wren-Warbler, although at eventide I have often heard it pouring out its warble, but not from a prominent position, as is the custom of its insular ally. Its food consists of various small Coleoptera and other minute insects. Its notes are moderately loud, but not so shrill as those of *D. valida*.

Nidification.—I have never found the nest of the present species, but have obtained fledgings in the Eastern Province in September. It breeds, therefore, on that side of the island in July or August, and on the west most probably from March until June.



ORINOCOA INSULARIS
ORINOCOA ALBA

DRYMÆCA INSULARIS.
(THE WHITE-BROWED WREN-WARBLER.)

(Peculiar to Ceylon?)

Drymæca inornata, Blyth, Cat. B. Mus. A. S. B. p. 142, spec. F (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 263; Layard & Kelaart, Cat. B. App. Prodrum, p. 57 (1853).
Drymoipus inornatus, Legge, J. A. S. (Ceyl. Br.), 1870-71, p. 50; Holdsw. P. Z. S. 1872, p. 456; Hume, Str. Feath. 1873, p. 439; Legge, Ibis, 1875, p. 396.
The Plain-Warbler, Grass-bird, Europeans in Ceylon.

Adult male and female. Length 4.9 to 5.4 inches; wing 1.85 to 2.15; tail 2.1 to 2.5; tarsus 0.8 to 0.9; hind toe and claw 0.58 to 0.61; bill to gape 0.65 to 0.68.

Iris very pale reddish or reddish yellow, a dark, thin, outer ring generally visible; eyelid reddish; bill black, with a clearly-defined white base; legs and feet flesh-colour or fleshy grey, claws dark brown.

Above dull cinereous or greyish brown, pale on the rump and tinged with chestnut on the head; wings and tail brown, edged with rufescent greyish; centre rectrices with faint cross rays; tips of rectrices white, with an adjacent blackish spot, both showing most beneath and least defined on the centre pair; a conspicuous white supercilium spreading over the lores, except at the corner of the eye, which is brown; orbital fringe whitish, with the posterior corner rufescent brown; beneath white, tinged with buff, most strongly on the sides of the chest and belly; flanks slightly dusky; under wing and under tail-coverts buffy white; thighs fulvous-brown.

I do not observe any constant difference in the plumage of adults in the winter. Some specimens are certainly darker in the cool season than the generality of breeding birds; but I have an example, shot from the nest in July, quite as dark as one killed at the latter end of October. The tail is, if any thing, *shorter* in winter than in summer.

Young. Iris greyish; bill, upper mandible brown, lower fleshy, with a dusky tip; legs and feet pinkish flesh-colour. Upper surface rufescent brown; the wings broadly margined with brownish rufous; tail tipped fulvous, with a trace of the subterminal bar; supercilium narrow and buff-white, under surface more washed with fulvous buff than the adult.

The tail is *even* in the nestling, the lateral feathers being nearly as long as the centre pair.

Obs. This Wren-Warbler has hitherto been united with the Indian species, *Drymoipus inornatus*, Sykes, to which it is, indeed, very closely allied. I will, however, keep it distinct, on account of its shorter tail, generally smaller size, and darker summer plumage, which differences, I find, exist between it and the type of the above-mentioned species, which is preserved in the India Museum. Mr. Brooks has lately compared this specimen, which is from the Deccan, with others of the northern race, which he and Mr. Hume have recently demonstrated to possess a distinct summer and winter plumage, and he finds that it is identical with them. In his notice on this subject ('Stray Feathers,' 1876, p. 407), Mr. Hume contrasts the winter phase (*D. longicaudatus*, Tickell) with the summer (*D. terricolor*, Hume) as follows:—

"*Drymoipus inornatus.* Winter, *longicaudatus*: lower surface warm buff; upper surface strongly rufescent; wings hair-brown, strongly margined with dull ferruginous; tail 3.2 inches, rufescent brown. Summer, *terricolor*: lower surface white, with a faint yellowish tinge; upper surface dull earthy grey-brown; wings earthy brown, margined albescent; tail 2.5, central feathers pale earthy brown."

Now although, as I have above remarked, some winter specimens of our bird are darker than some summer ones, no such thorough change or increased length of tail takes place as I have just quoted; and as Mr. Brooks says ('Str. Feath.' 1876, p. 274) that Sykes's type of *Drymoipus inornatus* is in the *longicaudatus* or dark winter plumage of *terricolor*, it follows that it must be a different bird from ours. Touching Mr. Brooks's decision, however, I would remark that Mr. Moore and myself have compared a pale summer-plumaged Ceylon specimen with Sykes's type, and find that the latter is the paler of the two, so that it cannot well be as dark as the above diagnosis of Mr. Hume, and likewise former writings of Mr. Brooks's on the subject, would lead one to suppose *D. longicaudatus* really is. Furthermore it would be necessary to possess summer specimens of the Deccan bird (there is no date of procuring on Sykes's specimen) before a decided opinion could be pronounced whether it was identical with the northern form. But whether Mr. Brooks be right or not, Sykes's bird does not agree well with ours; for besides

being paler than even a summer example of the latter, it is 0·37 inch longer in the tail and a trifle shorter, notwithstanding, in the wing: the eye-stripe is not so conspicuous and the bill is paler, the ground-colour of the tail darker beneath, with the blackish subterminal bars not so conspicuous. Another example of Sykes's measures 2·15 in the wing and 2·9 in the tail. As our bird, therefore, cannot be united to *D. inornatus*, it remains to be seen whether it is the same as the species inhabiting the Nilghiris and Southern India generally, and which Mr. Hume says should stand as *D. fuscus*, Hodgson. The natural inference would be that it is so; but Mr. Hume points out that the Nilghiri bird is larger, and has not so slender a bill as the Ceylonese; and I observe, furthermore, that its eggs are marked with fine hair-lines or streaks, which is never the case, to my knowledge, with the Ceylonese race, the eggs of which are always spotted openly with rather large blotches. I have therefore decided to separate our bird as an insular though closely allied race to the Deccan form, which, I have no doubt, will prove to be the same as the South-Indian species, now styled *D. fuscus*.

Distribution.—This sprightly little bird is about equally common with *Prinia socialis*, being widely distributed throughout the low country, as well as an inhabitant of the Kandyan and Southern-Province hills up to an altitude of about 5000 feet. At this height it is to be found on patnas in Uva, Haputale, and the slopes of Northern Saffragam, in which I include the sides of the ranges from Haldamulla round to Ratnapura; it also affects grassy spots and paddy and hill-grain fields in most of the upland valleys of the Central Province. In the Western Province it inhabits the Guinea- and Mauritius-grass fields in the neighbourhood of towns and villages, and in the interior is to be found in paddy-fields as soon as the grain is of sufficient length to afford it cover. In the Galle district I have often detected it in sugar-cane cultivation, and in the eastern and northern province it inhabits sedges and long grass in the beds of dried-up tanks.

Habits.—This Warbler frequents grass-fields, tall paddy and other native cereals, and long grass or tussocky wastes of all kinds, such as are found in the dry beds of tanks, on open plains, or the sides of hill-patnas. It is an active little bird and generally found in pairs, which flit about the tall corn, alighting on, and clinging with ease to, the most pliant stalks, while they constantly utter their repeated note, *kink-kink-kink*. Several pairs frequented the Guinea-grass near my quarters on the Galle face, and, together with the Ashy Wren-Warbler and the little Grass-Warbler, conduced to make the little field an interesting resort of small birds. I found it in great abundance in the bed of Hurullé tank, which, in the dry season, is a vast area of long grass; to such large tracts as this, as well as to extensive paddy-fields, it usually flocks for the time being, taking itself off again when its shelter is removed by fire, water, or the hand of the reaper. It consorts much with the Ashy *Prinia*, and at a distance is with difficulty distinguished from that species, except by its note. I have found the nests of both in close proximity to one another. It has a weak jerky flight, sustained for a short distance only, and it is insectivorous in diet, feeding on small caterpillars, larvæ, minute insects, &c.

Nidification.—I have found the nest of this species in almost every month from February till November; the prevailing time, however, in all parts of the island is from May until June, birds breeding in October and November being probably in the act of rearing a second brood. It builds its neat and cleverly-constructed nest between the tall stalks of paddy or other cultivated species of grass, about 3 feet from the ground. The egg-cavity is very deep for its width, for the better security of its contents, which are liable to be swayed to and fro with the wind. The nest is sometimes dome-shaped, with the top forming a hood over the entrance, which, in some instances, is neat and rounded, and in others wide and unfinished. Many, however, have an ingeniously made roof of the green blades of the supporting stalks, cleverly bent down and interlaced. The body of the nest is constructed of strips of green grass, generally sewn into the stalks at the bottom to form a secure foundation, the rest being woven round them to form the walls; the lining consists of finer strips of grass, scantily arranged in some cases, so that the bottom can be plainly seen through. The interior usually measures 2 inches in width by 3 in depth. The eggs are almost invariably 4 in number, of a beautiful blue ground-colour, very handsomely though sparingly blotched with rich umber and sepia blotches of two shades, which in some examples are gathered mostly round the larger end. They measure from 0·6 by 0·47 to 0·67 by 0·49, and the period of their incubation is from 11 to 13 days. They are almost entirely hatched by the heat of the atmosphere in fine weather, the bird resorting to the nest at sundown and leaving it again in the morning.

The figure on the Plate accompanying this article is that of a male shot in July at Hurullé tank.

Genus CISTICOLA*.

Bill more compressed than in *Drymæca*, high at the base, the culmen moderately curved; rictal bristles small and fine. Wings ample, with the secondaries much curved, the 1st quill less than half the length of the 4th, 5th, and 6th, which are subequal and longest, the 2nd shorter than the 7th, which is slightly less than the 6th. Tail of 12 feathers, and not exceeding the wing, the lateral feathers graduated. Legs long; the tarsus exceeding the middle toe and its claw, and shielded with broad smooth scutæ. Toes delicate; hind toe and claw large.

Plumage above striated. Nape furnished with short hair-plumes.

CISTICOLA CURSITANS.

(THE COMMON GRASS-WARBLER.)

Prinia cursitans, Frankl. P. Z. S. 1831, p. 118; Jerdon, Ill. Ind. Orn. pl. 6 (1847).

Cisticola schænicola, Bonap. Geogr. and Comp. List B. of Eur. p. 12 (1838); Jerdon, B. of Ind. ii. p. 174 (1863); Shelley, Ibis, 1871, p. 133; id. B. of Egypt, p. 97 (1872); Holdsw. P. Z. S. 1872, p. 455; Hume, Str. Feath. 1873, p. 439; id. Nests and Eggs, ii. p. 343 (1873); id. Str. Feath. 1874, p. 235, et 1875, p. 137; Butler & Hume, *t. c.* p. 481; Irby, B. of Gibraltar, p. 91 (1875).

Cisticola cursitans (Frankl.), Blyth, J. A. S. B. xvi. p. 457 (1847); id. Cat. B. Mus. A. S. B. p. 145 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 324 (1854); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 262 (in pt.); Hume, Str. Feath. 1877, p. 90; Davison & Hume, B. of Tenass. *ibid.* 1878, p. 349.

Cisticola omalura, Blyth, Cat. B. Mus. A. S. B. p. 145 (1849); id. J. A. S. B. 1851, xx. p. 176; Kelaart, Prodromus, Cat. p. 120 (1852) (in pt.); Layard, *ut suprâ*, p. 262 (in pt.); Blyth, Ibis, 1867, p. 302; Legge, Ibis, 1874, p. 21.

Drymæca cisticola, Von Heuglin, Ibis, 1869, p. 132.

Cisticola homalura, Hume, Str. Feath. 1877, p. 93.

The Mountain Grass-Warbler (*C. omalura*); *The Grass-Warbler* (*C. cursitans*), Kelaart; *The Fan-tail Warbler*, Shelley; *Bou-fesito*, Moorish, lit. "Father of eloquence;" *Cierra-puño*, *Tin-Tin* (from its note), Spanish; *Bolsicon*, Spanish (Saunders). *Ghaska phutki*, Hind., lit. "Grass-Prinia;" *Kher ghusa*, Hind. at Bhagulpore (Jerdon); *Chittu kuruvi*, lit. "Small bird," Ceylonese Tamils.

Adult male. Length 4.0 to 4.6 inches; wing 2.0 to 2.3; tail 1.3 to 1.6 (lateral feather from 0.3 to 0.5 shorter than central); tarsus 0.7 to 0.8; mid toe and claw 0.59 to 0.65; bill to gape 0.55 to 0.61.

* This peculiar genus, on account of its short 1st and long 2nd quill, and likewise its striated plumage, appears to form a link between the Drymæcine division of the Timaliidae and the Sylviidae, which latter family I propose to place next in order to the present. Notwithstanding these characters, the rounded form of the wing, the lengthened secondaries, the stout legs and feet, and the graduated tail ally *Cisticola* to the Drymæcinæ, in which subfamily Jerdon placed it.

Female. Length 3.9 to 4.3 inches; wing 1.9 to 2.05.

Iris varying from greyish yellow to olive-grey or pale olive; bill fleshy, the culmen varying from dusky to blackish brown, tip of lower mandible dusky; inside of mouth in the male *black*, in the female *fleshy*; legs and feet fleshy; joints of toes dusky.

Male (Hambantota, 30th June). Centres of the hind neck, back, scapulars, and wing-coverts deep sepia-brown, paling gradually off at the margins into brownish rufescent and rufescent greyish, the wing-coverts and scapular feathers having the lightest edgings; forehead and sides of the crown uniform sepia-brown, but the feathers of the centre of the occiput and of the nape and hind neck indistinctly edged with rufous-grey; tertials and the innermost feathers of the greater coverts brownish black, broadly edged with fulvous greyish; primaries and secondaries dark brown, edged with greyish; rump brownish rufous; upper tail-coverts dark brown at the centres of the feathers; central tail-feathers and a subterminal band on all the rest black-brown, these latter deeply tipped with whitish, which, together with the black bar, is clearer and more conspicuous beneath; above the bar a rufous patch, chiefly confined to the inner webs of the feathers.

Lores and supercilium whitish, a small dark spot just in front of the eye; face and ear-coverts rufescent, the latter with pale shafts; throat and under surface white, changing on the flanks and under tail-coverts into rufescent; wing-lining tinged with the same; thighs pale rufous.

Colombo (27th January and 8th February). These two examples have the feathers of the centre of the crown very faintly margined with fawn-colour, the head being scarcely less uniform than in the above; the feathers of the back are darker, as also the wings; rump deeper rufous.

Galle (12th April). Head almost uniform brown; margins of the feathers just perceptibly paler than the rest of the web.

Colombo (26th October). Feathers of the crown conspicuously margined with pale fawn, the forehead uniform, and the brown tint of the head very dark.

Horton Plains and Kandapolla (January). These birds are darker above than low-country ones; the margins of the feathers are more greyish than rufescent, the rump rufous-brown, and the tail-feathers with the tips not so white as in the above detailed examples; the spot in front of the eye is darker, and the bill is also blackish; the under surface is not so white, but is pervaded with greyish on the chest, and the flanks are brownish rufous; the head is more plainly striated than in any lowland birds.

It will be seen from the above that there is but little difference in Ceylon specimens in summer and in winter plumage,

Genus SCHENICOLA* (?).

Bill straight, the culmen curved, compressed, rather deep at the base; the tip slightly notched. Nostrils oval and placed well forward; two or three stout rictal bristles, one of which is much longer and stouter than the others. Wings rounded, the 1st quill more than half the length of the longest, which is the 3rd; the 2nd subequal to the 5th. Tail long, of 10 feathers, the middle pair very broad, the laterals graduated. Tarsus long, covered with broad transverse scutæ; middle toe long, the lateral ones subequal and reaching to the last joint of the middle one; claws very straight.

SCHENICOLA PLATYURA (?).

(THE BROAD-TAILED REED-BIRD.)

Timalia platyura, Jerdon, Cat. B. S. India, Madr. Journ. 1844, xiii. no. 96 *bis*.

Schenicola platyura, Jerdon, B. of Ind. ii. p. 73 (1863); Hume, Str. Feath. 1878, p. 37.

Adult (Ceylon: ex Cuming). Length from skin, which is rather stretched, 6 inches; wing 2.6; tail 2.7; tarsus 0.9; middle toe 0.7; bill to gape 0.61. Lateral tail-feathers 1.3 shorter than the central pair, which are 0.15 longer than the adjacent ones; under tail-coverts 0.3 shorter than the outermost pair.

Head, hind neck, back, scapulars, and rump ruddy brown, darkest on the head, and inclining to rufous-brown on the

* These are the characters of a bird presumed to belong to this genus, which is now in the British Museum.

the up-country birds cited proving, however, an exception: in breeding-plumage the head is somewhat more uniform than in winter; but there is in this sex always an absence of that striation which is characteristic of the other; some birds at the autumn moult retain the dark head more than others.

Female. Galle (June). Edges of the feathers of the head dusky buff, and those of the back conspicuously wide.

Colombo (September: two examples). Head and upper surface the same as in the above.

Horton Plains (January). Head striated, edgings of back-feathers very dusky; rufous of the lower back the same; flanks dark; spot in front of the eye not so dark as in the male. At all seasons the head of the female is striated, owing to the light edgings of the feathers.

The length of the lateral tail-feathers, and also of the adjacent pair, varies. Specimens from the eastern province are more rufous in their markings than those from the Colombo district.

Young. Iris greyish olive; bill dark horn, under mandible yellowish fleshy; legs and feet fleshy reddish.

In first plumage (July) a male in my collection has the feathers of the head, hind neck, back, and wing-coverts very broadly margined with fulvous, the quills edged conspicuously with the same; the centres of the feathers are very black; fore neck and chest tinged with buff, and the flanks strongly coloured with fulvous, as in the adult.

Obs. Blyth described (*loc. cit.*) a second species of *Cisticola* from Ceylon, under the title of *omalura*, alleging that it differed from *C. cursitans* in having "a shorter bill, the whole upper parts much darker, and the tail subeven, except that its outermost feathers are $\frac{1}{4}$ inch shorter than the next. The prevailing hue of the upper parts is dusky black, with much narrower rufescent margins to the feathers than in *C. cursitans*, the rump, however, being unmixed rufescent as in that species, and the neck much tinged with the same." This is simply the plumage of a dark specimen from up-country, in which district Kelaart affirms that he found this supposed species, although Layard discovered it first of all at Galle, and afterwards met with it at Pt. Pedro. Numbers of examples may be met with corresponding to Blyth's *C. omalura*; but it is impossible to separate them from *C. cursitans*, which is as variable in Ceylon as it is throughout the vast range of territory in which it is elsewhere found. Males of the *omalura* type have the inside of the mouth black and the forehead uniform, as in typical *cursitans*; and the females of both have the inside of the mouth fleshy and the head striated, and there is *no difference* in size, which, more than any thing, shows the identity of the two supposed species. Any one examining a large series of this interesting little bird from India, Europe, and Africa must speedily come to the conclusion that it would be very unsafe to take slight differences in plumage into consideration, so variable is it in this respect. The relative

upper tail-coverts; primaries and secondaries plain brown, the feathers margined with rufous-brown; tail ruddy brown, obsoletely and narrowly barred with brown; the ground-colour of the two outer pairs of rectrices dark brown towards the tips, which are pale; lores, which are brown, surmounted by a whitish streak; ear-covert feathers brown at the tips and whitish at the base; chin, throat, and down the centre of the breast dull white, the sides of the fore neck and the flanks brownish fulvous; under tail-coverts fulvescent brownish, tipped whitish; under wing whitish.

Obs. While examining some drawers of skins in the British Museum, I came on this example of a Timaline bird, labelled "Ceylon, *ex* Cuming." It appears to have been entirely overlooked during a period of more than twenty years; for no bird corresponding to it has ever been noticed as being in the national collection from Ceylon. My friend Mr. Sharpe informs me that there is no doubt about the locality, and therefore the subject of this notice must be added to the already long list of Ceylonese birds. Whether the specimen in question is correctly identified as being the *Schaenicola platyura* of Jerdon it is impossible to say, for he only procured one example, and that was lost, not, however, until after Blyth had seen it, and applied to it the generic appellation of *Schaenicola*. I have carefully compared the skin in the British Museum with the description given by Jerdon of the generic characters and plumage of his bird, and it corresponds in both respects so closely, that I feel almost sure that it is the same species. Jerdon's generic characters are:—"Bill moderate, rather deep, much compressed, slightly curved on the culmen; a few strong rictal bristles Wings moderate, slightly rounded, 4th quill longest, 3rd equal to the 5th; tail moderate, *very broad, soft*," &c. His description is extremely curt, and runs as follows:—"Above dark olive-brown; the feathers of the tail obsoletely barred; beneath ochreous yellowish, bill horny yellow; irides yellowish brown. Length 5.25 inches; wing $2\frac{1}{2}$; tail 2.5; bill at front 0.4; tarsus 0.9."

It would appear that the Broad-tailed Reed-bird has recently again been procured in Travancore, as in the last number

length of the respective tail-feathers is furthermore not to be depended upon at all. Mr. Hume notices the conspicuous difference in the cold- and hot-weather plumage of this species in India, the head being striated in the former, and uniform in the latter; but this does not appear to be the case in Ceylon, where there is but little change in the seasons. Specimens from Madras, Nepal, and the North-west Himalayas have the lateral tail-feathers variable in length, and nearly all have the head paler than in Ceylonese birds; but the back in some is as dark as in our up-country birds, while in others, notably in one or two from Nepal, it is very pale. The wings vary from 1.9 to 2.2 inches in the males, and the tails from 1.65 to 1.8 inch. A Nicobar example in the national collection, which is, judging from its size, a female, has the wing 1.7; the upper surface is somewhat dark, and the edgings of the feathers rather rufescent.

The West- and South-African representatives of *Cisticola cursitans* do not admit of separation from ours. I append the following among the results arrived at on comparison of a large number of specimens. A West-African example, a presumed female, from the River Volta, has the wing 1.85 inch, tail 1.55, bill to gape 0.5, and is the exact counterpart, as regards plumage, with one of my Galle birds; another, a male from Potchefstroom, measures 2.03 in the wing and 1.8 in the tail, and has the colour of the upper surface pale, like a Hambantota specimen, from which it cannot be separated. Captain Shelley records the wing of Egyptian specimens as 1.9 inch, and Mr. Gurney that of Sicilian examples as 1.86 to 2.0. Turning south-eastwards from India we find that examples of the *Cisticola* from the Malayan archipelago are scarcely separable from ours. A male specimen from Macassar has the wing 1.9, and the edgings of the back-feathers slightly more rufous than most Ceylon birds, but the rump not more so than in some; in the length of the tail, which measures 1.9 inch, it differs from the generality of *C. cursitans* from the continents of Asia, Europe, and Africa; but it is not so sufficiently removed from them to be treated as a distinct species. An example from Flores (*C. fuscicapilla*, Wallace) has the head uniform brown, but not more so than some of my old male specimens in summer plumage. The wing measures 2.0 and the tail 1.6, and I do not think it can be separated from *C. cursitans*.

My space does not permit me to instance further examples; but the evidence here adduced is sufficient to show that specimens throughout the vast range of the species may be found to correspond with others from Ceylon, although races, as a whole, from particular localities may present special characters. I also find that individuals from all parts vary *inter se* in the proportion of the tail-feathers to one another.

Distribution.—This curious little denizen of the grass frequents the whole island of Ceylon from Pt. Pedro to Dondra Head and up to the elevation of Horton Plains. It is, of course, only found in grassy localities, which are alone suited to its habits. It is equally abundant in these spots all over the low country, and is

of 'Stray Feathers' which I have received I find an account of its (presumed) rediscovery by Mr. Bourdillon on the 18th of April last year. Mr. Hume gives a minute description of the specimen; and it appears from it that the 3rd, 4th, and 5th quills are almost equal, and the 1st 0.9 shorter than the 4th; the tail of ten feathers, soft, very broad, and much rounded. Length 5.75 inches; wing 2.5; tail 2.5. The plumage is rich rufescent olive-brown, darker on the crown and tail, which latter is obsoletely rayed; the feathers of the upper surface lax, lower surface brownish olivaceous, with the centre of the abdomen fulvous-white. This bird may or may not be identical with Jerdon's species; it appears, except as regards the length of the tail, to correspond pretty well with the Museum example. Jerdon places his specimen at the end of the Timaliinae; and I consider the Ceylonese bird to belong to what I have separated as the Drymœine section of the Timaliidae, to the members of which its bill, tail, wings, and feet ally it. I accordingly place it here; but as I am uncertain as to whether my identification of it as the *Schoenicola platyura* of Jerdon is correct, I shall assign it a place in this work as a *doubtful* species.

The type of Jerdon's bird having been lost, and no other apparently similar specimen having been subsequently procured or noticed prior to the capture of the Travancore bird and my discovery of the Ceylonese skin in the British Museum, it will be a very difficult matter to determine what *Schoenicola platyura* of Jerdon really is.

Distribution.—The scanty information on the label of this bird affords me no clue as to where Mr. Cumming procured it in Ceylon. It would seem reasonable to suppose that it occurred in the island as a straggler from the coast of India, otherwise subsequent collectors would surely have met with it. There is, perhaps, no spot more favourable to its habits than the great swamp lying between the Negombo Canal and the highroad to that place from Colombo; in this vast morass I met with one species of similar disposition, which has never before been seen in Ceylon, and I would therefore indicate it as a not unlikely locality for the rediscovery of this *rara avis*.

Jerdon's remarks on his meeting with *Schoenicola platyura* are:—"I only once observed this curious bird among

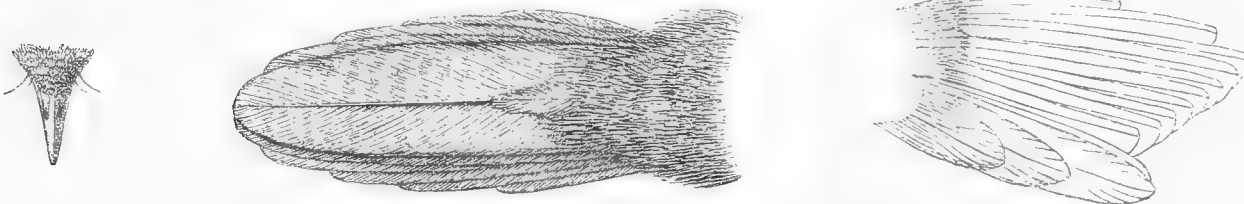
likewise just as plentifully diffused over all the patnas and grass-lands of the Central Province, being quite as numerous at Nuwara ELLIYA and on the Horton Plains as it is several thousand feet lower down. It is a very well-known bird in the neighbourhood of Colombo, frequenting in large numbers the "Water" grass-fields in the cinnamon-gardens, and those in Borella, Malagaha kanda, and other suburbs of the capital. It is equally common near Galle, Trincomalie, and Jaffna.

It is found in suitable localities throughout the whole of India, extending into Burmah, where Mr. Oates says it is "very common in all paddy-lands during the rains." Further south, in Tenasserim, it does not seem to be so generally distributed as there. The same writer remarks, "I have only occasionally met with this species in the Thatone plains and at Tavoy in grassy lands or rice-fields. It was by no means numerous, and always seen singly or in pairs." In the Malayan archipelago it may be said to exist in the form of a species which cannot well be separated, and specimens of which I have seen sent from Macassar and Flores.

Turning northward we find it, according to Swinhoe, an inhabitant of China, Hainan, and Formosa; and Père David writes that it occurs throughout the east of China, from Hainan to Tientsin, and that he met with it frequently at Shanghai. In Europe it inhabits the countries bordering the Mediterranean, being much more common in some localities than in others. In Corsica Mr. Bygrave Wharton says it is numerous at Biguglia, but observed nowhere else. Dr. Giglioli reports it as common in the neighbourhood of Pisa, frequenting grass- and corn-fields in the spring. It is likewise found in Switzerland. Near Gibraltar it is, according to Col. Irby, resident and very plentiful in winter, and in Southern Spain it is said by Mr. Saunders to be common as far north as lat. 40°. It has been stated to be plentiful in Portugal; but I observe that the Rev. A. C. Smith, in writing to 'The Ibis' of 1868, states that he did not meet with it in that country, though he searched diligently for it in likely places. Crossing over to Africa, we find it noted as the most common of aquatic (?) warblers in Tangier by Mons. Favier; and Captain Shelley, in his excellent book on the Birds of Egypt, says that it is one of the most abundant birds in that country and Nubia: further testimony as to its distribution in this part of the world is afforded by Dr. von Heuglin, in his exhaustive monograph of the *Malurinae* of North-eastern Africa (*Ibis*, 1869, p. 132), who says that it inhabits Arabia, besides being a permanent resident in Egypt and Nubia, and goes southwards to Abyssinia and probably to Senaar. In Western Africa it is common in various localities, having been procured on the River Volta, at Cape Coast, Acra, &c.; on the opposite side of the continent Dr. Kirk records it from Zanzibar. In South Africa it is

some reeds in swampy ground close to Goodaloor, in the Wynaad, at the foot of the Nilghiris." Mr. Bourdillon's bird, however, was met with under very different circumstances, from which I infer (should it in reality be the same as Jerdon's) that the Broad-tailed Reed-bird is not entirely a denizen of reeds. "It was obtained," says Mr. Hume, "in open grass-land at Colathoorpolay patnas, at an elevation of 3800 feet, in the Assambo hills, the southernmost section of the Western Ghâts, about three degrees due south of Goodalore, where the lost type and hitherto unique specimen was obtained." Nothing is said of its habits; but Jerdon informs us that his bird "took short flights, and endeavoured to conceal itself among the thick herbage." Its food consisted entirely of small insects.

The accompanying woodcuts represent the bill, tail, and wing of the Ceylonese bird.



plentiful in parts of the Transvaal, Natal, and also in Damaraland, in which region it exists in the form of *C. ayresi* (Natal) and *C. terrestris* (Transvaal), which two races, Mr. Gurney has pointed out, are identical with the *C. schanicola* of Europe, and consequently with *C. cursitans* of Asia.

Habits.—The Grass-Warbler, as its name implies, frequents both cultivated and wild grass-land of all sorts, paddy-fields, marshes, swamps, meadow-land surrounding inland tanks, waste ground covered with rank herbage, patnas, and all places where the soil will grow sufficient cover for it to thread its way about in. It is essentially terrestrial in its mode of life, and is the most restless little creature imaginable, rising up a hundred times in the day, with its spasmodic jerking flight and singular *chick-chick* note, and then suddenly descending to earth, as if it were simply desirous of exercising its muscular powers or discontented with the haunts that fate had allotted to it. Nothing, perhaps, can be more interesting to the lover of animated nature than, on a lovely morning, to walk through the rich pastures clothing the alluvial deposits round the vast Minery tank, and while the ear is arrested with the sweet song of hundreds of Sky-Larks, to watch the vagaries of these little denizens of the grass, as they flit up and down and send forth their singularly sharp little notes. Its manner of hovering on the wing when it reaches its greatest altitude, which is generally from 50 to 100 feet, is a mere habit, and not done with any view of selecting a place to alight in, as it invariably “jerks” itself down to the ground considerably beyond where it has been poising itself. The large variety, which frequents the patnas of the Nuwara-Elliya plateau and the Horton and other elevated plains, has a habit of alighting on the tops of bushes and rhododendron-trees, and there remaining perched for some time, which I have not observed in the low-country birds. This species is particularly lively in the evenings, just before going to roost, and when it settles on the ground, immediately threads its way through the grass, not by running on the ground, but by adroitly springing from stalk to stalk, and darting here and there wherever an opening in the vegetation presents to it an easy way of escape. When it realights, after being flushed, it will always be found a good number of paces from where it first disappeared, no matter how quickly one follows it up.

There is perhaps no bird of this family concerning which more has been written than the present; and that which has attracted notice, in the case of all naturalists who have observed it, is its peculiar flight, as also its interesting mode of nidification. Of the European race, which, however, appears to frequent sedges and marshy places much more than ours, Col. Irby writes:—“In the spring they go to the cornfields as well, never, however, being found away from water. I do not recollect ever seeing them perch on bush or tree, but always on some plant. Their note and jerky flight somewhat remind one of the Meadow-Pipit; during the nesting season in particular they will fly darting about high over head for several minutes, continually uttering their squeaky single note (whence the name of Tin-Tin), all the time evidently trying to decoy the intruder from their nest.” In spite of what I have already said about the European, African, and Asiatic *Cisticolæ* being identical, I would here remark that the difference in the note of the European and the Indian bird, and likewise the extraordinary variety in the eggs of the former (allusion to which will presently be made), while those of the latter are all of the one type, is somewhat remarkable, and might well be considered sufficient to establish grounds for a slight separation of the two races. As far as external characteristics go, I do not perceive that the African bird can be separated from the Indian, as has already been stated in this article; and competent ornithologists affirm that there is no difference in the birds on both sides of the Mediterranean. The diet of the species in Ceylon consists of many sorts of small insects and caterpillars; and Brehm says that “the indigestible parts of the food, which consists of small beetles (*Diptera*), caterpillars, and little snails, are thrown up in pellets.” It is with reference to observations made in Africa that this statement is made; but I have no knowledge of the same thing having been noticed in India. Jerdon remarks that “during the breeding-season the male bird may be seen seated on a tall blade of grass, pouring forth a feeble little song.”

Nidification.—This Warbler apparently has two broods in the year, nesting for its first in May, June, and July, and for the second in November and December. Its style of architecture is suited to the locality in which it builds; but at all times it constructs a very beautiful little nest. It is, when built in tall grass or paddy, usually situated about 2 feet from the ground: a framework is first made by passing cotton or other such material round and *through* several stalks or stiff blades of grass; when a tolerably secure wall is thus

obtained, several blades belonging to the stalks round which the framework is passed are bent down and interlaced to form a foundation, on which, and inside the cotton network, a neat little nest of fine strips torn off from the blade is built; this is, as a rule, beautifully lined with cotton or other downy substance, mixed with the saliva of the bird and having the appearance and texture of thick felt. The average dimensions of the egg-cavity are 2 inches in depth by $1\frac{1}{4}$ in diameter; the network or frame takes two or three days to construct, and the entire nest is finished in about six days. When nesting in short, tussocky grass, such as is found on the "Plains" of the main range, the Grass-Warbler builds in the centre of a thick tuft close to the ground, the blades being drawn round the nest and brought into a point above it, in which the entrance is placed, and the whole is so well concealed, that, unless the bird be roused from it, it would invariably elude the best search. The eggs are usually three, but sometimes four, in number, short ovals in shape, and without much variation in colour; the ground is white or very pale greenish white, spotted and blotched, generally in an open zone round the large end, with brownish red and reddish grey. Dimensions, on the average, 0.6 to 0.63 inch in length by 0.48 to 0.51 in breadth. The period of incubation lasts from nine to ten days, the bird sitting for the most part only at nights. I had ample opportunity of ascertaining this fact from two years' observation of this and other birds breeding in the "Guinea-grass" field attached to my bungalow on the Galle face, Colombo.

The nesting-season in India lasts during the rainy months—April to October. Mr. Hume, writing, in 'Nests and Eggs,' of its nidification there, says that it selects a patch of dense fine-stemmed grass, from 18 inches to 2 feet in height, and, as a rule, standing in a moist place; in this, at the height of from 6 to 8 inches from the ground, it builds. Corresponding with my own observations in Ceylon, he states that the "sides are formed by the blades and stems of the grass *in situ*, closely packed and caught together with cobwebs and very fine silky vegetable fibre;" the interior is also stated to be closely felted with silky down, in Upper India usually that of the Mudar (*Calotropis hamiltoni*). In India, as in Ceylon, the eggs appear to be all of one type, the ground being white, spotted, most densely towards the large end, with, as a rule, excessively minute red, reddish-purple, and pale purple specks, thus resembling, though smaller, more glossy, and far less densely speckled, the eggs of the Rufous-fronted Wren-Warbler. The average dimensions of a large number are recorded as 0.58 in length by 0.46 in breadth. Dr. Von Heuglin found it nesting in Africa in date-palm groves and low thorn hedges, about 2 or 3 feet from the ground. He likens the nest to that of the Reed-Warbler, and describes it as interwoven with leaf-sheaths, thorns, twigs, and even grass-stalks, and composed of fine dry grass and rootlets, the interior being "carefully lined with wool, hair, and fibres." These nests appear to be somewhat abnormal, as it is unusual for this species to build anywhere except in grass, standing corn, sedges, &c.

Concerning its nidification in Egypt, Capt. Shelley writes (*loc. cit.*):—"It breeds in March, forming a charming little deep purse-shaped nest, open at the top, which I have found in clover, corn, and sedge, at a height of from a few inches to a foot from the ground. The nest is constructed of dried grass and cotton, and often thickly lined with soft downy seeds of the reed or thistle, and is firmly secured by the interweaving of the surrounding herbage, which assists to hide it; in general appearance it looks very like the cocoon of a large caterpillar." The eggs are said to vary to a great extent in Europe. Dr. Bree figures three varieties, one pink, another bluish white, and the third a dark bluish green, all being *spotless*.

PASSERES.

Fam. SYLVIIDÆ.

Bill moderately slender and straight; the culmen acute; the tip notched; rictal bristles short. Wings pointed; the 1st quill much reduced. Tail of 12 feathers, shorter than or not exceeding the wing. Tarsus scaled, longer than the middle toe.

Of small size, with a double moult, and of unspotted young plumage.

Genus SYLVIA.

Bill small, rather straight; the culmen gently curved from the base. Nostrils oval; gape beset with small bristles. Wings long; the 3rd, 4th, and 5th quills equal and longest, the 1st not much exceeding the primary-coverts. Tail rounded at the tip. Tarsus rather short, shielded in front with well-developed scales; toes stout and strongly scaled.

SYLVIA AFFINIS.

(THE LARGER INDIAN WHITETHROAT.)

Sylvia affinis, Blyth, Cat. B. Mus. A. S. B. spec. C (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Layard & Kelaart, Prodromus, Cat. p. 57 (1853); Jerdon, B. of Ind. ii. p. 209 (1863); Holdsworth, P. Z. S. 1872, p. 457.

Sterparola curruca (Lath.), Hume, Nests and Eggs, ii. p. 373 (1874).

Sylvia althæa, Hume, Str. Feath. 1878, vol. vii. p. 60.

The Allied Grey Warbler, Jerdon. *Nella kumpa-jitta*, Telugu.

Adult male (Aripu, Dec. 1869). Length (from skin) 5·6 inches; wing 2·8; tail 2·8; tarsus 0·7; middle toe 0·5, its claw (straight) 0·15; bill to gape 0·57.

2nd quill intermediate in length between the 6th and 7th.

"Irides pale yellow; bill, base slate, tip dusky; feet dark leaden" (Holdsworth).

Crown and nape *dull* bluish ashy, changing into the *subdued* earthy brown of the hind neck, back, and scapulars; the upper tail-coverts more ashy than the back; lesser wing-coverts ashy at the margins of the feathers, the centres being concolorous with the back; wings brown, the edges of the primaries and secondaries pale fulvous brownish, the tertials more conspicuously margined than the outer secondaries; tail darker brown than the wings, the margins of the feathers albescent, the outer web and terminal portion of the inner web of the outer feather and the tips of the two next dull white; lores and ear-coverts dark brown, contrasting with the ashy hue above and below the ears on the side of the neck; lower portion of orbital fringe white; chin and throat pure white; chest and under surface whitish, faintly tinged with reddish ashy, mostly on the sides of the chest and the under tail-coverts; flanks slightly shaded with greyish; edge of the wing white; under wing-coverts tinged with reddish ashy.

Obs. The above is a description of an example procured by Mr. Holdsworth at Aripu, and the only one, I believe, now extant from Ceylon, unless Specimen C of Blyth's Catalogue is still in a state of preservation in the Calcutta Museum. It appears to belong to the larger race lately distinguished by Mr. Hume as *S. althæa*; it, however, has the head more ashy than I am led to suppose is the case in *S. althæa*; and as I think Mr. Hume will require a larger series before he can safely found his new subspecies, I will keep the Ceylonese bird as *S. affinis*, the title

by which the Indian Whitethroat has hitherto been known. *S. althæa* is characterized by its large size, the wings of five examples in Mr. Hume's museum varying from 2·7 to 2·8 inches, and further by having the upper surface darkish grey, slightly tinged with brown on the back. The 2nd quill of one of these examples nearly equals the 8th, and in three others is intermediate between the 6th and 7th, as in the Ceylonese example. The ordinary form of Indian Whitethroat, *S. affinis*, from which Mr. Hume separates the last named on account of the characters here noticed, has a smaller wing; in 93 specimens it varies from 2·4 to 2·71 inches, and several that I have examined from Futteghur and Cawnpore measure 2·5 to 2·6 inches. The 2nd primary, as a rule, equals the 6th. All these examples have, according to Mr. Hume (and so have others which I have examined), the crown brownish grey and the mantle earth-brown. An example in Mr. Seeböhm's collection, procured at Yenesaïsk, is almost as "earthy brown" as the Cawnpore birds above mentioned, and its wing measures 2·5 inches. The third and smallest race, which appears to be confined to "the extreme western portions of the continent," has the wing varying from 2·3 to 2·45 inches, and has the "crown pale bluish grey, and the mantle pale sandy brown" (*Hume*).

These Indian Whitethroats differ from their closely allied relative of Europe, *S. curruca*, in the proportion of the primaries to one another. The 2nd quill in the latter is considerably longer than in the Indian birds, it being generally *equal to the 5th, or only very little shorter than it*. The bill in the European bird is usually shorter, and the ear-coverts are not so dark, while the upper surface is more cinereous or less brown than in *S. affinis*. The coloration of the upper surface varies, however, scarcely any two specimens being *precisely* alike. A Heligoland specimen in Mr. Seeböhm's collection is almost a counterpart of Mr. Holdsworth's, being only slightly paler on the head. A specimen from Christiania is nearly as sandy-coloured as any Indian example of *affinis*. Two specimens from Asia Minor, which I have examined, are ashy on the back, being almost devoid of any earthy tint at all; they belong to the European species, having the 2nd primary longer than Indian examples.

Mr. Seeböhm, in his notice of the Whitethroats he procured in Siberia, 'Ibis,' 1879, p. 8, hesitates to allow the Indian bird to be a good species, and instances one specimen from India which has the 2nd quill as long as in the European species. He will, however, no doubt reinstate it in his forthcoming volume of the Catalogue, now that the results of Mr. Hume's researches have been published. If the proportion of the primaries is allowed to hold good in the separation of certain *Phylloscopi* and *Acrocephali*, members of this family, it must be a matter of equal importance in the present case.

Distribution.—This Whitethroat is evidently a very rare cool-season migrant to Ceylon. Whether it is actually commoner than is supposed, and escapes observation owing to the habits of concealment which it no doubt affects in the non-breeding season, I am unable to say; but certain it is that it has only, as yet, come under the notice of two observers. Layard, its first discoverer, writes as follows concerning it:—"I noticed a few of this species at Ambegamoa in the year 1848, but I never afterwards met with it." He informs me, *in epist.*, that, as far as he can recollect, the month of March was the time of his meeting with them. Recently it was again observed by Mr. Holdsworth, who procured the example noticed in this article at Aripu in December 1868. The two localities in question are far apart; and the facts of the case prove that it wanders over the island when it does visit it, and there is no saying where it may not be met with in future. I always kept a look out for it in my wanderings in the north, but never once saw it that I am aware of.

The larger race, to which I have attached Mr. Holdsworth's specimen, has been found in the western parts of peninsular and continental India—Mr. Hume's specimens being recorded from Ahmednuggur, Deesa, Jhansie, Bhawulpur, and Ramoo Cashmeer. Jerdon, in speaking of the distribution of the Indian Whitethroat generally, says he "found it in the Carnatic at Jaulnah and other parts of the Deccan, and also at Mhow;" and these observations may possibly refer to the larger race as well as the smaller, *S. affinis*. The majority of Mr. Hume's specimens of the latter appear to come from the central portion of continental India, between Sambhur and Cawnpore.

Habits.—Like the European Whitethroat, this species frequents low bushes, grassy patches of land, gardens, and groves, and is very active in its movements, flitting from place to place, and threading its way among the thick masses of vegetation in which it takes up its abode. Jerdon remarks that, in addition to being insectivorous in its diet, it feeds much on flower-buds. Blyth writes of its habits:—"I observed many of them frequenting the Baubul (*Mimosa*) trees, and, as in England, keeping chiefly to the trees and not to low bush-coverts, as is the habit of *S. cinerea*" (the Greater Whitethroat). Mr. Brooks writes that its song resembles that of the European species, being full, loud, and sweet, and that the male usually sings near the nest.

Nidification.—This species breeds in Cashmere in May, building a nest, according to Mr. Brooks, similar in size and structure to the European Lesser Whitethroat, “formed of grasses, roots, and fine fibres, and scantily lined with a few black horsehairs.” The nests are “slight and thinly formed, very neat but strong,” and are decorated on the outside with bits of spiders’ webs. At the time this was written, Mr. Hume did not accept the Indian birds as distinct from the European; but having since altered his opinion, based on the characteristic wing-formula of the two species, I shall be correct in giving his description of the eggs as applying to the Indian bird, though perhaps not to the larger race with which I am principally dealing. He characterizes them as somewhat broad ovals typically, a good deal pointed towards the lesser end; the ground-colour is white, marked with small spots, blotches, and specks of pale yellowish brown, more or less intermingled with spots of dull inky purple; in some the markings are confined to a zone, in others scattered over the surface of the egg. The average dimensions of sixteen eggs are 0·66 by 0·5 inch.

Genus ACROCEPHALUS.

Bill lengthened, straight; culmen acute, the tip slightly bent down and plainly notched. Nostrils basal and oval; rictal bristles well developed. Wings pointed; the 1st quill minute, the 3rd and 4th the longest; the 2nd variable, but never much less than the 3rd. Tail moderate and rounded at the tip. Legs and feet strong; the tarsus protected by broad scutes in front, and longer than the middle toe; lateral toes short; hind toe and claw very long.

ACROCEPHALUS STENTORIUS.

(THE CLAMOROUS REED-WARBLER.)

Curruca stentorea, Hemp. & Ehr. Symb. Physicæ, Aves, fol. 66 (1828); Blanford, Ibis, 1874, p. 79.

Agrobates brunescens, Jerdon, Madr. Journ. 1839, x. p. 269.

Acrocephalus brunescens (Jerd.), Blyth, Cat. B. Mus. A. S. B. p. 181 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 331 (1854); Jerdon, B. of Ind. ii. p. 154 (1863); Hume, Lahore to Yarkand, p. 214, pl. 16 (1873); Legge, Str. Feath. 1873, p. 488 (first record from Ceylon).

Calamoherpe brunescens (Jerd.), Blyth, J. A. S. B. 1846, xv. p. 288.

Calamodyta brunescens (Jerd.), Hume, Str. Feath. 1873, p. 190; Adam, *t. c.* p. 381; Legge, *ibid.* 1875, p. 369.

Acrocephalus stentorius (H. & E.), Allen, Ibis, 1864, p. 97, pl. 1; Shelley, Ibis, 1871, p. 133; *id.* B. of Egypt, p. 95 (1872).

Calamodyta stentoria (H. & E.), Hume, Nests and Eggs, ii. p. 326 (1874).

Calamodyta meridionalis, Legge, Str. Feath. 1875, p. 369.

The Clamorous Sedge-Warbler, Shelley; *The Greater Indian Reed-Warbler*. *Bora-jitta*, Telugu.

Adult male. Length 7·5 to 7·8 inches; wing 3·3 to 3·4; tail 3·2; tarsus 1·05 to 1·1; middle toe and claw 0·9 to 1·0; bill to gape 1·05.

Adult female. Length 7·5 inches; wing 3·1; tarsus 1·0; middle toe and claw 0·85 to 0·95; bill as long as in the male.

Iris brownish yellow; bill, upper mandible dark brown, lower fleshy at base, with dusky tip; gape and inside of mouth red; legs plumbeous grey or greenish plumbeous; feet olivaceous, claws brownish.

Above shining olivaceous brown, in some specimens slightly darker on the forehead; wings and tail brown, margined with the hue of the back; from the nostril over the eye a pale streak, beneath this the lores are dark brown; orbital fringe fulvous-grey, dark at its posterior corner; chin and throat white, with a fulvous-grey wash over the chest and flanks, darkening on the lower parts above the thighs and paling again to white on the centre of the breast and abdomen; under tail-coverts whitish; under wing and its edge fulvous; between the flanks and abdomen the grey hue is tinged with tawny. In non-breeding plumage the underparts are more fulvous than after the spring moult.

During the breeding-season, in July and August, the plumage becomes much abraded, causing the feathers of the upper surface to have pale edgings, and exposing on the fore neck the dark portions of the shafts of the feathers, which are quite concealed in a newly-plumaged bird, the effect of this being to produce a number of pale brown striæ. I observe the same feature in examples sent me by Mr. Hume from North India.

Obs. I was under the impression, when writing of this species in 1875, that it merited separation from the Indian form, on account of the presence of striæ on the chest, and the absence, in some specimens from Ceylon, of the rusty hue on the upper surface, which is a character of the latter species. Mr. Hume, however, pointed out that these characters were seasonal; and I have since examined Cashmere specimens shot in July with these throat-marks and find they show on the surface merely, on account of abrasion, the dark shaft-stripe, as above remarked, existing more or less always, but being concealed by the tips of the feathers in birds in new plumage. Three examples from the locality in question have very large bills, varying from 1·1 to 1·2 inch in length from the gape; but one from Calcutta, perhaps bred in the lowlands, is the counterpart of my Ceylonese birds, both as regards plumage and length of bill (1·05 inch).

This Warbler and *A. orientalis*, which inhabits China, Japan, and some of the Malay islands (Lombok, Morty, Batchian, and perhaps others), are very closely allied Asiatic representatives of the large Reed-Warbler of Europe, *A. arundinaceus*, from which they differ in their smaller size and the proportion of the quills to one another. The European bird has a more pointed wing than its Asiatic relatives and is larger. The following is a diagnosis of the characters of the three races:—

A. arundinaceus. Larger: wing (5 examples measured) 3·7 to 3·9 inches; 1st *long* primary longer than the 3rd.

A. orientalis. Smaller: wing (19 examples measured) 3·05 to 3·5 inches; 2nd *long* primary slightly shorter than, or equal to, the 3rd.

A. stentorius. Intermediate in size in its average measurements: wing (6 Ceylonese and 6 Indian examples measured) 3·1 to 3·55 inches; 2nd *long* primary shorter than the 4th.

A Labuan specimen is intermediate between the two latter; it has the 2nd long primary equal to the 4th; wing 3·4 inches, bill to gape 0·98.

Mr. Seebold recognizes the *Acrocephalus longirostris* of Gould and the *Sylvia syrix* of Kittlitz as subspecies of *A. stentorius*, depending for their rank chiefly on their peculiar distribution and smaller size. The first-named bird, which winters in Lombok and breeds in Western Australia, has a proportionately longer bill than *A. stentorius*, and measures in the wing 2·8 to 3·1 inches; the 2nd primary is intermediate in length between the 5th and the 6th. The second, *Acrocephalus syrix*, is confined to the island of Ponape in the Caroline group. It has a proportionately shorter tail than the preceding species, and measures in the wing 2·9 inches; the 2nd primary is intermediate between the 6th and the 8th.

The whole of these Austral-Asiatic Reed-Warblers appear to be merely local races of our European species.

Distribution.—It is only of late years that this fine Warbler has been known to inhabit Ceylon. It was first discovered by myself in the Jaffna-Fort ditch, where there is a bed of reeds suitable as a refuge for such a lurking species as it is. It is also an inhabitant of the adjacent lotus-ponds, and occurs in similar spots throughout the island. I found it breeding in July in the Tamara-Kulam near Trincomalie, which, in the dry season, is a vast bed of gigantic rushes; at the celebrated Pollanarua tank it was abundant during the same month, and in the extreme south I procured it near Hambantota likewise in the hot season. Mr. Parker met with it near Puttalam, and afterwards, in the month of July, came on “dozens in a small tank full of reeds at Ambanpola on the Anaradjapura road a few miles beyond Bulalli.” There is therefore abundant proof that it is a tolerably plentiful resident in the island, a circumstance somewhat remarkable when it is considered that the bird is a visitor to the plains of India. On strict search being made for it, it will doubtless be found in many places, similar to those mentioned, in the wild dry districts of the country. From the damp portion comprised of the Western Province and south-western district it appears to be absent; for I examined the lofty reed-beds (a most likely place) which line the old Dutch canal and its branches which intersect the Mutturajawella swamp between Colombo and Negombo, and found no trace whatever of it, which, I think, is strong testimony that it does not inhabit any part of the south-west.

Dr. Jerdon writes that it is found in most parts of India during the cold weather, being only a winter visitant. Mr. Hume likewise, in ‘Lahore to Yarkand,’ expresses the same opinion; but I observe that Mr. Adam found it at the Sambhur Lake in the middle of May; and though the eggs in the ovary were very minute, yet it was close to its breeding-time, Mr. Brooks having found its young in Kashmir on the 10th of June; it is therefore probable that some examples may remain behind to breed. On the other hand, Captain Butler gives the date of its departure from the district with which he deals as the 8th of April. Dr. Fairbank merely remarks, with regard to the Deccan, that it is found among rushes, giving no details of its arrival or departure; but Dr. Jerdon specifies the Carnatic as a region to which it is a visitant; therefore we may conclude that this writer’s statement, backed as it is by the experience of Mr. Hume, will be found to hold good for the entire peninsula, and that this Warbler, while migratory from Northern India to the Southern parts of the empire, is a resident in Ceylon! I believe, however, that further investigation is still necessary, as, owing to its habits, it may have been overlooked; and I commend the matter as one of great interest to my Indian readers.

Mr. Blanford records it from Persia, and says that it was rather scarce at Bampur in Beluchistan in April, but abounded in June near the lake of Shiraz; in these localities he considers that it probably breeds, leaving

the highlands in winter; it probably extends into Northern Persia, as Mr. Blanford notices that De Filippi gives an account (Viag. in Persia, p. 162) of a bird which he saw resembling this species.

In Northern Africa it is an inhabitant of Egypt and Nubia. Mr. Allen, who gives an account of its breeding, found it in a lake near Damietta, and speaks of it as being very rare; subsequently Mr. E. C. Taylor and Captain Shelley met with it in the same place. The latter author considers that it is resident in Egypt, as he noticed a specimen as early as the 7th March in the Fayoom.

Habits.—In Ceylon, as in other countries inhabited by it, this Warbler is only found in high reeds or lofty rush-beds surrounding water, in the thickest parts of which vegetation it skulks, rarely showing itself except during the breeding-season, when it becomes very noisy and restless, constantly flying up to the tops of the tallest reed-stalks and there giving out its harsh warble. This commences with somewhat measured notes and then breaks forth into quick and jerky variations. Its usual voice consists in nothing but a monosyllabic “*chit*,” varied sometimes by a “*churr*” sound. There are few spots in any part of the island suitable to its habits, as Ceylon is not at all prolific in reeds or any tall rushes, and to those which furnish it with a good retreat it clings with an instinctive tenacity which is something quite remarkable. The tank which I have mentioned above as being overgrown with enormous rushes in the dry season, abounded with these Warblers in the month of June; shortly afterwards it was burnt by herdsmen for feed for their cattle, leaving nothing but a few solitary clumps of reeds standing amidst the blackened waste. When I visited it no sign of a Warbler was anywhere to be seen. Blue Coots and Waterhens were moping about at the edge of the only remaining sheet of water, and a few of the handsome Water-Pheasants (*Hydrophasianus chirurgus*) “scudded” along the lotus-leaves as I approached. None of these I wanted, and was about to turn my back upon the wild scene when a flock of Weaver-birds (*Ploceus*) flew across the open and settled on one of the reed-clumps, when immediately out sallied one of my looked-for Warblers and chirped defiance at the strangers, which was the signal for further notes almost in every little oasis of vegetation. On my trying to drive them out of their strongholds they retreated to the base of the reeds, and no amount of shouting or stone-throwing, and in some cases of stamping even on the rushes, sufficed to flush them. It was only by setting fire to the almost impenetrable cover that I succeeded in getting a shot. At Topare tank they were constantly on the wing and very noisy, and I had ample opportunity of observing their animated movements, although I could not get a shot at them. I found the food of the specimens I procured at various times to consist of small flies and minute insects.

Of its habits in India Jerdon writes:—“It frequents high grain-fields, to the stalks of which it clings, and on being observed conceals itself among them. At Jaulnah I have seen it in my garden, hunting about various low shrubs, peas, and beans, &c., among which, on being observed, it immediately withdrew, most carefully hiding itself and being with difficulty driven from its place of refuge. I occasionally heard it utter a harsh clucking note. I found its food to consist of small grasshoppers and ants.”

Mr. S. S. Allen (*l. c.*) thus describes meeting with it in Egypt:—“Shortly after entering the labyrinth of tall reeds which covers the greater part of the lake, and is intersected by narrow lanes of water, along which the flat-bottomed boat is poled, a curious harsh grating note burst out suddenly, with almost startling abruptness, from the reeds a little distance ahead, and was answered by others in two or three different directions. On questioning the Arabs who accompanied me, they replied that it was ‘only a little bird,’ which I could scarcely believe at first; but on watching the spot closely for a short time, we presently saw a little sober-coloured bird, rather larger than a Nightingale, hopping in and out among the reeds, every now and then making the air ring with his noisy song.”

Nidification.—This species breeds in Ceylon during June and July. Its nest was procured by me in the former month at the Tamara-Kulam, and was a very interesting structure, built into the fork of one of the tall seed-stalks of the rush growing there; the walls rested exteriorly against three of the branches of the fork, but were worked round some of the stems of the flower itself which sprung from the base of the fork. It was composed of various fine grasses, with a few rush-blades among them, and was lined with the fine stalks of the flower divested, by the bird I conclude, of the seed-matter growing on them. In form it was a tolerably deep cup, well shaped, measuring $2\frac{1}{2}$ inches in internal diameter by 2 in depth. The single

egg which it contained at the time of my finding it was a broad oval in shape, pale green, boldly blotched with blackish over spots of olive and olivaceous brown, mingled with linear markings of the same, under which there were small clouds and blotches of bluish grey. The black markings were longitudinal and thickest at the obtuse end. It measured 0·89 by 0·67 inch.

In India it has as yet only been found breeding in Cashmere, and there only (at the time Mr. Hume's 'Nests and Eggs of Indian Birds' was published) by Captain Cock and Mr. Brooks. It breeds in May and June; and the nest is described variously as an "inverted and truncated cone," "a deep cup," and "a largish nest of a deep cup form," composed of coarse water-grass or dry sedge, woven round the reeds which support it about 2 feet above the water. Mr. Hume describes two types of eggs—the one stippled minutely with small specks, over which are scattered bold and well-marked spots of greyish black, inky purple, olive-brown, yellowish olive, and reddish umber-brown; in the other the stippling is almost wanting, and the markings are smaller and less well defined. The average size of nine eggs was 0·89 by 0·61 inch.

ACROCEPHALUS DUMETORUM.

(BLYTH'S REED-WARBLER.)

Acrocephalus dumetorum, Blyth, J. A. S. B. 1849, xviii. p. 815; id. Cat. B. Mus. A. S. B. App. p. 326; Kelaart, Prodrumus, Cat. p. 120 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 263; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 332 (1854); Jerdon, B. of Ind. ii. p. 155 (1863); Holdsworth, P. Z. S. 1872, p. 455; Adam, Str. Feath. 1873, p. 381; Brooks, ibid. 1875, p. 241; Anderson, *t. c.* p. 351; Butler, *t. c.* p. 479; Dresser (Severtzoff's Fauna of Turkestan), Ibis, 1876, p. 84.

Calamodyta dumetorum (Bl.), Hume, Nests & Eggs, ii. p. 327 (1874); Ball, Str. Feath. 1874, p. 414.

The Lesser Reed-Warbler, Jerdon; *The Bush-Warbler* of some. *Tikra*, Bengal.; *Podena*, Hind.; *Tik-tikki*, Mussulmen.

Adult male and female. Length 5·4 to 5·6 inches; wing 2·35 to 2·55; tail 2·1; tarsus 0·8 to 0·9; middle toe and claw 0·6 to 0·68; bill to gape 0·7 to 0·72; 2nd quill equal to the 6th.

Iris clear olive; bill dusky brown or dark brown above, lower mandible light fleshy, tip slightly dusky; legs and feet plumbeous or bluish grey, claws dusky bluish.

Above uniform brownish olive, paling slightly towards the upper tail-coverts; in some specimens the upper surface is of a darker hue than in others and the forehead deeper in colour; wings and tail hair-brown, edged with the hue of the back; orbital fringe fulvous-grey; lores dusky, surmounted by a pale supercilium; cheeks mottled brownish; beneath white, more or less shaded with pale brownish on the sides of the chest and flanks, this colour blending into the white with a fulvous tinge; the hue of the sides of the neck likewise blends softly into the white of the throat.

Young. Some specimens which are obtainable in Ceylon during the season of their visit have the tips of the secondaries and tertials pale; these are probably immature birds.

Obs. Ceylonese specimens of this bird were stated to possess a greenish shade; they, however, migrate to us from the peninsula of India, and it is difficult to see how they could differ from their fellows on the mainland. I find that the hue of the upper surface varies in specimens from India and elsewhere; and in comparing six from Ceylon with the same number from India and Siberia, I observe that the former as a whole are not more olivaceous on the back than the latter. The wing in nine examples varies from 2·3 to 2·5 inches, one specimen from Etawah alone exceeding 2·4; *A. dumetorum* is the Indian representative of the Reed-Warbler of Europe (*A. streperus*), which is a summer visitor to England. It is closely allied to this latter, differing from it in the proportion of the longer primaries to one another, which give it a more rounded wing; likewise in its deeper bill, the more olivaceous tint of the upper surface, and its somewhat smaller size. Various examples of *A. streperus* which I have examined vary in the wing from 2·45 to 2·5 inches in males, and from 2·4 to 2·5 in females. The 2nd quill or 1st long primary is equal to the 4th.

The following comparison of the differentiating characters of these two Warblers will show at a glance in what respect they differ:—

A. streperus. Larger, browner on the lower back; bill slender; 2nd quill (1st long primary) equal or slightly shorter than the 4th.

A. dumetorum. Smaller, back and rump more olivaceous than in *A. streperus*, bill stouter; 2nd quill equal to the 6th.

The *Acrocephalus montanus* of Jerdon, B. of Ind. p. 155, and which he compares with *A. dumetorum*, is a small Babbler (*Alcippe*), about the size of *A. nigrifrons*. There is, at least, a specimen of it, collected by Mr. Wallace, in the British Museum, and provisionally labelled *A. montanus*. It is olivaceous brown above and pale beneath, tinged with fulvous.

Distribution.—The Lesser Reed-Warbler (or Bush-Warbler, as it would be more appropriately called, as

far as Ceylon is concerned) is a cool-season visitant to the island, arriving usually in October, but some seasons not appearing about Colombo until the beginning of November. It is found throughout the entire low country, being very numerous in the north and in all the west of the island. It inhabits the Jaffna peninsula and adjacent islands, as well as Manaar, in great numbers, and about Colombo it is very common. In the Central Province it ranges up to 4500 feet, at which height I have seen it at Catton, in Haputale, inhabiting there patnas and coffee-estates; above 2500 feet it is not very frequent in any part but Uva; but lower than this, in Dumbara and portions of the western districts of similar altitude to that valley, it is almost as common as in the low country. Its time of departure varies according to season; during some years I have seen it at Colombo as late as the 15th of April; but I should say all leave the island, at the latest, before the 25th of that month. Mr. Hume remarks that they leave the plains of India after the end of March; but I conclude that they remain somewhat later than this in some parts; in fact Captain Butler says it does not quit the Mt. Aboo and Deesa districts until the middle of April.

In the cool season (namely, from September until April) it is found throughout India, more or less, inhabiting such districts as are suitable to its habits. Jerdon writes that it is found in the Nilghiris and on the west coast, and also in the Carnatic, Central India, and Bengal; it likewise, he says, extends into Assam; but it does not migrate southwards into Burmah, if we may take the experience of naturalists who have lately collected there. It breeds in the Himalayas and Cashmere, whither it retires after its season's residence in more southerly latitudes, and inhabits these hills to an altitude of 7000 feet. In some parts of the north-west it is plentiful, as in Kattiawar; in others it is rare, as in the Samblhur-lake district and in Sindh, from which latter place it has only lately been recorded by Mr. Blandford. In Chota Nagpur it is local, for Mr. Ball has only obtained it in Sirguja. About Calcutta he speaks of it as common, although Blyth wrote, many years ago, that it never was to be seen about the marshy salt lakes of that neighbourhood, among which the last species is common. Severtzoff found it in Turkestan; but it does not seem to range to the eastward of that region, as Przevalsky did not meet with it in Thibet or Mongolia.

Habits.—Blyth's Warbler frequents low and thick bushes, detached thickets, and bushy trees, even in the most public places, but never betakes itself (in Ceylon) to reeds or sedgy spots, although I have noticed it sometimes in clumps of bamboos overhanging streams. When it first arrives it takes up its quarters in some thickly-foliaged tree or dense bush, and there remains throughout most of the season; and so regular is it in its habits, that I have perceived it for weeks from my windows, sallying out of the same tree to another close by, about the same hour every morning. It feeds on insects, which it procures among the branches and leaves of trees, attentively searching for them, and leisurely hopping about from twig to twig, now and then jerking out a sudden "*chik*," reminding one of the note of the "*Whitethroat*" in our hedges at home. It remains almost perpetually concealed from view, showing itself, when it does emerge from its stronghold, for a very short time. It commences to warble slightly in March; and on one or two occasions I have seen it perched on the top of a bushy Suriah-tree in the Fort at Colombo, endeavouring to utter its love-notes, perhaps preparatory to winging its way, in a few days, to far more temperate climes, where they develop into a fine and vigorous song.

In India it seems to avoid reeds, in the same manner as in Ceylon. Blyth writes that it comes a good deal into gardens, frequenting pea-rows and the like. Mr. Adam noticed it hunting for insects among reeds, and says that after each hunt it perched well up on a reed and uttered its peculiar loud call.

Nidification.—This species breeds, as far as is known, not further south than the Himalayas. There, according to Indian observers, it nests along the banks of streams or in thick bushes near water, building, as noticed by Captain Hutton, a globular nest of coarse dry grasses, lined with finer grass. The eggs are described by Mr. Hume as "broad ovals, smooth and compact in texture, with little or no gloss . . . ; they are pure white, very thinly speckled with reddish and yellowish brown, the markings being most numerous towards the larger end." Dimensions 0.62 by 0.5 inch.

Since the publication of Mr. Hume's '*Nests and Eggs*' in 1873, the late Mr. A. Anderson found this Warbler breeding in Upper Kumaon at elevations from 3000 to 6000 feet; his experience corroborates that of

Captain Hutton as to its building in a bush ; he found a nest in the middle of a small rose-bush, about 2 feet from the ground ; it was "elliptical in shape, and about the size of an Ostrich's egg, made of the largest and coarsest blades of a kind of dry grass, the egg-cavity being lined with grass-bents of a finer quality." The eggs in the nest were four in number, "pure white and beautifully glossed, and well covered with rufous or reddish-brown spots, most numerous at the obtuse end."

Subgenus LOCUSTELLA.

Similar in *external* structure to the last, but possessing longer under tail-coverts, minute instead of well developed bristles, and a striated upper plumage.

LOCUSTELLA CERTHIOLA.

(PALLAS'S WARBLER.)

Motacilla certhiola, Pall. Zoogr. Rosso-As. i. p. 509 (1831).

Locustella rubescens, Blyth, J. A. S. B. 1845, xiv. p. 582.

Locustella certhiola (Pall.), Bp. Consp. Gen. Av. i. p. 280 (1850); David & Oustalet, Ois. de la Chine, p. 248 (1877); Przevalsky, B. of Mongolia, Rowley's Orn. Misc. vol. ii. p. 170 (1877); Legge, Ibis, 1878, p. 204 (first record from Ceylon); Dresser, B. of Europe, pt. 68 (May 1878); Seebohm, Ibis, 1879, p. 13.

The Lesser Reed-Warbler, Jerdon; *Pallas's Grasshopper-Warbler*.

Camishevka-priatlivaya, Russian.

Adult male (Ceylon). Length 5·6 inches; wing 2·5; tail 2·1; tarsus 0·9; middle toe and claw 0·87; hind claw 0·34; bill to gape 0·67. Expanse 7·5. Weight $\frac{1}{2}$ oz.

Female (Ceylon). Length 5·3 inches; wing 2·35; tail 1·9; bill to gape 0·65.

Iris reddish brown; bill, upper mandible blackish brown, lower fleshy white at base, the tip dusky; legs and feet fleshy brown, inner side of tarsus paler.

Winter plumage (Ceylon). Above rusty olivaceous brown; the feathers of the centre of the back and interscapular region with very broad black centres, narrowing on the hind neck; the crown and occiput almost entirely dull brown-black, the forehead and edges only of the rest of the feathers being olive-brown; wings dark brown, the coverts and quills edged with the hue of the back, and the 2nd primary with a pale margin; upper tail-coverts with central terminal black dashes; tail olive-brown, the terminal portions of the feathers with central blackish "drops," and the tips of all but the middle pair whitish, showing plainer beneath; lores and supercilium whitish, a dark line through the lores and a dark patch just behind the eye; sides of the neck, chest, and breast, together with the flanks and under tail-coverts, chestnut-brown; chin, throat, centre of the breast, and belly white; thighs chestnut-brown; under wing-coverts fulvescent. When this plumage is first acquired in autumn the tinting of the underparts is brighter, almost approaching chestnut.

Summer plumage. Female (Cheefoo, May). The upper surface scarcely so dark as the above; the edgings of the feathers and the colour of the rump less rusty; the stripes on the head and back rather narrow and well defined against the surrounding colour of the feathers; the rump and upper tail-coverts with broad terminal black streaks; tail rusty olive-brown; sides of the breast and the flanks less rusty than in a winter-plumaged bird; the sides of the neck and chest marked with obsolete bars, the remains of the immature spots; under tail-coverts streakless; tips of the tail-feathers whiter than in my Ceylonese specimens.

Wing 2·5 inches; tail 2·2; bill to gape 0·68.

Young (Yenesaisk). In first plumage the young have the edges of the head-feathers olive-grey, the centres being black, as in the adult; back and rump rusty brown, the feathers broadly edged with black; wings very dark brown, the innermost secondaries almost black, and together with the wing-coverts edged with rusty olivaceous; tail blackish brown, tipped with olivaceous grey; the central feathers not so dark as the others, which are edged with earthy brown; lores blackish; a dusky whitish supercilium; chin and throat yellowish, the fore neck marked with dark streaks and washed with rusty brownish, which is the colour of the flanks, abdomen, and under tail-coverts; breast paler than the throat. After the first moult a young bird shot in China in September has the upper surface rich ferruginous, with the back-feathers very broadly streaked with black; tail black, edged with olivaceous rusty; wing-coverts and inner secondaries black, edged with rusty; chin and throat yellowish; chest and flanks rich rusty brown, with broad central spots of dark brown on the fore neck; under tail-coverts striped with brown; tail beneath tipped pale.

For an examination of these interesting specimens I am indebted to the kindness of my friend Mr. Seebohm.

Obs. Allied to the present species (the young of which, according to Mr. Seebohm, has been confounded with it) is the Eastern-Siberian and Kamtchatkan species *L. ochotensis*. A male in Mr. Seebohm's museum measures

2.62 inches in the wing and 2.4 in the tail. It has the upper surface more uniform than in *L. certhiola*, the dark centres of the head and back-feathers being almost obsolete; the lower back and rump are uniform rusty brown: wings plain brown, edged with rusty; tail rusty brown, with dark subterminal patches and light tips to the feathers; throat, breast, and lower parts white, with a brownish wash on the chest. This form has a more eastern general distribution than the subject of this article, being found round the sea of Okhotsk, and is said to winter in Borneo and other Malay islands. *Locustella nevia* of Europe is likewise not distantly allied to the present species; it has the upper surface more olivaceous, and wants the rusty hue characteristic of *L. certhiola*; the dark centres of the upper-surface feathers are not pronounced, and the tail is uniform olive-brown, without the black subterminal patch and whitish tips; the plumage of the under surface is not unlike that of *L. certhiola*; the bases of the under tail-coverts are dark, and there are dark mesial streaks reaching to the tips of the feathers. The example on which these remarks are based is in the collection of Mr. Seebohm, and was procured in Heligoland; it measures in the wing 2.4; tail 2.3; tarsus 0.75; bill to gape 0.6. A species common in China, the *L. macropus* of Swinhoe, which I take to be the same as *L. hendersoni*, resembles the European bird very closely, but has the wing and tail shorter; an example in the collection of the late Mr. Swinhoe has the wing 2.2 inches and the tail 2.0.

This group of birds is so close to the Reed-Warblers, *Acrocephalus*, that it can merely be considered to form a subgenus of the latter; and the only characters which warrant this distinction are the small rectal bristles and lengthened under tail-coverts.

Distribution.—This Grasshopper-Warbler has been only recently added to the avifauna of Ceylon; it was the last discovery made by myself before leaving the island. I met with it in the great swamp between the old and new Negombo canals in February 1877. This vast marsh, already several times referred to in this work, and which is called Mutturajawella by the Sinhalese, is covered from end to end with an almost impenetrable coat of dense and matted vegetation, in many places about 3 feet in height; and frequenting the thickest parts in it I found this bird. During several visits I made to this place I observed three or four examples, but only succeeded in shooting two of them. It is of course migratory to the island, and must of necessity pass through India on its way to Ceylon; but though Jerdon identifies it as a species which he found “in long grass in the neighbourhood of Mhow,” Mr. Hume considers the bird thus spoken of to be the more eastern form, *Locustella hendersoni*. It is not quite clear what species the *L. rubescens* of Blyth (J. A. S. B. 1845, p. 582), found by him frequenting long grass in the neighbourhood of Calcutta, really is; for Swinhoe considered it, in his catalogue of the birds of China, to be identical with Middendorff’s bird, *L. ochotensis*, for which species young examples of *L. certhiola* have been, it appears, hitherto mistaken. Mr. Seebohm, who was the first to obtain well authenticated examples of the young of *L. certhiola*, remarks, in his valuable paper on the birds of Siberia (‘Ibis,’ 1879, p. 13):—“Authentic skins of this bird in first plumage, now for the first time obtained, are very interesting. They prove that the various skins to be found in collections labelled *L. ochotensis* by Dyboffsky, from Lake Baikal, are simply the young of *L. certhiola*.” These I have described above; and from Jerdon’s description of *L. rubescens* I should certainly say that it was nothing but the young of the present species. However, be that as it may, our Ceylonese bird is certain to be found in India: my specimens, when I first returned to England, were at once identified as *L. certhiola* by Mr. Seebohm; and now that I have, through the kindness of himself and Mr. Sharpe, been able to mature my acquaintance with the genus, I am myself prepared to state that the Ceylonese bird is *L. certhiola*.

It is found in various parts of Siberia, including the province of Trans-Baikal, and extends into China. Mr. Seebohm writes of it:—“As I passed through Yeneseisk on my return journey, towards the end of August, I found this rare Grasshopper-Warbler breeding in the swampy thickets near the bank of the river.”

In the ‘Birds of Mongolia,’ translated into English in Rowley’s ‘Orn. Miscellany,’ Col. Prjevalsky writes as follows:—“It is tolerably abundant in the Hoang-ho valley, but is very rare at Ala-shan and Halha, inhabiting only small clear marshes. We did not obtain it more than once in Kan-su. It is extremely common in the Ussuri country. On the coasts of the Japanese Sea I observed the species migrating in the early part of October.” In Eastern Siberia it was procured by Taczanowski; and Père David obtained it in Central China, but not at Peking, as stated by Swinhoe in the “Birds of China” (P. Z. S. 1871, p. 354).

Habits.—I found this species frequenting the tangled and almost impenetrable grass in the above-mentioned marsh; it lurked in the thickest parts near the ground, and did not take flight until almost trodden on, when

it darted out with a quick jerky flight into the nearest tussocks, from which I found it, in several instances, impossible to drive. It frequented the same spots from day to day, as on escaping my pursuit on one occasion I was sure to find it, at my next visit, in the same place. I was unable to detect it uttering any note save a little *chik* of alarm; but in the breeding-season it very likely has a somewhat similar creaking song (like the noise of a cricket or grasshopper) to that which has earned for its European relative the name of Grasshopper-Warbler. Mr. Seebohm remarks of it, as observed in Siberia in August, that he "found it very shy and skulking in its habits. The young birds," he writes, "some only half-fledged, were still in broods; and occasionally I got a shot at one which left the sedges and ventured into the willows. They were calling anxiously to each other, the note being a harsh *tic, tic, tic*."

All the members of this interesting group of Warblers are characterized by their skulking habits. The English bird (*L. nevia*), which arrives in the country in April, secretes itself in thick branches and grassy underwood, out of which I have seen it running like a mouse. We read of it in Yarrell that "except on first coming, when the cocks, awaiting the arrival of their mates, display themselves more than is their wont, it is at all times difficult, and in the breeding-season, when bushes and shrubs are clothed with leaves, almost impossible to obtain a sight of it." It is said to sing more at sunrise than any other time, and it has the power of pitching its note so that it is very difficult to determine the direction from which it comes. This is said to arise from the bird turning its head, which produces a remarkably ventriloquistic effect, already noticed in this work in the case of other species.

Genus PHYLLOSCOPUS.

Bill straight, rather slender and wide at the base; the culmen curved at the tip only; tip notched. Nostrils oval and lengthened, placed in a wide membrane; rictal bristles scanty. Wings long; the 1st quill exceeding the primary-coverts, the 3rd and 4th the longest, the 2nd variable in length. Tail of 12 feathers, slightly emarginate. Tarsus longer than the middle toe and shielded with smooth scutæ. Feet small.

PHYLLOSCOPUS NITIDUS.

(THE GREEN TREE-WARBLER.)

Sylvia hippolais, Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 6.

Phylloscopus nitidus, Blyth, J. A. S. B. 1843, xii. p. 965; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 263; Layard & Kelaart, Prodromus, App. Cat. p. 57 (1853); Jerdon, B. of Ind. ii. p. 193 (1863); Holdsworth, P. Z. S. 1872, p. 457; Adam, Str. Feath. 1873, p. 382; Legge, ibis, 1874, p. 22; Seebohm, Ibis, 1877, p. 72.

Abornis nitidus (Bl.), G. R. Gray, Gen. B. i. p. 175 (1848).

Regulus nitidus (Bl.), Bonap. Consp. Gen. Av. i. p. 390 (1850).

Adult male and female. Length 4.5 to 4.75 inches; wing 2.5 to 2.6; tail 1.65 to 1.8; tarsus 0.65 to 0.7; mid toe and claw 0.55; bill to gape 0.55 to 0.6; bastard primary about 0.3 longer than the primary-coverts.

Iris dark olive-brown; bill dark along culmen, margin of upper mandible and almost all the lower fleshy; legs and feet brownish fleshy, or the tarsus bluish grey and the feet olivaceous in some.

Above olivaceous greenish; the breast slightly darker than the back; wings and tail brown, edged with the hue of the upper surface; the outer primaries pale-edged; basal inner edges of quills whitish; greater wing-coverts with whitish tips, forming a slight bar across the wing; superciliary streak and beneath the eye greenish yellow-white; lores and a streak at the posterior corner of the eye brown; beneath whitish, tinged with flavescent greenish, generally brightest on the chest; flanks shaded with dusky grey; tail-feathers in some tipped beneath with greenish white, but not so conspicuously as in *P. magnirostris*; shafts of the tail-feathers beneath white.

Summer plumage. The above description is taken from Ceylon-killed winter specimens. Mr. Seebohm recognizes a difference in the breeding attire. Specimens I have examined from Northern India certainly appear to differ from mine in being uniform dull pale green above, the head concolorous with the hind neck, and the upper tail-coverts paler than the back, having a yellowish tinge.

Obs. This Tree-Warbler and the two following are among those classed by Mr. Seebohm in the section which have no mesial line on the crown, in addition to which the under mandible is pale and the wing-coverts are tipped whitish, forming one and sometimes two bars across the wing. It is very closely allied to the Greenish Tree-Warbler, but can be easily distinguished from that species, as I shall presently point out. I have submitted all my specimens to Mr. Seebohm for examination, and have myself compared them with examples of the Greenish Tree-Warbler, *P. viridanus*, and there is no doubt that they are all *P. nitidus*. A male from Futteghur, in Mr. Anderson's collection, measures 2.5 inches in the wing, and three females vary from 2.3 to 2.4 inches.

Distribution.—This diminutive Warbler migrates in great numbers from the Himalayas through India to Ceylon, spreading over the whole island, from the sea-coast to the summits of the highest mountains, and frequenting all districts independently of climate or nature of locality. It is equally at home in the Suriah-trees in the streets of Colombo and in the heart of the forests of the Northern Province. It arrives in the island about the middle of September, and departs again at the end of March and the beginning of April. By the end of September it may be found all over the coffee-districts and throughout the extreme south of the island. It is common at Nuwara ELLIYA and in the circumjacent forests, and frequents the woods on the Horton Plains; while I have even procured it on the summit of Totapella, one of the mountains which overlook this elevated tableland.

The Green Tree-Warbler is spread throughout India in the cold weather, and breeds, in all probability, in the Himalayas. It would seem to be less numerous in the central portions of continental India in the cool season than it is in Southern India and Ceylon. Jerdon writes that he frequently procured it in the hills of the peninsula; and Mr. Bourdillon remarks of it, "common in heavy jungle, for the most part frequenting high trees, but sometimes descending to the underwood." As regards the north, Jerdon states that it is rare about Calcutta; and Blyth writes that it is generally distributed, but rare in Lower Bengal. I have seen

specimens collected at Futteghur and at Etawah. About the Sambhur Lake Mr. Adam says that it is very rare; and it has only lately been added to the avifauna of Sindh, having been procured at Kotri by a collector of Mr. Blanford's. But there is much more still to be learnt about the distribution of this tiny Warbler. The extraordinary fact of a specimen of it having been shot in Heligoland some years since proves that it must breed in Western Siberia. Many species, singularly enough, after breeding in Northern Asia stray, on their migration back, westwards through Europe till they find their way to the little island of Heligoland; and this example of the Green Tree-Warbler must have been, as Mr. Seebohm infers, *loc. cit.*, a young bird which had got out of its track.

Habits.—This species frequents the upper branches of umbrageous trees, no matter whether they may be situated in busy thoroughfares or in the quiet of the forest. It is especially fond of Jack-trees, which are mostly found in the gardens of the natives, and again is very partial to the monarchs of the forest which surround the many romantic tanks of the interior. In these spots its perpetual little chirrup invariably discloses its presence when otherwise it would certainly be passed over in the lofty foliage which it frequents. It affects the leaves of trees more than the next species, and darts out from its place of concealment on various insects, after the manner of a Flycatcher. It is very lively in its actions, and is sociably inclined, for one or two of its fellows may usually be found in an adjacent tree, each answering the other with its cheerful little note. Its flight is swift, although its powers of locomotion are not much brought into play after it once locates itself in its winter quarters; it then merely darts from tree to tree, and often remains for a considerable time without moving out of its retreat. The powers of wing which these little *Phylloscopi* have are marvellous; that they should be able to make their way across such a chain of mountains as the Himalayas, as some of them undoubtedly do, is one of the greatest wonders connected with the migration of birds.

PHYLLOSCOPUS MAGNIROSTRIS.

(THE LARGE-BILLED TREE-WARBLER.)

Phylloscopus magnirostris, Blyth, J. A. S. B. 1843, xii. p. 966 ; Jerdon, B. of Ind. ii. p. 191 (1863) ; Brooks, Ibis, 1872, p. 26 ; Hume, Str. Feath. 1873, p. 439 (first printed record from Ceylon) ; Legge, Ibis, 1874, p. 22 ; Brooks, Str. Feath. 1875, p. 243 ; Seebohm, Ibis, 1877, p. 77 ; Hume, B. of Tenass., Str. Feath. 1878, p. 352.

Phyllopneuste magnirostris (Bl.), G. R. Gray, App. Hodgs. Cat. B. of Nep. p. 15 (1846).

Phyllopseuste magnirostris (Bl.), Hume, Str. Feath. 1874, p. 236.

Phylloscopus javanicus, Blyth, Cat. B. Mus. A. S. B. p. 185 (1849).

The Large-billed Willow-Warbler.

Adult male and female. Length 4·9 to 5·2 inches ; wing 2·5 to 2·75 ; tail 1·85 to 2·0 ; tarsus 0·7 to 0·8 ; middle toe and claw 0·55 ; bill to gape 0·5 to 0·6.

Iris light or yellowish brown ; bill dark horn, with the base and tip of lower mandible fleshy ; gape pale ; legs and feet bluish grey or dusky bluish.

Above dusky olive-greenish, paling on the rump ; wings and tail brown, edged with a pale greenish hue, and the latter tipped with the same ; greater coverts with pale terminal spots, forming a wing-bar ; a whitish supercilium from the nostril over the eye to the ear-coverts ; lores and a moderately large space behind the eye dark brown ; cheeks mingled brown and greenish white ; beneath whitish, washed with flavescent greenish, with the flanks and sides of the chest cinereous brownish (in some the whole chest is overcast with dusky) ; under tail-coverts greenish white ; under wing greenish yellow.

Obs. This Warbler is easily recognized from the last species by its stouter build and darker upper plumage, also by the dark head and space behind the eye, over which the rather conspicuous supercilium reaches ; these are differences which prevent it being confounded for a moment with *P. nitidus*, where the larger bill might at first be overlooked, especially as this varies somewhat in size.

This Willow-Warbler is very closely allied to *P. lugubris*, another Indian species, the only reliable point of difference between the two being the proportion of the primary quills to one another. In the present species the 2nd and 8th primaries are subequal, whereas in *P. lugubris*, the 2nd primary is shorter than the 8th. In one of my skins from Ceylon, the 2nd primary is somewhat shorter than the 8th ; but it is so exactly identical with the rest of my series that it is not advisable to separate it. Mr. Seebohm has examined it and is of the same opinion. On the whole, I think, the wing of *P. lugubris* is shorter than in the present species ; several specimens from Sikkim I have examined measure as follows :—2·6, 2·55, 2·4, 2·6, ♀ 2·5 inches, and they are, as a whole, a trifle darker on the upper surface than *P. magnirostris*. I have not procured a female of this latter with the wing less than 2·5 inches, and one specimen measures 2·6, although I see that Mr. Seebohm, in his excellent paper on the *Phylloscopi* already referred to, gives a minor limit of 2·23. Two examples from India measure 2·83 and 2·5 inches in the wing.

There is no reason to infer why *P. lugubris* should not occur in Ceylon ; and I commend the subject of its discovery there to those who may hereafter pay attention to this genus in the island.

Both these species much resemble the Willow-Wren of Europe, *P. trochilus* ; but this latter has no wing-bar, is slightly greener on the back, and the throat, chest, and under wing-coverts are washed with a brighter greenish yellow ; the bill is smaller and legs longer. An example in my collection measures :—length 5·1 inches, wing 2·65, tail 2·1, tarsus 0·85, bill to gape 0·5. Iris brown ; bill, upper mandible brown, lower fleshy ; legs and feet brown.

Distribution.—Like the last species, this Tree-Warbler is migratory in the cool season to Ceylon, arriving and departing much about the same time as that bird. It is common in many parts of the island, particularly in the forest-region of the northern half and in the Eastern Province. I found it likewise in considerable numbers in some parts of the North-west Province, particularly on the Deduru oya and its tributaries, and also in the Ikkade-Barawe forest and other spots in the Western Province. In the Kandy country and in the upper hills it is likewise common. It was particularly abundant during the cool season of 1876–77 ; in January 1877, at

the Horton Plains, it was quite as frequent as the last-noticed bird. The first example recorded from Ceylon was shot by myself on the banks of the river in Lindula, in November 1870, and I have never detected it in any collections but my own. It is worthy of note that females are rare in Ceylon.

Jerdon writes as follows:—"It appears to be spread, but rare, over India. I obtained it at Nellore in the cold weather, and it has been procured near Calcutta and in Nepal." Its head-quarters, in the summer, seem to be the sub-Himalayan districts. Mr. Brooks found it in forest in Cashmere, and met with it in numbers in the valley of the Bhagarati river above Mussoori. In the winter it wanders down the eastern side of the Bay of Bengal, and is, according to Mr. Hume, a rare cold-weather visitant to the central portion of the province of Tenasserim. It likewise finds its way to the Andamans, where it was procured by Lieut. Wardlaw Ramsay, and also on Mount Harriet, above Port Blair, during Mr. Hume's expedition to the island in 1873.

Habits.—This Tree-Warbler frequents the upper branches of trees in jungle and forest, and does not affect the vicinity of human habitations like the last, preferring the retirement of the woods to the shelter of umbrageous trees in compounds, gardens, and other open places. It likewise does not seem to dwell so much among the leaves and boughs as *P. nitidus*. On hearing its sweet three-note whistle, which somewhat resembles the note of the Redbreast Flycatcher (*C. tickellie*), if you look up you will see the little bird, whence it comes flitting from one bare branch to another, peering down for an instant on you, and at the next rapidly darting among the surrounding foliage at some passing insect, and then realighting at some little distance off. These actions are so much like that of a Flycatcher, and its note so unlike the chirrup of the last species, that the first time I procured it under these circumstances I was surprised to find I had killed a Willow-Warbler instead of a Flycatcher. It constantly repeats its note as it moves from tree to tree in search of insects, which form its entire food; and it generally hunts singly, notwithstanding that one of its companions may usually be heard not far off.

Blyth writes of its song, "My shikaree, who shot it, informed me that it sung prettily; and on my imitating the well-known note of *P. trochilus* (the Willow-Wren), he assured me that the song of this bird was quite different." Mr. Brooks, who has paid so much attention to the members of this genus, says that its song is peculiarly shrill and sweet, but is the most melancholy one that could be imagined. He further writes, concerning his observations of the species in the Mussoori district, "I frequently heard its song near Danguli, and again not far from Gangaotri. Also on the road from Sansoo to Kauriagalia, in a rocky wooded glen through which a small stream flowed. The conditions this bird requires are wooded cliffs or very steep rocky banks impracticable for man, and plenty of flowing water below. Above a roaring torrent it is in its element, and sings most vigorously It is very shy and of a retiring disposition, and the female is rarely seen. But for its song the male also would escape observation."

PHYLLOSCOPUS VIRIDANUS.

(THE GREENISH TREE-WARBLER.)

Phyllopneuste rufa, Blyth, J. A. S. B. xii. p. 191 (1842), *nec* Bodd.

Phylloscopus viridanus, Blyth, J. A. S. B. 1843, xii. p. 967; Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 263; Layard & Kelaart, Prodr. Mus. App. Cat. B. p. 57 (1853); Jerdon, B. of Ind. ii. p. 193 (1863); Holdsw. P. Z. S. 1872, p. 457; Brooks, Ibis, 1872, p. 31; Henderson & Hume, Lahore to Yarkand, p. 220, pl. 19 (1873); Scully, Str. Feath. 1876, p. 148; Seebohm, Ibis, 1877, p. 73.

Abornis viridana, Bonap. Consp. Gen. Av. p. 290 (1850).

Phylloscopus plumbeitarsus, Swinhoe, Ibis, 1861, p. 330; Seebohm, Ibis, 1877, p. 73; Brooks, Str. Feath. 1878, vii. p. 505.

Adult male and female. Length "4.75 to 5 inches" (Jerdon); wing 2.2 to 2.4; tail 2.0; tarsus 0.7; middle toe 0.4, claw (straight) 0.15; bill to gape 0.5. These measurements are from two specimens in my collection from Futteghur.

Dr. Scully gives the following complete measurements of a specimen killed in Turkestan:—Length 4.3 inches; expanse 7.15; wing 2.34; tail 1.8; tarsus 0.81; bill from gape 0.53; weight 0.35 oz.

"Bill, upper mandible dusky brown, lower mandible yellowish brown; irides dark brown; legs and feet brownish grey; claws brown horny." (Scully.)

Above dull olivaceous green, pervaded with a brownish hue, the rump greener than the back; primaries and secondaries brown, edged with the hue of the back; greater coverts tipped with whitish, forming a single wing-bar; tail brown, the feathers edged, principally near the base, with the colour of the upper tail-coverts; a dark spot in front of the eye; above it a rather wide yellowish supercilium passes from the nostril to above the ear-coverts, which are brownish; beneath from the chin to the under tail-coverts whitish, tinged slightly with greenish yellow; under wing-coverts washed with greenish yellow, brightest at the edge of the wing; shafts of the tail-feathers beneath white.

Obs. This species may be distinguished from *P. nitidus* by its browner upper surface and less yellow-tinged underparts; it is aptly named the *Greenish* while the latter is styled the *Green* Tree-Warbler.

Distribution.—The evidence on which this bird takes its place in our lists rests on the following statement of Layard's, who writes, in speaking of a Warbler which he calls *Phyllopneuste montanus*, Blyth:—"The present species is migratory, and abounds in low thick bushes in company with *Phyllopneuste viridanus*." There is some error here, as there is no such bird as *P. montanus*, Blyth, and it is strange that the present species should be said to abound. Perhaps it may visit Ceylon; and if its note is not to be distinguished from that of the very numerous species first noticed, it would naturally be supposed by Layard to be common after he had once procured it. It is to be hoped that naturalists will pay particular attention to this point.

The Greenish Tree-Warbler, as hitherto considered, inhabits Cashmere, according to Mr. Brooks, in the breeding-season; and Jerdon procured it at Darjiling. It ranges, however, north of the Himalayas, as Dr. Scully procured it in Kashgharia, and Dr. Henderson found it common in Hill Yarkand at the Arpalak river. In the cool season it migrates to the plains, Blyth stating that it is very common in Lower Bengal. It is not unfrequent in the North-west Provinces; and Jerdon obtained it in Southern India. It passes to the eastward of the Bay of Bengal on to Tenasserim, whence Mr. Hume records it from Thatone, river Salween, and Moulmein.

Concerning its habits Dr. Scully writes:—"This species was noticed among the tamarisk and willow bushes fringing the Sanju stream, and along the banks of the Karakash river. It seemed very restless, continually flitting from spray to spray, and its note was a weak sort of chirp frequently uttered. Blyth pronounces its voice to be very weak, and to be expressible by *tiss-yip, tiss-yip*, frequently uttered."

Presuming, however, that the *P. plumbeitarsus* of Swinhoe is the same as *P. viridanus* (and Mr. Seebohm informs me that he believes in the identity of the two species, the former being the summer plumage of the latter), the range of this Warbler becomes enormously extended, and reaches "in the breeding-season the subalpine districts of the North-eastern Palearctic Region from the Ural to the Pacific. Prjevalsky found it in the breeding-season in the pine-districts of Camsu." It passes through China on migration, and probably winters in Burma and the East-India islands" (*Seebohm*). The identity of this northern species with our Indian *P. viridanus* might account for the fact of a skin of the latter having been identified by Messrs. Brooks and Seebohm in a collection made in the month of August in the Ural. It has likewise been recently procured in Heligoland by Herr Gätke.

On the other hand, however, Mr. Brooks gives it as his opinion, in the last number of 'Stray Feathers' (vol. vii. pp. 508-10), that Swinhoe's species is distinct from the present. He points out, among other points, that *P. plumbeitarsus* has a stronger, differently shaped and coloured bill, two wing-bars instead of one, which are yellowish instead of white, and also a darker upper plumage than *P. viridanus*.

Mr. Brooks found its nest in Cashmere at an elevation of about 4000 feet; it was a domed structure, on the steep bank-side of a ravine full of small birch trees.

PASSERES.

Fam. PARIDÆ.

Bill short and conical, with the tip entire. The nostrils concealed by a tuft of feathers; gape furnished with bristles. Wings rather long; the 1st quill about half the length of the longest. Tail moderate. Legs and feet stout; the tarsus scaled.

Of small size and of arboreal habit.

Genus PARUS.

Bill typical in form, the margin of the upper mandible lobed; the tip slightly more curved than the rest of the culmen. Nostrils circular and concealed by the impending tufts; rictal bristles feeble. Wings with the 4th and 5th quills subequal and longest, the 2nd shorter than, or about equal to, the 8th. Tail moderately lengthened and slightly graduated. Tarsus exceeding the middle toe and claw, and shielded with broad scales. Lateral toes short; hind toe and claw large.

PARUS ATRICEPS.

(THE GREY-BACKED TITMOUSE.)

Parus atriceps, Horsf. Trans. Linn. Soc. xiii. p. 160 (1820), "ex Java"; Sykes, P. Z. S. 1832, p. 92; Tweeddale, Ibis, 1877, p. 304.

Parus cinereus, Vieillot, Tabl. Enc. Méthod. p. 506 (1823), *ex* Levaillant; Blyth, Cat. B. Mus. A. S. B. p. 103 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Kelaart, Prodromus, Cat. p. 121 (1852); Jerdon, B. of Ind. ii. p. 278 (1863); Holdsworth, P. Z. S. 1872, p. 460; Ball, Str. Feath. 1874, p. 417; Legge, Ibis, 1874, p. 23.

Parus nipalensis, Hodgs. Ind. Rev. 1838, p. 31.

*Parus caesi*us (Tick.), Swinhoe, P. Z. S. 1871, p. 361; Hume, Nests and Eggs, ii. p. 405; Brooks, Str. Feath. 1875, p. 253; Hume & Davison, B. of Tenass., Str. Feath. 1878, p. 376.

Le Mésange grise à joue blanche, Levaillant, Ois. d'Afrique, pl. 139; *Le Mesange cap nègre*, *The Tit*, also "*Coffee-bird*," Planters. *Ramgangra*, Bengal.; *Glate wingko*, Java.

Adult male and female. Length 5·3 to 5·8 inches; wing 2·6 to 2·9; tail 2·3 to 2·6; tarsus 0·7 to 0·75; middle toe and claw 0·6 to 0·7; bill to gape 0·48 to 0·55.

Some hill-birds are larger than those from the low country: a male from Horton Plains measures—length 5·8 inches, wing 2·9, tail 2·6; a male from Colombo—length 5·5 inches, wing 2·6, tail 2·2.

Iris dark brown; bill black, a slaty edge to the lower mandible; legs and feet dusky bluish or plumbeous; claws brown. Head, nape, sides of neck, chin, throat, chest, and down the centre of breast, belly, and under tail-coverts shining blue-black, enclosing a large white patch, which extends from the gape over the cheeks and ear-coverts; back, rump, and wing-coverts cinereous bluish, with a whitish patch adjacent to the black nape; wings and tail black, edged with bluish, the longer primaries with narrow, and the tertials with broad white margins: greater coverts broadly tipped white; outer tail-feather white, with a broad black inner margin, the next with a variable white streak running up from the tip; sides of the breast, belly, under tail-coverts, and the lower portion of the thighs whitish, tinged with bluish grey on the flanks.

The amount of white on the outer tail-feathers varies; in some examples the outer web of the penultimate is wholly white. This may be the result of age. The size of the white nuchal spot varies much, and the black at each side of it descends further down the hind neck in some specimens than in others.

Young. Iris as in the adult; bill dark horn-colour; margin and gape yellowish.

The back of the head and chest has less gloss than in the adult; the ventral stripe is narrower; the back dusky bluish, with a greenish tinge.

Obs. Examples from India are identical with our Ceylon bird, which I cannot likewise separate from the Javan and Malayan form, although individual specimens may be perhaps chosen from a series of the latter which would not, in all respects, correspond with some from our island. This is only to be expected, as it is a species subject to local variation. A West-Javan skin has the wing 2·6 inches, and corresponds entirely on the upper surface with one from Ceylon; another from the same district measures 2·4 only, and is slightly darker on the back; another from East Java measures 2·4, and is paler than most Ceylonese examples. A Lombok specimen has a wing of 2·6 in length and tail 2·6; it is also a very pale bird, but differs in no other way. Swinhoe remarks, in his "Catalogue of the Birds of China" (P. Z. S. 1871), that the Javan bird can be readily distinguished from the continental one by "the black of the head extending beyond the white nuchal spot, and separating it from the grey of the back," and accordingly he applied a name of Tickell's (*P. caesi*us) to the Chinese and Indian bird, which has been in vogue in 'Stray Feathers' ever since. I do not see this character exemplified in the British-Museum specimens, and I have, since my examination of them, asked Mr. Sharpe to look at them. He informs me, *in epist.*, that he cannot see the distinction here referred to, although, in some examples, the "black bordering the white nape-spot is carried a little further down the mantle." I have referred to this above as an individual peculiarity in Ceylonese

birds, and it is therefore not a character of sufficient value to justify a separation of the two varieties. If it were, however, the name of *P. cæsius* would, in my opinion, be objectionable, as no one knows where Tickell first employed it, and he certainly never published it. Jerdon uses it as a synonym of *P. cinereus*; and this is our only authority for its employment at all. As to the latter title, it is three years junior to *P. atriceps*, and is therefore merely a synonym of it.

This Titmouse may be styled the Asiatic representative of the English "Great Tit," which has the distribution of the black on the head and throat and the white cheek-patch the same; but the back is greenish and the nuchal patch yellowish; the underparts are yellowish instead of greyish white.

Distribution.—The Grey Tit is very numerous in all the hill-districts of Ceylon, frequenting the highest parts of the main range and other forests above 3000 feet more abundantly than those of lower altitude. It is scattered over all the forest districts of the low country, but is not common near the sea. I met with it in most parts of the eastern side of the island and in the north-central jungles; and Mr. Parker informs me that it is common about Uswewa, in the Puttalam district. In the neighbourhoods of Colombo and Galle I have found it during both monsoons, but mostly in the cool season, and I believe that it is an occasional visitant only to those places. In the Morowak and Kukkul Korales, and likewise in the Saffragam and Pasdun-Korale jungles it is common, and probably visits the coast region from these localities. I never observed it close to Trincomalie, although it is tolerably frequent further inland.

Jerdon writes of the Grey Tit's distribution in India:—"This Tit extends throughout the Himalayas from Nepal to Bhootan, Assam, and through Central India to the Nilghiris. I have procured it on the Nilghiris, and it extends all along the range of Western Ghâts north to Kandeish. I have also obtained it in the hilly regions of Nagpur and at Saugor, and Tickell got it at Chaibassa, in Central India, but it does not occur in Bengal." In Travancore it is, according to Mr. Bourdillon, not uncommon at higher elevations. It is, in fact, chiefly found in hilly wooded tracts of country: at Mt. Aboo, for instance, Captain Butler records it as occurring sparingly, though very rare in the plains, where he procured it once in the month of June, about 18 miles from Deesa; and Mr. Hume writes that it is found in the Gir and Girwan districts, in Kattiawar, and the Koochawun and Marot jungles north of the Sambhur Lake, but nowhere else in the entire region. An exception to this rule, however, is found in Dr. Armstrong's notes on the Birds of the Irrawaddy delta, in which he writes:—"This species was met with abundantly in the open tidal jungle bordering portions of the coast between Elephant Point and China-Bakeer, and also in similar localities along the margin of the Rangoon river at Eastern Grove." It is found in various parts of Burmah, and is a rare straggler to the central portions of the province of Tenasserim. It is likewise, no doubt, an inhabitant of the Malay Peninsula, which forms a link between its Indian and Malayan habitat. It was first described from Java by Horsfield; to the east of that island it is found in Lombok, and to the west in Sumatra. A region quite as remote as these islands is the east coast of China, to the avifauna of which Swinhoe added this Tit; he found it in the island of Hainan, and writes that his specimens thence procured were identical with those from India.

A notice of this bird's distribution would not be complete without referring to Levaillant's remark on it as a South-African species; he says, "It was the only species" (of Titmouse?) "I saw in the vicinity of the Cape or in the colony!"

Habits.—This interesting little bird, like its European congeners, possesses a restless and inquisitive disposition, and is a most diligent worker when in search of its insect food. It consequently frequents a variety of situations, and intrudes itself upon the notice of the most casual observer. In the hills it is found in pairs, or two or three together, in forest, thick jungle, and patna-woods; it is likewise common on estates, the well-grown coffee-bushes affording it such a welcome shelter that it appears to live permanently among them; thence it makes casual raids upon the neat little gardens attached to so many bungalows, and deals destruction to the buds and young shoots. In the low country it resides chiefly in forest; but its wandering disposition brings it often into the vicinity of habitations, where it locates itself for the time being in the shady compounds and pleasant groves among which the villagers pass their existence. There it frequently resorts to the heads of cocoanut-trees, searching among their flowers and at the bases of the broad fronds for the numerous insects which affect these favourite situations. On the Horton-Plain woods, where it is common, it delights in the

moss-covered trunks and limbs of the rather stunted timber-trees of that elevation, and attentively scrutinizes every nook and cranny in quest of its morning meal. While hopping about the branches of trees, it gives out a sharp two-note whistle, and repeats it for a considerable time, after the manner of its European relative. I am not aware whether it has the interesting habit of tapping branches in the same style which must be familiar to all who have observed our Great Tit in England during the autumn and winter. No little bird can possess a more thoroughly busy and at the same time contented air than this one, when he is diligently working away at the branch of some fine old apple-tree, making his well-directed blows heard at a considerable distance from his perch.

Jerdon says of the Grey Tit, "it is a very familiar and abundant bird on the Nilghiris, with the usual habits of the tribe, entering gardens, and feeding on various small insects and also on seeds." Dr. Armstrong observes that it is very active, "moving from one bush or tree to another, and frequenting alike the highest *Sonneratia*-trees and the lowest mangroves."

Nidification.—In the Central Province this species breeds from March until July. It usually selects a hole in some moderately-sized tree, perhaps one which has been cut by a Barbet or a Woodpecker, and at the bottom of this retreat forms a large and slovenly nest of moss, feathers, and hair. It lays from four to six eggs, broad ovals in shape, pure white, openly spotted with well-defined marks of purplish red, which often form a zone round the large end. It often chooses a hole in a bank, and has been known to build *on* a branch of a tree, Mr. Hume citing an instance of a nest so situated in a "Banj" tree, 10 feet from the ground.

This author states that they rear two broods in India, the first in March, the second in June, while in the Nilghiris they lay as late as September and October. Miss Cockburn, who has made so many interesting notes on the nidification of birds at Kotagherry, remarks that they show great affection and care for their young, and that they bite savagely at the hand of an intruder, puffing out their throats and hissing like a snake. The average size of a number of eggs taken in India is stated to be 0·71 by 0·54 inch.

PASSERES.

Fam. CETHIIDÆ.

Bill variable, either straight or much curved, but always compressed and with the tip entire. Tail variable, rather long in some, with the shafts rigid and pointed, in others short and even at the tip. Legs short; feet very large; toes in many syndactyle, the hind toe and claw larger than the rest.

Of scansorial or climbing habit.

Subfam. SITTINÆ.

Bill straight and rather short. Tail shorter than the wings and even at the tip.

Genus DENDROPHILA.

Bill straight, widened at the base; the culmen gently curved from the base to the tip. Nostrils oval and lateral; a few weak rictal bristles. Wings long, pointed; the 1st quill exceeding the primary-coverts by about 0.2 inch, the 4th the longest, and the 2nd shorter than the 6th. Tail very short, slightly exceeding the closed wing. Tarsus short, scaled, exceeding the middle toe, which is shorter than the hind; outermost toe much exceeding the inner and syndactyle; hind claw very large and much curved.

DENDROPHILA FRONTALIS.

(THE INDIAN BLUE NUTHATCH.)

Sitta frontalis, Horsf. Trans. Linn. Soc. xiii. p. 162 (1821).

Sitta corallina, Hodgson, J. A. S. B. 1836, v. p. 779; Gray's Zool. Miscell. p. 82 (1840).

Dendrophila frontalis (Horsf.), Jerdon, Madr. Journ. 1839, xi. p. 218; Blyth, Cat. B. Mus. A. S. B. spec. B & C, p. 190 (1849); Kelaart, Prodromus, Cat. p. 120 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 176; Jerdon, B. of Ind. i. p. 388 (1862); Holdsw. P. Z. S. 1872, p. 435; Hume, Nests and Eggs, i. p. 161 (1873); Legge, Ibis, 1874, p. 16; Bourdillon, Str. Feath. 1876, p. 393; Fairbank, ibid. 1877, p. 399; Hume and Davison, B. of Tenass., Str. Feath. 1878, p. 201.

Dendrophila corallina (Hodgs.), Hume, Str. Feath. 1875, p. 89; Sharpe, ibid. 1876, p. 436.

The Velvet-fronted Nuthatch, Jerdon; *The Tree-creeper*, *The Blue Creeper*, Europeans in Ceylon.

Adult male and female. Length 5.1 to 5.2 inches; wing 2.9 to 3.15; tail 1.8; tarsus 0.65 to 0.7; middle toe and claw 0.75; hind toe 0.5, its claw (straight) 0.35; bill to gape 0.67 to 0.73.

Iris pale golden yellow, eyelid greenish leaden, orbital skin dusky yellowish; bill coral-red, the tip of upper mandible nearly always blackish; legs and feet wood-brown, claws pale horny, soles dull yellowish.

Male. Above cærulean blue, somewhat deeper on the upper tail-coverts and shoulder, and changing at the edge of the frontal band into lazuline blue; lores, a broad band across the forehead, and a streak over the eyes to the nape deep velvety black; quills and most part of tail dull black; secondaries edged with the hue of the back; several of the primaries with a whitish-blue margin; central tail-feathers dull blue, and the tips and outer edges of the remainder bluish, the under surface of the feathers being greyish; just below the eye a slight wash of blue; cheeks, ear-coverts, and the neck just beneath them lilac; chin and upper part of throat whitish, changing into the brownish- or fulvous-lilac of the whole under surface; tibia and under tail-coverts washed with bluish grey.

Female. Wants the black superciliary stripe, and has the lores edged with bluish. In most specimens I have seen there is a series of one or two dark spots across the shaft of the centre tail-feathers, which seems peculiar to this sex.

Young. The bird of the year has the terminal portion of the upper mandible blackish, and the sincipital stripe, in the male, smaller than in the adult.

Obs. Mr. Sharpe, on the evidence of a small series of skins in the British Museum, has recently pointed out that the Javan bird is distinct from the Indian, inasmuch as it has the throat concolorous with the chest and not white as in the latter, and also the under surface richer in colour. I have examined the series in question, and also some skins of the late Mr. A. Anderson's collecting, and find that 3 Malayan examples from Java, Sarawak, and

Palawan do differ in the above respects from the continental Indian and the Ceylonese specimens. The series, however, is too small, it appears, to form a correct conclusion from; for I find that Mr. Hume, commenting on this subject in 'Stray Feathers,' 1878, vol. vii. p. 459, states that he has "numerous Indian and Burmese specimens exhibiting in a marked degree the alleged characteristics of both forms,"—that is, that both white and lilac-coloured throats exist in continental birds. This being the case, I do not think it advisable to place the Ceylonese birds at present under Hodgson's name, as, although all my specimens exhibit the white-throated character, I have not enough of them to base a safe conclusion on. As regards size, there is but little to choose in either of the alleged races. Mr. Oates gives the wing-measurements of four males from Pegu as 2·75 to 3·0 inches; and the wings of those I have examined are as follows:—*D. corallina*: ♀, Burmah, 2·75 inches; ♂, Nepal, 2·9; ♀, Nepal, 2·7; ♀, N.W. Himalayas, 2·85; ♂, Pegu, 2·95. *D. frontalis*: ♀, Sarawak, 2·8; ♀, Palawan, 2·8; Java, 2·9. I must remark that these examples from the Malay region seem to be slightly more purple on the back than the Indian birds; and I do not think the matter can be definitely settled until a large series is procured from Java and the fact is ascertained satisfactorily whether the Javan birds have or have not white throats *occasionally*. Hodgson bestowed his title on a Nepalese skin; and Gray subsequently applied it to birds from Nepal, Ceylon, and Pegu, placing the Burmese form with the Javan as *D. frontalis*, his distinction being that the latter was smaller and had a darker bill than *D. corallina*. The latter character is peculiar to immature birds.

Distribution.—This pretty little Creeper is numerous throughout all the hill-zone, inhabiting the upper ranges to their summits, and is likewise common in the forests and fine tree-jungle of all the low country. In various parts of the northern forest tract wherever the trees are large and lofty it is numerous; and this is likewise true of the Eastern Province and the forest regions of the south-east, along the rivers of which, as well as in the country between Pollanarura and Anaradjapura, I have found it almost as abundant as in the hills. It frequents the timber-jungles between the southern ranges and Galle, and is common in the Pasdun Korale and in the timber-forests of Saffragam. It occurs sometimes, during the north-east monsoon, on the sea-board between Colombo and Galle.

On the continent this Nuthatch is found in the wooded and hilly districts of India, from the extreme south to the Himalayas, and extends south-eastwards through Burmah and Pegu to Tenasserim. It appears to be very abundant in the hills of the south of the Indian peninsula. Jerdon speaks of it being numerous in the Nilghiris, and further remarks:—"I have found it on the Malabar coast, . . . in Central India, in Goomsoor, and also in the Himalayas. It is also found in Assam and Burmah. On the Himalayas I only found it in the warmer valleys." Mr. Bourdillon says it is a common species in the hills of Travancore, "frequenter the margins of clearings in the forest;" and on the Palanis it is, according to Dr. Fairbank, found wherever there are trees, both at the top and bottom of the range. He likewise obtained it on the Goa frontier. Tickell procured it in Dholbhúm, and it has been obtained all along the sub-Himalayan region from the north-west to Darjiling. It is recorded from Assam by M'Clelland, and from Arrakan by Messrs. Barry and Anderson. Mr. Oates writes that it is very common in the Pegu hills. In Tenasserim it is noted by Messrs. Hume and Davison from many localities; and these gentlemen consider it to be common everywhere throughout the province up to 5000 feet, though it is not as numerous, according to the latter gentleman, as in the Nilghiris. Its range through the countries to the south, in common with that of all birds in these imperfectly explored regions, is not so well known. It is believed to be found all down the Malay peninsula to the very south, and probably occurs in Sumatra, as it is found in the next island, Java, and further east still in Borneo, whence it has been sent from the province of Sarawak.

Habits.—This pretty little species, which recalls to the wanderer in the wilds of Ceylon the familiar little Nuthatch of England, lives in small troops of half a dozen or so, and is in its habits one of the most active birds imaginable. It is ever on the move, nimbly running up and down and round the trunks of trees, traversing and retraversing the huge boles which protrude from the giant pillars of the forest, or tripping along beneath the massive limbs which grandly overhang the solitary sylvan tanks of Northern Ceylon. It does not remain long in one tree, but darts quickly on from one to the other, followed by its companions, and when it alights gives out its trilling little note, which, although comparatively weak, is audible at a considerable distance. In the tall timber-forests of the Central Province which grow on steep inclines this little note may be heard far overhead, as one is toiling up the face of the mountain, although it is often scarcely possible to

discover the tiny little birds, so difficult are they to discern in the gloom against the sombre-coloured bark. While searching for its food it frequently runs *down* the bark as well as up and across it, locomotion in any direction being alike easily performed by it; it may likewise just as often be seen running along fallen logs or over small dead wood lying on the ground; and in this situation I have not unfrequently observed it near paths and cart-tracks in the forest. It must, during some portion of the day, rest from its labours; but I have never succeeded in finding it in a state of quiescence.

Mr. Davison writes of it as follows:—"They are always busy working up and down and round and round the branches of trees, standing and fallen, sometimes even foraging in brushwood, always, like the rest of the *Sittas*, coming down head foremost, never tail foremost, as some Woodpeckers will; feeding exclusively on insects; often hammering away at the bark and constantly uttering a sharp *chick, chick, chick*, rapidly repeated as they work about, but not as they fly."

Besides this well-known sound in the Ceylon forests I have heard the males utter a short little warble, with which they answer one another while feeding.

Nidification.—I am unable to give any particulars of this bird's nesting in Ceylon. In India Mr. Thompson notes it as breeding in the Kumaon forests, where it is common in May and June. Mr. Davison has found its nest at Ootacamund in April, and Miss Cockburn at Kotagherry as early as the 10th of February. It builds in a small hole in a tree, a natural cavity in itself, but with the entrance, according to Mr. Hume, trimmed by the bird. The nest, a compact structure, is made of moss and moss-roots, and lined with feathers and hair.

Miss Cockburn has an interesting note, in 'Nests and Eggs,' on the finding of one of these nests, in which, among other details, she describes the manner in which the parent bird entered its nest; she writes to Mr. Hume, after describing an inquisitive visit of a Titmouse to the opening, which he found too small and soon flew away from:—"I continued to watch, and was quite repaid by seeing a Velvet-fronted Nuthatch fly *to the top of a tree containing the nest* [the italics are mine] *and descend rapidly down the trunk*, which was about 12 or 13 feet high, knowing well where the nest-hole was, and disappear into it."

The eggs are three or four in number, white, "blotched, speckled, and spotted, chiefly, however, in a sort of irregular zone round the large end, with brickdust-red and somewhat pale purple." An egg taken by Miss Cockburn measured 0.68 by 0.55 inch.

PASSERES.

Fam. CINNYRIDÆ*.

Bill slender, lengthened, compressed and curved throughout, very acute at the tip, which is entire. Nostrils linear, placed in a capacious membrane. Gape smooth. Wings more or less pointed, with the 1st quill exceeding the primary-coverts. Tail of 12 feathers, usually rather short, the central feathers in some genera elongated. Legs and feet stout. The tarsus strongly scaled; hind toe and claw large.

Of small size; mostly of brilliant metallic plumage. Tongue lengthened and bifid.

Subfam. NECTARINIINÆ.

Bill typically curved and slender. Wings with the 1st quill slightly longer than the primary-coverts. Tail even, or with the central feathers attenuated and much longer than the next pair.

Genus CINNYRIS.

Bill variable in length and curvature, much compressed, the margins of both mandibles inflected towards the tip. Nostrils overlapped by the membrane. Wings with the 3rd and 4th quills the longest, the 2nd either equal to or shorter than the 7th, and the 1st not half the length of the 2nd. Tail *short and even*. Tarsus longer than the middle toe and claw; the outer toe not much shorter than the middle, and joined to it at the base; hind toe equal to the middle, its claw large.

CINNYRIS LOTENIUS.

(LOTEN'S SUN-BIRD.)

Certhia lotenia, Linn. Syst. Nat. i. p. 188 (1766).

Cinnyris lotenius (L.), Cuv. Règne An. i. p. 412 (1817); Bonap. Consp. Gen. Av. i. p. 408 (1850); Shelley, Monog. Cinnyr. pt. v. (1877); Fairbank, Str. Feath. 1877, p. 399.

Nectarinia lotenia (L.), Jard. Monogr. Sun-birds, pp. 220, 263, pl. 23 (1842); Blyth, Cat. B. Mus. A. S. B. p. 224 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 175; Gould, B. of Asia, pt. viii. p. 3, pl. 3 (1856).

Nectarinia letonia (apud Layard) (*errore*), Kelaart, Prodrumus, Cat. p. 119 (1852).

Arachnechthra lotenia (L.), Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 743 (1856-58); Jerd. B. of Ind. i. p. 372 (1862); Walden, Ibis, 1870, p. 23; Holdsw. P. Z. S. 1872, p. 434; Swinhoe, Ibis, 1873, p. 229.

* I follow Captain Shelley in using the oldest *family* title for this group, although it has been usually styled Nectariniidæ, after the genus *Nectarinia*, the first established, I believe, for any of the Sun-birds.

Purple Indian Creeper, Edw. Glean. pl. 265; *Le Soui-manga pourpre*, Buffon; *Loten's Creeper*, *Polished Creeper*, *Green-gold Creeper*, Latham; *The Large Purple Honeysucker*, Jerdon; *Humming-bird*, *Long-billed Sun-bird*, Europeans in Ceylon.

Ran sutika, *Modara sutika*, *Gewàl kurulla*, Sinhalese; *Tahn-kudi*, Ceylonese Tamils; *Tutika*, Portuguese in Ceylon.

Adult male. Length to forehead 4·2 to 4·3 inches; bill along the culmen about 1·2, from gape across the arc to tip 1·1 to 1·13; wing 2·2 to 2·4; tail 1·8; tarsus 0·6; middle toe and claw 0·5; hind toe 0·3, claw (straight) 0·15. Iris brown, variable in shade; bill, legs, and feet black.

Breeding plumage. Head, upper surface, lesser wing-coverts, and cheeks deep metallic green, glossed with purple in a contrary light; wings and greater coverts umber-brown; tail black, the edges of the feathers glossed with purplish towards the base; chin and centre of throat dull metallic purple, contrasting with the bright green of the cheeks, and deepening into metallic lilac on the chest, where it is bounded beneath by a narrow band of maroon-red; breast and lower parts uniform smoke-brown; a brilliant yellow tuft on each side of the breast, streaked in some examples with orange-red.

Winter plumage. After breeding the male bird moults, almost entirely assuming the plumage of the female, with the exception of a dark metallic stripe down the fore neck, and the lesser wing-coverts, which remain green; during the change the plumage is mingled fantastically with feathers of both dresses: one specimen I have examined in change has the upper surface a darker brown than a female, the upper tail-coverts tipped with green and the breast and flanks striped with brown; there is likewise a metallic purple band across the back.

Female. Length to forehead 3·8 inches; bill from gape, across arc to tip, 1·0; wing 2·15; tail 1·6. Iris, bill, and legs as in the male.

Above glossy olive-brown, somewhat darker on the rump than on the back; wings darker brown, the inner webs darker than the outer, which have fine pale edges; tail black, the two outer pairs of feathers tipped deeply with dull white, the rest, with the exception of the middle pair, slightly less so; beneath dull sulphur-yellow, darkening into greyish on the flanks, the yellow of the fore neck abruptly set off down the sides of the neck against the brown of the upper surface; under wing-coverts yellowish white.

Obs. Ceylon birds of this species are a very little larger, have the bill slightly longer and more curved than, and have not the pectoral tufts so much striped with orange as the Indian race. Captain Shelley does not consider these differences of sufficient weight to entitle our bird to specific rank; and in this I agree with him. A South-Indian male specimen which I have examined measures 2·18 in the wing and 1·06 across the bill from gape to tip, and the bill is straighter than in Ceylonese birds; a female has it similarly shaped. The figure of the male bird in Captain Shelley's splendid monograph shows the orange markings of the pectoral tufts as they exist in Indian birds.

Distribution.—*Loten's Sun-bird* is very common in the Western Province, from Puttalam down the coast to Galle and Matara, and inhabits the interior of that side of the island as well in considerable numbers. It is fond of a damp climate, as on travelling round to the dry south-eastern district I found it much less common, it being mostly replaced in that part by the next species. It is found generally throughout the Kandyan Province up to about 3000 feet; but in Uva ranges to a higher altitude, and ascends from the Fort-Macdonald patnas, in the north-east monsoon, as high as the Hakgala gardens, in which Mr. Thwaites tells me he has observed it. I have not heard of its being seen at Nuwara ELLIYA; but if it has been rightly identified at Hakgala, it doubtless occurs there occasionally. It occurs on the Morowak-Korale hills. In the north it is much less numerous than *C. asiaticus*; and Mr. Holdsworth remarks that he never saw it in the Aripu district.

Jerdon writes of this species, "It is common on the Malabar coast, and also tolerably so in the more wooded parts of the Carnatic, as about Madras and other large towns." Messrs. Hume and Davison write to Captain Shelley that it is not found north of lat. 15° in the Indian peninsula, and, further, that "it is a bird of the plains, and does not ascend the hills, but is common in localities such as Calicut, Trinchinopoly, Salem, and Madras itself."

In common with several other species, this bird owes its introduction to the scientific world to Governor Loten, who sent home the type specimens from Ceylon, and after whom it was named.

Habits.—Its lively manners, powerful song, and perhaps its remarkably long bill render this species the most showy of the Ceylonese Sun-birds, though in plumage it cannot vie with either of its congeners. It is found in most situations but forest, and is very partial to open bushy land studded with large trees; its love of frequenting gardens and compounds, in the flowering trees of which it finds employment for its long and brush-like tongue, makes it a familiar bird to both European residents and natives; and it always seems to be an object of admiration to the half-clad Singhalese boy who often accompanies the collector in his morning excursions. Besides feeding on the honey and pollen of flowers, it catches spiders and other insects; and one which Mr. Swinhoe shot at Galle in April had a number of small *Pipulæ* (hairy long-legs) in its gizzard. Oleanders and hedge-rows of "shoe-flower" trees (*Hibiscus*) are a favourite resort of this Sun-bird, and it may often be seen, half-flying, half-clinging to the flowers of this fine shrub while it inserts its long bill into the petals and extracts the honey therefrom. The male has a very lively and (for such a small bird) powerful song, which it utters from the tip top of a tree or when seated on some outstretching lateral branch, which is a favourite perch with it. While thus engaged in serenading its soberly clad partner, the bill is pointed upwards, as if to give full vent to its love-song, and its wings are anon opened and shut to add still more to the attractions of an already gay plumage. In India Jerdon writes that it frequents both jungles and gardens, and that he has seen it frequently enter his verandah to feed on spiders.

Nidification.—The breeding-season of this Sun-bird in the south lasts from February until May; and the nest is a pear-shaped, purse-like structure, suspended from a hanging twig. A lime or orange-tree is frequently chosen, and the nest placed about 5 feet from the ground. It is composed of fine grass, interwoven and decorated with bleached leaves and small pieces of bark, which are sown to the exterior with grass split into fine threads, the whole structure measuring about 7 inches by 3; the interior is composed of cotton from the pod, mixed with spiders' webs, and formed into a compact mass. The eggs are two or three in number, of a greenish-grey ground-colour, speckled throughout with two shades of light brown or brownish grey, sometimes forming a zone round the obtuse end. Dimensions—axis 0.64 inch, diameter 0.45 inch.

CINNYRIS ASIATICUS.

(THE PURPLE SUN-BIRD.)

Certhia asiatica, Lath. Ind. Orn. i. p. 288 (1790).

Cinnyris asiaticus (Lath.), Lesson, Man. d'Orn. p. 36 (1828); Shelley, Monogr. Cinnyr. pt. iv. (1877); Fairbank, Str. Feath. 1877, p. 399.

Cinnyris mahrattensis (Lath.), Jerd. Cat. B. S. Ind., Madr. Journ. 1840, xi. p. 224.

Nectarinia mahrattensis (Lath.), Jard. Monogr. Sun-birds, pp. 222, 264, pl. 24 (1843); Kelaart (*Nectarina errore*), Prodromus, Cat. p. 49 (1852).

Nectarinia asiatica (Lath.), Blyth, Cat. B. Mus. A. S. B. p. 224 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 175; Gould, B. of Asia, pt. viii. pl. 2 (1856).

Arachnechthra asiatica (Lath.), Jerdon, B. of Ind. i. p. 370 (1863); Walden, Ibis, 1870, p. 20; Holdsw. P. Z. S. 1872, p. 434; Hume, Nests and Eggs, p. 151 (1873); id. Str. Feath. 1873, p. 174; Ball, Str. Feath. 1874, p. 396; Legge, Ibis, 1875, p. 285; Morgan, *tom. cit.* p. 315; Hume, Str. Feath. 1875, p. 87; Fairbank, *ibid.* 1876, p. 256; Armstrong, *tom. cit.* p. 313; Hume, Str. Feath. 1878, B. of Tenass. p. 190.

Arachnechthra intermedia, Hume, Ibis, 1870, p. 436.

Nectarinia brevirostris, Blanf. Ibis, 1873, p. 86.

Purple Indian Creeper, Edwards; *The Yellow-winged Creeper*; *Sugar-Creeper*, *Mahratta Creeper*, *Eastern Creeper*, Latham; *The Short-billed Purple Honey-bird*, Kelaart; *The Purple Honeysucker* of some; *Purple Humming-bird*, Europeans in Ceylon. *Jugi-jugi* at Bhagalpur; *Dunbarg* in Sindh, Blyth.

Gewûl kurulla, Sinhalese; *Tahn-kudi*, Ceylonese Tamils.

Adult male. Length to forehead 3·7 inches; bill along culmen 0·73 to 0·77; wing 2·2 to 2·3; tail 1·4; tarsus 0·55; middle toe and claw 0·5.

Iris deep brown; bill, legs, and feet black.

Breeding plumage. Head, back, scapulars, lesser wing-coverts, upper tail-coverts, and the sides of the neck and throat brilliant metallic green, glossed on the back and upper tail-coverts with purple, the basal portion of the feathers on all these parts being black, and the metallic hue confined to the terminal parts; wings dark brown, the greater coverts and secondaries edged with purple; tail black, glossed with purple, and the feathers edged towards the base with green; chin, centre of throat, and chest lilac-purple, glossed with green, and changing into metallic blue on the chest; across the breast a narrow dull maroon band; beneath this to the under tail-coverts black, glossed with purple, which is glossed in some lights with green; under tail-coverts broadly margined with purple; on the sides of the breast, concealed beneath the closed wing, a bright yellow tuft, streaked with orange-red.

In those specimens which have come under my notice in Ceylon the maroon pectoral band has always been present, but, as I have not examined a large series, it may be absent in some birds. Captain Shelley says that he has found it thus in about half the examples he has seen, irrespective of locality.

Non-breeding plumage. Head, back, scapulars, and upper tail-coverts mouse-grey, with a short yellowish-white supercilium; wing black, the lesser coverts edged with metallic green, the greater series and the inner secondaries with purple; tail black, edged with metallic green; under surface variable, in some rather bright yellow, in others whitish tinged only with yellowish; a broad stripe of purple from the chin down the fore neck and breast; thighs dark brown.

This plumage in Ceylon is acquired in November and December in the Western Province; and, while in a state of moult, specimens are procured with both upper and under surface mingled with summer and winter feathers; the broad throat-stripe becomes clearly defined before the breast loses the metallic feathers.

Adult female. Similar to the male in size. Above olive-brown like the last species, with a narrow supercilium of yellowish white; wings brown, edged with a paler hue; tail blackish, the outermost feathers deeply tipped with white, and the rest successively less so towards the centre; beneath whitish, tinged with yellow on the chest.

Young. I have no specimens; but Blyth describes the young as being dark olive-green above and tolerably bright yellow on the underparts; wings dusky, with brownish margins to the tertials; tail black and its exterior feathers tipped with whitish.

Obs. Although I have not detected any difference in the size of the bill in different individuals in Ceylon, this species is subject to considerable variation on the continent in this respect, as well as in the colour of the gloss on the upper parts. In Ceylon this is undoubtedly green and not purple. In birds from Rangoon, according to Mr. Hume, the purple hue is chiefly developed; whereas it would appear that in the Baluchistan variety, described by Mr. Blanford as *C. brevirostris*, the upper surface is very green; but here, again, Mr. Hume remarks that many Indian examples are absolutely inseparable from Mr. Blanford's. As regards size, the type of the Persian or western variety quite equals Ceylon birds. Mr. Blanford's measurements are:—Total length 4.5 inches; wing 2.2; bill to gape 0.67; but, notwithstanding, it is stated to be smaller than typical *C. asiaticus*. Mr. Hume once separated the birds from Tipperah and other eastern parts, as well as those from the south of the peninsula, as *C. intermedius*, as he considered them to have larger bills and to be more brilliantly coloured; but neither he nor Captain Shelley now consider these species distinct from the true *C. asiaticus*, which may be said simply to vary in size of bill and colour according to locality. Mr. Hume gives it as his opinion that western birds from the dry-plains country run smaller and greener, while those from the well-watered eastern and southern regions run, as a rule, larger and purpler. To this I would add, as already stated, that Ceylon birds are also characterized by their green upper surface.

Distribution.—This Sun-bird is perhaps more local in its distribution than the last species. It is common in certain districts in the Western Province wherever the country is open and bush-covered, and is accordingly an inhabitant of the environs of Colombo. In the south-west it occurs rather sparingly; but in the scrubby country beyond Hambantota, as well as in many parts of the Eastern Province and in the north generally, it is common in spots which suit its habits. Near Trincomalie and in the Jaffna peninsula I found it more numerous than the last; along the west coast, and in the island of Manaar, as well as in the islands of Erinativoe, I likewise found it. Mr. Holdsworth records it as common at Aripu, and he procured it at Nuwara Eliya in October. It inhabits the eastern parts of the Kandyan Province, and finds its way to Hakgala and Nuwara Eliya from the Fort-Macdonald district.

On the mainland it has a very wide range. Captain Shelley thus epitomizes its habitat on the continent:—"India, northward to the Himalayas; westward it extends through Sindh and Baluchistan to the confines of Persia, and is possibly to be found in Southern Arabia. To the eastward it ranges through Assam, Tipperah, Chittagong, Arrakan, Burmah, and Tenasserim, but in this direction has not been collected southward of the river Yé."

As regards its *locale* in the Himalayas, Mr. Hume has obtained it far into the range "in the valley of the Beas, almost at the foot of the Rohtung pass, in the valley of the Sutlej as far as Chini, in the valley of the Ganges, or rather Bhagirati, to within four or five marches of Gangaotri;" but eastward of this he did not observe it at any distance from the plains. Blyth states that it arrives at Calcutta in the cool season, and leaves that district before breeding-time; he considered it (J. A. S. B. xii. p. 978) to be only a summer visitant to Nepal. Mr. Hume found it common all over Sindh; and in Kattiawar it is, according to Capt. Lloyd, abundant. In the Mount-Aboo district Capt. Butler found it common both on the hills and in the plains. Mr. Ball gives the like testimony concerning Chota Nagpur. Dr. Fairbank found it abundant in the vicinity of Khandala, and "common at the base of the Palanis and on the plains." In the Nilghiris it is numerous, and breeds, according to Mr. Morgan, as high as 6000 feet. In open jungle near the foot of the Travancore hills it, according to Mr. Bourdillon, "occurs abundantly." It is found in Ramisserum Island; and I may here remark that in perusing Mr. Hume's article on the avifauna of that group ('Stray Feathers,' 1876, p. 458), Captain Shelley has misread this locality for the Laccadive Islands, in which it does *not* appear to occur.

Mr. Blanford met with his short-billed variety near the Mekran coast, and remarks that "it is very

probably confined to Baluchistan and the low portion of Fars, in Southern Persia, perhaps ranging along the north-east coast of the Persian Gulf; but it has not been obtained in the neighbourhood of Bushire or Shiraz." He goes on to say that near Maskat, in Arabia, he saw a *Nectarinia* which may have been this species. In Tenasserim Mr. Davison says it occurs from Pahpoon to about Yea, the most southerly point where he ever observed it being about a day's march north of the river Yea.

Habits.—This beautiful species has very similar habits to the last; but it does not seem to frequent large trees as much. It is very lively in its actions, fluttering and poising itself over flowers while it extracts the nectar from them, and is constantly giving out its sharp but not unpleasant little chirping notes; its song in the breeding-season is not so loud nor so varied as that of its larger relative. It feeds on small flies and insects, especially spiders, as well as honey; and it is constantly opening and closing its wings, both when flitting about the branches in search of food and when singing in a state of rest on some prominent twig. Blyth remarks that he has taken so large a spider from its stomach that he wondered how it could have been swallowed.

Out of the breeding-season I have observed that the male birds associate together in little troops, and they may be seen in a variety of different plumages while moulting.

Nidification.—In the south of the island the Purple Sun-bird breeds in April, May, and June, but in the north it nests as late as August. In this month Mr. Holdsworth writes of a nest being constructed in the verandah of his bungalow at Aripu:—"It was fastened," he says, "to the end of an iron rod hanging from the roof and once used for suspending a lamp. The birds showed very little fear, although I was for several days sitting within a few feet of the nest, engaged in the preparation of specimens." The nest is generally suspended from the outspreading branches of a shrub or from the lateral down-hanging boughs of small trees; it is, like the last described, made of grass interwoven with hairs and covered often with spiders' webs; it is pear-shaped, tapering to the point of suspension, and with the opening near the top and shaded with a little hood which projects slightly; the interior is lined with cotton and feathers. Layard, in referring to the nest being artfully concealed with cobweb, writes that he has "seen the spider still weaving her toils, having extended the web to the surrounding branches, thus rendering the deception still more effective; and it would seem that the birds were aware of it and left their helper undisturbed." In his exhaustive article on the nesting of this Sun-bird Mr. Hume thus describes the construction of the nest:—"A little above the centre of the oval a small circular aperture is worked, and just above it a projecting cornice, 1 to 1½ inch wide, is extended; then—on the opposite side of the oval—the wall of the nest, which is ready some days before the eggs are laid, is pushed or bulged out a little so as to give room for the sitting bird's tail. The bulging out of the back of the nest is one of the last portions of the work, and the female may be seen going in and out, trying the fit, over and over again. When sitting, the little head is just peeping out of the hole under the awning." Nests which are not built in a perpendicular direction appear not to be provided with this hood or awning. We gather from the article in question that the nest is constructed in the most varied situations, as, indeed, Mr. Holdsworth's experience in Ceylon proves. In India verandahs seem to be frequently chosen; and consequently, being so much under observation, few birds have had so much written concerning their nesting habits. Mr. Adam observes that they are very fond of tacking on pieces of paper, light-coloured feathers, &c. to the outside of the nest, and that, in one instance in which he watched the construction of a nest, the male "never assisted the female in the slightest degree; he seemed exceedingly happy, fluttered every now and then about the nest, and after each careful inspection he was so seemingly pleased with the handiwork of his mate that he perched on an adjoining branch and poured forth a joyous strain, flapping his wings and making his axillary feathers rotate in the most extraordinary manner." Two is the usual number of eggs, but sometimes three are laid; the ground-colour is greenish white, and they are closely marked with small specks of brownish and greyish brown; these markings are generally almost confluent at the large end. Mr. Hume gives the average size of fifty eggs as 0.64 by 0.46 inch.

CINNYRIS ZEYLONICUS.

(CEYLONESE SUN-BIRD.)

Certhia zeylonica, Linn. Syst. Nat. i. p. 188, "Ceylon" (1766).

Cinnyris zeylonicus (L.), Bonap. Consp. Gen. Av. i. p. 409; Shelley, Monogr. Cinnyr. pt. i. (1876); Hume, Str. Feath. 1877, p. 270; Fairbank, *t. c.* p. 398.

Nectarinia zeylonica (L.), Jard. Monogr. Sun-birds, pp. 213, 261, pl. 20 (1843); Blyth, Cat. B. Mus. A. S. B. p. 226 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 174; Gould, B. of Asia, pt. xix. pl. 4 (1867).

Leptocoma zeylonica (L.), Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 740 (1856); Jerdon, B. of Ind. i. p. 368; Hume, Nests and Eggs, i. p. 147 (1873); Ball, Str. Feath. 1874, p. 396; Legge, Ibis, 1875, p. 275.

Nectarophila zeylonica (L.), Walden, Ibis, 1870, p. 37; Holdsw. P. Z. S. 1872, p. 434; Morgan, Ibis, 1875, p. 315.

Cinnyris zeylonica, Davidson & Wender, Str. Feath. 1878, vii. p. 79.

Ceylonese Creeper, Latham; *The Amethyst-rumped Honeysucker*, Jerdon; *Humming-bird* of Europeans.

Mal sutika, lit. "Flower Honey-bird," Sinhalese; *Than-kudi*, lit. "Honey-feeder," Ceylonese Tamils.

Adult male. Total length 4.1 to 4.5 inches; wing 2.05 to 2.15; tail 1.35; tarsus 0.6; middle toe and claw 0.45 to 0.48; bill from gape across to tip 0.64 to 0.7. Some hill-specimens are more robust than those I have obtained in the low country, but do not measure larger in the bill.

Iris red and variable in tint from brick-colour to vermilion; legs and feet black.

Head above to the nape, together with the point of wing, brilliant metallic green; hind neck and its sides, upper back, scapulars, and a band across the chest deep maroon-red, the feathers at the origin of the scapulars metallic bronze; lower back, rump, and upper tail-coverts brilliant amethystine purple; wings brown, edged, except on the outer primaries, with dull ferruginous red; tail dull black, the lateral feathers with pale tips; chin, throat, and cheeks metallic purple-bronze; beneath, from the maroon pectoral band, primrose-yellow, paling to white on the flanks and under wing-coverts; under tail-coverts washed with yellow.

Some specimens have the green of the head tinted with amethystine (the centre portion of the feather being of this colour), and the amethystine of the rump glossed with brilliant metallic steel-blue; some specimens, again, have the two outer tail-feathers tipped whiter than others.

Female. Total length 3.95 inches; wing 2.0; bill, gape to tip (straight) 0.65.

Iris brick-red, in some as intense as in the male; bill, legs, and feet blackish brown.

Upper surface greyish brown, washed with greenish on the back; wings edged with duller rufous than in the male; a pale supercilium; chin and throat greyish white; breast washed with yellow; two outer pairs of rectrices tipped white.

Young (nestling: coll. Shelley, India). Bill 4.6 inches across arc to tip; wing 1.65.

Head and back olivaceous brown; a faint light supercilium; wings plain brown, the secondaries faintly edged with yellowish brown; longer upper tail-coverts and tail blackish, the outermost feathers smoky white, the next two tipped with the same colour; beneath primrose-yellow, tinted with greenish; the throat albescent.

Young male. "Similar to the adult female, excepting that it is less ashy above and slightly more olive-brown in colour; the eyebrows yellowish; chin, throat, and under tail-coverts sulphur-yellow." (Shelley, Monogr.)

Obs. I much neglected the collecting of these beautiful birds while in Ceylon, their lovely plumage, as far as I was concerned, generally ensuring their safety! I therefore procured no very young birds; but, in addition to the fact

that Jerdon affirms the throat of the young male to be more yellow than that of the female, Captain Shelley states, in his excellent article on this species, that the specimen labelled "Juv. ♂, Malabar," from which he took his description, had "one metallic-coloured feather on the throat, indicating that it would have assumed the adult male plumage." It is certainly a very interesting character in its plumage that the young male should only differ from the female in the colour of the throat being yellow. I myself obtained a specimen in August which had a metallic throat mingled with yellow feathers; the plumage of the head and back was mixed with dove-grey feathers, but the amethyst rump was not. I take this bird to have been changing to the adult stage from immature plumage. Indian birds have the bill longer, and are slightly larger than Ceylonese, but do not differ from the latter in the character of their plumage.

Males in Captain Shelley's collection measure 2.15, 2.2, 2.23, 2.25 in the wing; bill from gape across to tip 0.72, 0.75, 0.65, 0.68. In some the bills are more curved than in my specimens, in others slightly straighter.

Distribution.—The "Ceylonese Sun-bird" is a very abundant species with us; it is found throughout the whole island, but is particularly numerous in the western, southern, and lower parts of the Kandyan Province. About Colombo it is one of the most familiar of Ceylon birds, but it likewise frequents the forests of the interior, and its numbers do not seem to diminish towards the north. I found it tolerably plentiful in the Jaffna peninsula; but Mr. Holdsworth did not meet with it at Aripu, the country, perhaps, there being of too arid a nature for it; it occurs, however, in the south-east of the island, a district inhabited by other typical northern-province birds—*Pyrrhulauda grisea*, *Munia malabarica*, *Merops swinhoii*, and others; and it is, no doubt, only locally absent from the neighbourhood of Aripu. It inhabits the Trincomalie and Batticaloa districts, and is found throughout the northern forest tract. At Uswewa, in the Puttalam forests, Mr. Parker says it is common; and adjoining this section of country I have met with it in the Seven Korales. In the north-east monsoon season it ascends to the vicinity of the Nuwara-Elliya plateau, occurring not unfrequently in the Hakgala gardens. I did not see it at Nuwara Elliya; but I have no doubt that it may occasionally be seen, as a cool-season visitant, in the gardens of the residents there.

Concerning its distribution in India I cannot do better than subjoin here Mr. Hume's note on the subject which he published (Str. Feath. 1877, p. 270) in reference to Capt. Shelley's article (*loc. cit.*):—"It may generally be stated that this species is confined to Southern and Eastern India. It does not occur, as far as we know, in Sindh, Kutch, Kattiawar, Rajpootana, the Punjab, the North-west Provinces, Oudh, Behar, the Central Indian Agency, nor in the major portion of the Central Provinces, though in these latter it has been observed occasionally near Chanda, and is common in the Raipoor and Sumbulpoor districts. It does not extend to any part of British Burmah. It is normally a bird of the heavier rainfall and better-wooded provinces, though it certainly occurs in the comparatively dry uplands of the Deccan. It never ascends any of the mountain-ranges, to the best of our belief, to any considerable elevation, but is essentially a bird of the plains country. With this reservation its range may be said to include Travancore, Cochin, the whole Madras Presidency, Mysore, Hyderabad, the Bombay Presidency south of 20° N. lat., the southern portions of Behar, and the Central Provinces to about the same latitude, Raipoor, and the eastern states of these provinces, Orissa, the tributary Mehals, Chota Nagpur, and Lower Bengal, west of the Burrumpooter. I have never seen it from any of the districts east of this, *i. e.* Chittagong, Cachar, Tipperah, or Sylhet, though at Dacca, immediately west of this river, it is common. Nor have I seen it from Assam, though said to occur there, and though Godwin-Austen records a specimen from the Khasya hills."

Mr. Bourdillon does not appear to have noticed it in the Travancore hills, and the Rev. Dr. Fairbank only obtained it at the eastern base of the Palanis; yet it is common at no inconsiderable elevations in Ceylon.

Habits.—There is no more beautiful occupant of the bungalow-grounds, which make the environs of Colombo so pretty, than this lovely little creature. Attired in a plumage rivalling in splendour the gorgeous dress of the Humming-birds of South America and the West Indies, it may well be styled a "Humming-bird" by European residents in Ceylon. On almost every fine morning of the year it may be seen coming to the verandahs of the houses in the cinnamon-gardens, where it gathers nectar from the flowers which hang from the trellis-work, or snaps up the ill-starred spider as he diligently draws out his silken web in the rays of the morning sun; in other grounds equally pleasant, but not provided with such a favourite resort as these luxuriant creepers, it may be observed darting about among the handsome *Hibiscus*-shrubs, its metallic-plumaged

head and back glistening in the powerful sunlight, and exciting, perhaps, the warm admiration of some "new arrival" from England, who, rising from the morning tea-table, seeks the luxury of a pipe in the welcome long chair of eastern climes. But it frequents a variety of situations; it may be found in the tallest primeval forest or on the borders of isolated woods hung with creepers, in the flowers of which it finds the same sustenance as in the bungalow compound. Besides feeding on nectar it is very partial to small insects of all sorts; and, out of the breeding-season, flocks of young birds, and perhaps females, may be seen searching among the branches of forest-trees for food, unaccompanied by a single metallic-plumaged bird. At such times I have more than once, when I had left behind my binoculars, dropped specimens with a charge of dust-shot from the upper boughs of some noble keena-tree in the southern forests, or from an equally magnificent "koombok" overhanging the broad sandy bed of an eastern-province stream, and, expecting to pick up either of the much-sought-after "Flowerpeckers" of the island, been disappointed at finding that the little troop consisted of nothing but these Sun-birds. Had I taken the trouble to carry home some of these examples, my collection would have doubtless been enriched by the acquisition of birds in immature plumage. The song of this species is a lively pretty little chirping, which it constantly utters with a raising and shutting of its wings.

The males are most pugnacious; and, bearing on this point, Layard has an interesting note on the habits of this and the other Sun-birds of Ceylon; he writes (*loc. cit.*), after speaking of their visits to his verandah, "they would then betake themselves to the trellis supporting the passion-flowers, or to the branches of a pomegranate close by, where they pruned themselves and uttered a pleasing song. If two happened to come to the same flower, and from their numbers this often occurred, a battle always ensued, which ended in the vanquished bird retreating from the spot with shrill piping cries, while the conqueror would take up his position upon a flower or stem, and swinging his little body to and fro, till his coat of burnished steel gleamed and glistened in the sun, pour out his note of triumph. All this time the wings were expanded and closed alternately, every jerk of the body in *Nectarinia asiatica* and *N. lotenia* disclosing the brilliant yellow plumelets on either side of the breast."

Nidification.—The breeding-season lasts from November until July, during which time probably two broods are raised. I have taken the eggs in the north in November and in the south in December. The nest is a beautiful little structure, purse-shaped, and about 5 inches in length by 3 in breadth, and is attached to a pendent twig of a thorny shrub, generally about 4 or 5 feet from the ground. The exterior is composed of various materials, nests differing much in external appearance. They are generally constructed of fine grass or moss, decorated with small pieces of twig, bark, or decaying wood, which are fastened on with cobwebs and interlaced with lichens, white mosses, and such like—one nest, found near the shore of a salt lake, being covered with small pieces of bleached weed collected from the dry mud on the shore. The opening into the interior, which is composed of fine cotton, and sometimes strengthened with very fine grass, is just above the centre and shaded with a tiny hood; the depth of the egg-chamber is about 2 inches, and the diameter $1\frac{1}{4}$. The eggs are usually two, but sometimes three in number; large for the bird, rather stumpy ovals in shape, and of a dingy whitish or pale greenish or greenish-white ground, freckled with fine spots of greenish or olive-brown, which are often confluent round the obtuse end, and underlaid with small blotches of a lighter hue. The average dimensions are about 0.63 inch in length by 0.48 inch in breadth.

From 'Nests and Eggs' we glean that in India the breeding-season lasts from February until August, and that two broods are reared. The nest is constructed of the same materials as in Ceylon—vegetable fibres, cobwebs, chips of bark, dry petals of flowers, moss, cocoons, &c., and the interior felted with cotton-down. It is built sometimes as high as 30 feet from the ground.

The average size of the eggs is stated to be 0.65 inch by 0.47.

CINNYRIS MINIMUS.

(THE TINY SUN-BIRD.)

Cinnyris minima, Sykes, P. Z. S. 1832, p. 99; Jerdon, Cat. B. S. India, Madr. Journ. 1840, xi. p. 226.

Nectarinia minima (Sykes), Blyth, Cat. B. Mus. A. S. B. p. 226 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 175.

Nectarinia minuta, Jard. Mongr. Sun-birds, pp. 224, 265, fig. titlepage (1843).

Nectarina minuta (errore), Kelaart, Prodromus, Cat. p. 119 (1852).

Nectarophila minima (Sykes), Walden, Ibis, 1870, p. 40; Holdsw. P. Z. S. 1872, p. 434.

Leptocoma minima, Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 472; Jerdon, B. of Ind. i. p. 369 (1863); Hume, Nests and Eggs, i. p. 150 (1873); Fairbank, Str. Feath. 1876, p. 265; Bourdillon & Hume, *t. c.* p. 392.

Cinnyris minimus, Shelley, Mongr. Cinnyr. pt. iv. (1877); Fairbank, Str. Feath. 1877, p. 398.

The Tiny Honey sucker, Jerdon, B. of India.

Adult male (Travancore). "Length 3·5 to 3·7 inches; wing 1·8 to 1·81, expanse 5·37 to 5·62; tail 1·0 to 1·1: tarsus 0·48 to 0·5." (*Hume.*)

Iris brown (light hazel, *Fairbank*); bill, legs, and feet black.

Adult male. "Forehead and crown metallic green; lores, cheeks, and ear-coverts black; back and sides of the neck, upper back, scapulars, and least and median series of wing-coverts dark red; lower back, rump, and upper tail-coverts bright red, strongly glossed with steel-blue, making these parts in certain lights appear rich metallic lilac; remainder of the wings and tail brownish black; chin and throat metallic lilac; crop and front of the chest dark red; remainder of the breast, abdomen, thighs, and under tail-coverts yellowish white; pectoral tufts sulphur-yellow; under wing-coverts and inner margins of the quills white." (*Shelley.*)

In *non-breeding plumage* Messrs. Hume and Davison state that the males assume the garb of the female, except that they "retain invariably the amethystine-glossed rump, and usually a little red about the shoulder of the wing."

A male in this stage in Captain Shelley's collection measures:—wing 1·9 inch; tail 1·2; tarsus 0·5; middle toe with its claw 0·4; bill across arc to tip 0·52.

Head, hind neck, and interscapular region brownish olive, brightest on the forehead and crown; lower back, scapulars, tips of lesser wing-coverts, and rump rich maroon-red; upper tail-coverts the same, but brighter and illumined with metallic lilac; wings deep brown; tail black-brown; beneath from the chin to the under tail-coverts primrose-yellow, with a dusky wash across the chest.

Adult female. Wing 1·75 inch.

Above with the wing-coverts olive-brown, like the male in non-breeding plumage; wings dark brown; the primaries edged pale; rump and upper tail-coverts dull maroon-red; tail blackish brown, edged with fulvous-brown; beneath pale yellowish.

Young male. "Differs from the adult male in having the upper half of the head and neck olive, and the entire underparts very pale yellow." (*Shelley.*)

Obs. I quote the following interesting information from Messrs. Hume and Davison's notes to Capt. Shelley respecting the change of the male to the non-breeding dress, and from which it will appear that the female attire is donned for a short time only:—"About April some of the males begin to doff the brilliant nuptial plumage; early in May some may be obtained in full non-breeding plumage; but during May some may still be obtained in the nuptial garb. In June most of the birds have assumed the complete non-breeding dress; but a few will still be found that have only partially moulted. After the first of July not a bird is to be seen in the nuptial dress. During September they begin to assume their wedding garb; by the end of that month a good many males are in perfect plumage; and by the middle of October every bird is in the gay nuptial attire."

Distribution.—The only records which we have of the occurrence of this lovely little bird in Ceylon are contained in the catalogues of Messrs. Layard and Holdsworth. The former says *Nectarinia zeylonica* is replaced in the north by *N. minima*, and the latter states that it "is occasionally seen about Colombo." For my own part I searched diligently for it the whole time I was in the island, but never saw it and never met with any one who was acquainted with it. It does not certainly occur in the Trincomalie district, and on two visits to Jaffna I failed to observe it; so that I am led to believe that Layard, when he used the word north, referred to Pt. Pedro, where he resided. I have not visited Pt. Pedro; but in other parts of the Jaffna peninsula I found the last species common enough. My friends Messrs. F. Gordon and W. Murray, who have both collected much in Jaffna, have never met with it to my knowledge; and up till the receipt of my latest advices it had not been obtained at Colombo by any one since I left the island in 1877. It is therefore strange that Layard found it so common as to replace *C. zeylonicus* in the north. Its occurrence in Ceylon is one of the many points which require attention at the hands of naturalists in Ceylon.

Messrs. Hume and Davison state that it is common in all the hilly tracts of the peninsula, in the Ghâts, as at Matheran (above Bombay), and Mahabaleshwar, all over the Nilghiris, in the Wynaad, and the hills of South Travancore. In this latter locality Mr. Bourdillon found it common at the edges of forest; and Dr. Fairbank observed it from 4000 feet to the top of the Palanis; he likewise records it from the western slopes of the Ghâts at Khandala, Mahabaleshwar, and the Goa frontier.

Habits.—From the writings of naturalists in India we gather some information of considerable interest touching the economy of the Tiny Sun-bird. Mr. Bourdillon remarks as follows:—"It is slightly gregarious in habit, three or four hunting about together amongst the boughs of some gamboge-tree, which is a tree they seem particularly to like. They are not at all shy, and when sitting quiet in brushwood I have seen them perch inquisitively within a few feet of my face." The following interesting account is from the notes supplied to Capt. Shelley by the writers already mentioned:—

"Though not strictly migratory, this species moves about a great deal; and though there are places in the Neilgherries, at elevations of 5000 or 6000 feet, where some may be seen at all seasons of the year, the mass of them move higher in summer, and descend a great deal lower in the winter. Thus in the Chinchona plantations at Neddivuttum, at an elevation of about 6000 feet, some specimens may be seen at all seasons; but it is not till the first burst of the south-west monsoon, between the 10th and 15th of June, that a single bird is to be seen higher up at Ootacamund. After this they swarm in every garden where there are flowers, and especially about the apple-blossoms of the orchards. By the end of October they have all left Ootacamund, and have descended to a lower level, while, again, in January and February they abound at the base of the hills, as in the Moyar valley, in the Wynaad.

"They are very restless, active little birds, hopping about ceaselessly from twig to twig and flower to flower, and using their legs probably more than their wings, keeping up all the time a soft uninterrupted *chip, chip, chip*; very rarely, if ever, are they seen poised Humming-bird-like in front of any flower. So far as our observations go they always perch to feed, and probably feed quite as much on insects as on nectar. They may be often found in low brushwood, especially in the thickets of the wild raspberry and along the outskirts of all the sholas, or strips of jungle which run down every ravine on the hill-side. About the Chinchona plantations they are so numerous when the trees are in flower in November, you might probably shoot a dozen specimens any morning off a single tree."

Nidification.—Mr. Davison writes to Mr. Hume ('Nest and Eggs,' 1874, p. 150) that the Tiny Honey-sucker breeds on the slopes of the Nilghiris in September and during the early part of October. "I have seen," he says, "young birds only just able to fly about the middle of October. The nest is suspended to a twig about 4 or 5 feet from the ground; it is similar both in shape and materials to that of *Leptocoma zeylonica*, but considerably smaller. They lay two eggs." Mr. Hume describes the eggs as "perfect miniatures of some of the eggs of *Arachnechthra asiatica*; in shape they are somewhat elongated ovals, a good deal compressed towards one end. They have scarcely any gloss. The ground-colour is dull greenish or greyish white, and it is thickly speckled and mottled all over, mostly so towards the larger end (where the spots have a tendency to become confluent and form a zone), with dull greyish white and olivaceous brown. The eggs measure 0.62 by 0.42 inch."

PASSERES.

Series B. TANAGROID PASSERES.

Wing with 9 primaries, the 1st of which is fully developed and very long.
(Cf. Wallace, Ibis, 1874, p. 410.)

Fam. DICÆIDÆ.

Bill variable, moderately short and wide at the base; curved and compressed in some, in others very thick and triangular, with the lower mandible inflated at the gonys. Wings pointed, with the 1st quill long. Tail of 12 feathers, usually very short, always less than the wings. Legs and feet strong. Tarsus scaled.

Of small size and of arboreal and mostly gregarious habit.

Genus DICÆUM.

Bill high and wide at the base, suddenly compressed beyond the nostrils, the upper mandible curved throughout, tip entire and very acute; gonys straight. Nostrils basal, oval, and placed close beneath the culmen. Wings with the 1st, 2nd, and 3rd quills nearly equal and longest. Tail very short and even at the tip. Tarsus longer than the middle toe and claw, and shielded with broad transverse scales; outer toe slightly longer than the inner; hind toe and claw large.

DICÆUM MINIMUM.

(TICKELL'S FLOWERPECKER.)

Nectarinia minima, Tickell, J. A. S. B. 1833, ii. p. 577.

Dicæum minimum (Tick.), Blyth, Cat. B. Mus. A. S. B. p. 227 (1849); Jerdon, B. of Ind. i. p. 374 (1862); Beavan, Ibis, 1865, p. 416; Holdsw. P. Z. S. 1872, p. 434; Hume, Nests and Eggs, p. 155 (1873); Ball, Str. Feath. 1874, p. 397; Legge, Ibis, 1875, p. 275; Fairbank, Str. Feath. 1876, p. 256.

Dicæum tickelliæ, Blyth, J. A. S. B. 1843, xii. p. 983.

Dicæum tickelli, Kelaart, Prodromus, Cat. p. 119 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 175.

"*Parasite-bird*," Europeans in Ceylon. *Sungti-pro-pho*, Lepchas (Jerdon).

Adult male. Length 3·4 inches; wing 1·85 to 1·95; tail 0·95; tarsus 0·45 to 0·5; middle toe and claw 0·4; bill to gape 0·45.

Female. Length 3·3 inches; wing 1·7 to 1·75.

Iris yellowish brown or brown; bill dark brown above, the lower mandible fleshy; legs and feet brownish slate.

Above olivaceous brown, slightly greenish on the rump; wings brown, the coverts and tertials with slightly paler margins; tail blackish brown; lores and cheeks albescent, darkening on the ear-coverts; beneath whitish, with a

dusky wash on the sides of the chest, and becoming flavescent on the centre of the breast and belly; flanks cinereous.

In some examples the secondaries are edged with olivaceous.

Young. Iris darker brown than in the adult, with a slaty outer circle; upper mandible tinged with yellowish, and its margin, together with the under mandible, yellowish.

Above more olivaceous than old birds; quills and wing-coverts edged greenish; throat and fore neck duskier than in adults.

Obs. I have not been able to compare Ceylonese examples with many from the mainland. A specimen in the national collection, marked "India," measures 1.95 inch in the wing, and 0.41 from gape of bill to tip. It is somewhat more olive-coloured on the back and rump than my specimens, but corresponds otherwise with them.

An allied species to this is *D. concolor* from South India, an inhabitant of the Nilghiris and other peninsular ranges. It is larger than *D. minimum*, and is, according to Jerdon, more albescent beneath. Dr. Fairbank remarks that it frequents a parasitical *Loranthus* which grows on the Australian Blackwood (*Acacia melanoxylon*), and gives the measurements of a female as follows:—Length 3.6, wing 2.1, tail 1.0, tarsus 0.55, bill from gape 0.5. This species might possibly occur in Ceylon. These Flowerpeckers are seldom shot, and it may have been passed over.

I should perhaps likewise notice another species described of late years from the Andamans, belonging to the subgroup containing the two species already referred to here. This is *D. virescens*, Hume (Str. Feath. 1873, p. 482). It "differs from *D. minimum* in its somewhat longer bill, which is very differently coloured, in the much greener hue of the upper surface, and in the olive-yellow tinge of the rump, upper tail-coverts, and abdomen. It is considerably smaller than *D. concolor*, is of a purer and lighter olive-green, and differs from that, as from *D. minimum*, in the rump and upper tail-coverts. Length 3.1 to 3.4 inches, wing 1.75 to 1.85."

Distribution.—This tiny bird is very numerous in Ceylon, and inhabits the whole island, irrespective of climate or elevation. It seems as much at home in the damp cool jungles of the Horton Plains as in the hot forests of the Northern Province or the warm humid "Mukalaney" of the south. It is found as plentifully near the sea as in the interior, and is very common in the cinnamon-gardens of Colombo.

It occurs, according to Jerdon, "throughout lower Bengal and the jungles of Central India, extending to the Himalayas, Assam, and Arakan. Blyth observed it in extreme abundance in the hill-jungles about Moulmein. It is also found, though rarely, in Southern India, being there replaced by *D. concolor*."

As it is so abundant in Ceylon, it is strange that it should be rare in the adjoining part of the mainland; but in this respect it, after all, only forms one of the many curious instances of the affinity of the avifaunas of Ceylon and Northern India. The Rev. Dr. Fairbank found it common on the western slopes of the Sahyadris, and near Bombay and Poona it is, according to Mr. B. Aitken, very numerous. Mr. Ball remarks that it is found in Sal-jungle in most parts of Chota Nagpur, though it is not very common anywhere. Captain Beavan recorded it as plentiful near Maunbhoom in the breeding-season.

Habits.—This Flowerpecker, which is the smallest of Ceylon birds, frequents the parasitic plants (*Loranthus*?) which grow on various trees throughout the island, none of which are so infested with this singular vegetable growth as the Cadju (*Sarcoclinium longifolium*). It may consequently always be met with where there are many of these trees, about the leaves and smaller branches of which it flits when it is not gorging itself on the berries of the parasite. In the forests it affects the various creepers, some of them of the *Pandanus* tribe, which entwine the trunks of large trees. It is usually a solitary bird; I have sometimes seen more than two in the same tree, but such is an exception to the rule. It is very active, springing from branch to branch of the thick bunches of parasitic plants, and then darting off to another tree with a quick dipping flight, uttering its sharp little monosyllabic chirp while on the wing. It appears, from personal observation, to be entirely frugivorous; and feeding so gluttonously on its favourite berries, it becomes stupefied to such an extent that it may sometimes be almost taken with the hand before flying off. Its bill is generally stained with the juice of some sort of berry or fruit whenever it is shot; and I have never detected any trace of insect-food in the crop of those I have procured. It is, however, said by Indian writers to be insectivorous; for Beavan writes (*loc. cit.*), "It has a weak piping note, and is met with in heavy jungle, in thick trees, busily engaged seeking amongst the leaves for insects."

Nidification.—The breeding-season in the Western Province, as well as I can ascertain, is in July and August; but the nests are so rarely found (Mr. MacVicar, of the Survey Department, and a very successful egg-hunter, being, I believe, the only person who has discovered it) that it would not be safe, with so little evidence in the matter, to restrict the season to any particular month. This gentleman, who found one nest in August containing three young birds, described it to me as being a beautiful little cup-shaped structure, suspended, about 7 or 8 feet from the ground, to the twig of a Cadju-tree, constructed of wild cotton, mingled with cobwebs and lichens, and about $1\frac{1}{2}$ " in interior diameter. Subsequently he writes me of having found another, which was hanging to the branch of a wild cinnamon-bush growing in a fence. This one was formed outside of "some soft substance like tow, with a few pieces of bark and some spiders' webs; the inside was entirely lined with white 'cotton.' It measured 4 inches in length and $2\frac{1}{4}$ in breadth, external dimensions." It contained an egg, on which the bird was sitting when the nest was found, and which is stated to be white, speckled with minute brownish specks. In India, Messrs. Beavan and Aitken have both taken the nests and eggs, and describe the latter as white. I am, notwithstanding, sure that my informant, who knows the bird too well to mistake it, is right in his identification of the speckled egg just noticed. Mr. Hume thus speaks of the nest found by Mr. Aitkin, "It is a beautiful little 'egg,' suspended by the pointed end (which is slightly, and only slightly, extended) from the point of junction of three slender twigs. The length of the nest is exactly 3 inches, the greatest breadth 1·7 inch. In front, from near the point of suspension to the middle of the nest, is an oval aperture 1·25 inch in length and nearly 1 inch in breadth. The whole nest is composed of the silky pappus of some asteraceous plant, or it may be of the silky down of the *Calotropis*, held together by a slender irregular webwork of vegetable fibres, in which here and there a very few minute fragments of the excreta of caterpillars and tiny pieces of bark and fine grass have been, perhaps accidentally, intermingled. The whole interior is soft, silky, felted down." Captain Beavan remarks that three pure white eggs brought to him measured 0·6 by 0·4 inch.

Genus PACHYGLOSSA.

Bill short and very stout, both high and wide at the base; culmen curved considerably; tip faintly notched, but not serrated; gonys deep and curved up to the tip. Nostrils linear, in a capacious membrane, and partly protected by a tuft; gape with minute bristles. Wing long; the 2nd quill the longest, the 1st slightly shorter and subequal to the 3rd, 4th slightly shorter than the 1st. Tail short and even. Legs and feet stout; the tarsus covered with obsolete transverse scales; anterior toes joined at the base, the outermost syndactyle; inner toe slightly shorter than the outer; hind toe and claw large.



PACHYGLOSSA VINCENS.

(LEGGE'S FLOWERPECKER.)

(Peculiar to Ceylon.)

Prionochilus vincens, Sclater, P. Z. S. 1872, p. 729; Holdsw. *t. c.* p. 483; Legge, J. A. S. (Ceylon Branch) 1873, p. 13; Sclater, *Ibis*, 1874, p. 2, pl. 1; Legge, *t. c.* p. 23; Holdsw. *t. c.* p. 126; Hume, *Str. Feath.* 1875, p. 493 (redescription).

♂ *ad.* suprà plumbeus indigotico nitens, uropygio clariùs plumbescenti-cinereo: tectricibus alarum secundariisque nigris, dorsi colore marginatis: remigibus rectricibusque nigris, his (duabus mediis exceptis) albo terminaliter maculatis, externis latius: facie laterali totà et colli lateribus pileo concoloribus: gulà et praepectore albis: corpore reliquo subtùs flavo, hypochondriis vix olivaceo lavatis: tibiis et subcaudalibus albis, flavo lavatis: subalaribus albis: remigibus infrà nigris, intùs albo marginatis.

♀ *ad.* mari similis, sed pallidior et suprà minùs nitens: dorso olivaceo lavato: tectricibus alarum quoque nigricantibus, olivaceo vix marginatis.

Adult male. Length 4.1 to 4.2 inches; wing 2.3 to 2.4; tail 1.2; tarsus 0.5; middle toe and claw 0.52; bill to gape 0.45. Iris reddish; bill black, lower mandible pale at the base; legs and feet blackish brown.

Head, hind neck, back, rump, and lesser wing-coverts dull steel-blue, palest on the rump, and with the concealed portion of the feathers dark; wings and tail blackish, the coverts and tertials edged with the hue of the back, the secondaries edged faintly towards the tips with bluish green; terminal portion of the three outer tail-feathers white, tip of the next pair the same; throat and chest white, changing into saffron-yellow on the breast and lower parts, and paling to yellowish on the under tail-coverts; under wing-coverts and basal portion of the inner webs of the quills white. In specimens in abraded plumage the rump assumes a whitish aspect.

Female. Length 3.9 to 4.1 inches; wing 2.15 to 2.3; bill somewhat lighter than that of the male; iris not so intense: legs and feet slightly paler.

Head and hind neck bluish ashen, changing into the olivaceous brown of the back, which is overcome with dark olivaceous green on the lower back and rump; wings paler than in the male, coverts edged with olivaceous; tail brownish black, the terminal spots less deep and confined to the three outer pairs of rectrices; breast much less bright than in the male, with the flanks cinereous.

Young. Males of the year are very similar to adults; the breast not so yellow. Iris brown or red-brown. Females have the iris in nestling plumage olive-brown, changing when older to reddish brown; bill with the base of lower mandible yellowish fleshy. Above dull greenish brown, changing to dull brown on the sides of the neck and face, the white of the chin and throat confined to the centre; sides of chest cinereous, under surface washed with yellow.

Obs. This species was classed by Dr. Sclater as a *Prionochilus*, a genus of Strickland's, instituted for the reception, as this gentleman tells us ('*Ibis*,' 1874, p. 1), of the birds described and figured in the '*Planches Coloriées*' of Temminck as *Pardalotus percussus*, *P. thoracicus*, and another Malayan species, *P. maculatus*. This group is characterized by minute serrations on the upper mandible, and hence the name—*πρίων*, a saw, and *χείλος*, a lip. They have likewise, as Mr. Wallace states in his note on the genus ('*Ibis*,' 1874, p. 411) and also writes me recently, a minute 1st primary. On again examining the Ceylonese bird and carefully comparing it with a closely allied congener from Nepal, *Pachyglossa melanoxantha* (Jerdon, B. of Ind. i. p. 378), I find that these serrations are not present in either, and in addition to this they possess but *nine primaries*, which at once precludes their being placed with the *Prionochili*. This latter genus, according to the system of classification followed in this work, would be located in the Sturnoid Passeres, while *Pachyglossa*, to which the Ceylonese form belongs (it being a congener of the Nepal species), must be placed among the Dicaeidae in the Tanagroid or nine-primary section of the Passeres. I have lately sent my specimens to Mr. Wallace for examination, in order to obtain the benefit of his valuable opinion; and he writes me that my bird being a decided *Pachyglossa*, this genus will now consist of three species—*P. aureolimbatà* (a beautiful species described by himself from Northern Celebes), *P. melanoxantha* from Nepal, and *P. vincens* from Ceylon.

P. melanorantha (figured in 'The Ibis,' 1874, pl. 1) is a rare species and larger than *P. vincens*, measuring in the wing 2.80 inches: the proportion of the quills differs slightly from that of the Ceylonese bird, the 1st quill being slightly shorter. The coloration is much the same as regards its distribution; but the sides of the throat are blackish slate, contracting the white into a broad stripe; the under tail-coverts also are yellow, like the breast and abdomen.

Distribution.—When this little bird was brought to the notice of the scientific world by Dr. Sclater in the 'Proceedings of the Zoological Society' in 1872, the credit of its discovery was given to myself, as the specimens which I had sent him from the south of Ceylon were considered to be the first ever procured. Mr. Hugh Cuming, however, a well-known collector of Ceylonese birds, had, as noticed by Mr. Holdsworth in 'The Ibis' for 1874, brought home a male of this species, which was, I conclude, overlooked among the skins acquired from him by the British Museum, and was not identified until after its rediscovery by myself nearly thirty years afterwards. I am glad, therefore, to be able to give the true history of its discovery to my Ceylon readers, and ensure the credit of it being given to Mr. Cuming.

It is, as far as we know, essentially a bird of the heavy rainfall districts. My first specimens were procured in 1871 in the Kottowe forest near Galle, where it is abundant. I subsequently found it in other jungles adjacent to this one, in the fine timber-reserves near Oodogamma, on the south bank of the Gindurah, and in the Kukkul Korale, more particularly in the Singha-Rajah or Lion-king forest. Thence northward its range extends into Saffragam, where I obtained it in the Kuruwite Korale, in the lower Peak jungles, and saw it even as far north as Avisawella. Mr. Bligh shot, in 1873, a fair number of specimens in Kotmalie, to which district, lying at the base of the western slopes of the main range, it must extend through Maskeliya and Dimbulla, in both of which valleys it will doubtless some day be found. Its habitat is, I suspect, limited to the damp forest region, consisting of the south-west of the island, the southern coffee-districts, Saffragam, and the western portion of the Central Province as above indicated. It may perhaps be found in Uva, but will not, I should say, extend into the low country of the Eastern Province.

Habits.—I subjoin here the following extract from my notes on this Flowerpecker contained in the Journal of the Ceylon Branch of the Asiatic Society for 1873:—"It dwells exclusively in high jungle (the 'Mukalaney' of the Sinhalese), and affects the leaves and smaller branches of moderately sized trees, but more particularly the luxurious creeper *Freycinetia angustifolia*, a species of *Pandanus*, which grows so plentifully in the southern forests, entwining and clothing the stately trunks so completely that they have, in the distance, the appearance of ivy-clad columns. It associates in small flocks, which, when this plant is in fruit, may be seen feeding on its seeds. Its movements are most active, now hovering for an instant over a flower, now clinging 'tit-like' to the underside of some chosen sprig. . . . Although it usually takes but short flights in the jungle, from tree to tree, its powers of locomotion are considerable, and at times it may be seen darting across openings in the forest from one belt to another. Its note is a weak *tze-tze-tze*, somewhat resembling that of the Long-tailed Tit of Europe (*Acredula caudata*), and which is scarcely audible on a stormy day amidst the sighing of the wind through the forest trees. It is generally uttered in concert by the flock when searching together for food." I observed that in the Singha-Rajah forest it frequented the flowers of the Bowittiya plant (*Osbeckia virgata*), but whether in search of insects or not I was unable to ascertain. The stomachs of nearly all the specimens I have procured contained succulent matter, evidently extracted from fruit and seeds; and I therefore suspect that it is almost entirely frugivorous. It does not always confine itself to low situations in the forests, for I have met with it in flocks frequenting the tops of the loftiest trees in the Oodogamma timber-jungles.

The breeding-season, I imagine, must be during the south-west monsoon, for the organs of examples killed in both June and August testified to their nidification being carried on during that period. It is probable that this bird builds somewhat similarly to its Nepalese congener, which, says Hodgson, "makes an ingenious pendulous nest."

The figures in the Plate accompanying this article are those of a male and female from the southern forests.

Genus PIPRISOMA.

Bill very short and wide at the base, triangular when viewed from above, compressed suddenly beyond the nostrils; culmen keeled and compressed between the nostrils, below which the margin is inflated; gonys very deep, ascending and keeled near the tip. Nostrils very small. Wings long; the 1st quill equal to or slightly less than the 2nd and 3rd, which are the longest; 4th equal to the 1st. Tail short, even at the tip, not exceeding the closed wing by more than the length of the middle toe. Tarsus longer than the middle toe and claw; toes rather slender, hind toe moderately long; claws stout and well curved.

PIPRISOMA AGILE.

(THE THICK-BILLED FLOWERPECKER.)

Fringilla agilis, Tickell, J. A. S. B. 1833, ii. p. 578.

Pipra squalida, Burton, P. Z. S. 1836, p. 113.

Piprisoma agile, Blyth, J. A. S. B. 1844, xiii. p. 314; id. Cat. B. Mus. A. S. B. p. 228 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 262; Jerdon, B. of Ind. ii. p. 376 (1863); Beavan, Ibis, 1865, p. 416; Blyth, Ibis, 1866, p. 365; Beavan, ibid. 1867, p. 430, pl. x.; Jerdon, Ibis, 1872, p. 18; Holdsw. P. Z. S. 1872, p. 434; Hume, Nests and Eggs, p. 158 (1873); id. Str. Feath. 1873, p. 434; Ball, ibid. 1874, p. 397, et 1878, vii. p. 209.

Chitlu-jilta, Telugu (Jerdon).

Adult male and female. Length 3·9 to 4·0 inches; wing 2·15 to 2·3; tail 1·1; tarsus 0·48; middle toe and claw 0·4 to 0·45; bill to gape 0·4.

Iris orange, with an inner golden circle; bill plumbeous brown, lower mandible bluish; legs and feet plumbeous.

Above olivaceous brown, greenish on the rump and upper tail-coverts, and with the margins of the wings and tail the same; centres of the feathers on the forehead slightly darker than the margins; wings brown; tail blackish brown, narrowly tipped with white on all but the two outer tail-feathers, which have a terminal white spot; lores greyish; face and ear-coverts brownish; a rim of minute pale feathers on the eyelid; fore neck and under surface white,

In Lesson's 'Century of Zoology' is figured (pl. 26) a very remarkable little bird, said to have been procured by a Dr. Reynard at Trincomalie, and named by Lesson *Prionochilus pipra*. The engraving certainly represents a bird belonging to this group of Flowerpeckers; but whether it is *Piprisoma*, *Pachyglossa*, or *Prionochilus* it is impossible to say. Lesson's description of this *rara avis* is in French, and could not be better translated than it has been by Blyth (notes on Ceylon ornithology, 'Ibis,' 1867, p. 306). I accordingly give it verbatim for the benefit of my readers:—"Upper parts brownish ashy; the wings and tail brown, with a russet tinge; throat and front of the neck rust-coloured; the rest of the lower parts brown, rayed (the feathers tipped in the figure) with whitish; vent and lower tail-coverts russet; axillary tufts brilliant violet; bill and tarsi black, the lower mandible whitish beneath. Length about 4 inches, the closed wing 2·25." The date given by the author for the publication of this note is April 1830. From that day to this the bird has never been heard of; and the extraordinary character of its plumage, exemplified in its possessing, in combination with an otherwise sombre dress, two brilliant axillary tufts like those of a Sun-bird, almost suggests the idea of a *made-up* bird!

The following is M. Lesson's note on the species:—"M. le Docteur Reynard a découvert cet oiseau à Trincomalie sur la côte de Ceylon. Ses mœurs sont inconnues, et ses caractères mixtes porteraient sans doute à en faire un petit genre intermédiaire à ces des *Pardalotus* et des *Pipra*, si le genre *Pardalote* n'était pas lui-même peu caractérisé."

the sides of the chest and breast with dull olivaceous mesial stripes to the feathers; flanks olivaceous; bases of the under tail-coverts dark.

Some examples are less conspicuously striated beneath than others: and one from the Uva district is greener than those from the Northern Province.

Young male. "Length 3.9 inches; wing 2.2; tail 1.1; bill at front 0.3. Iris differing from that of the adult, yellowish brown, darkest near the pupil, and without the bright 'thread' or circle round it; bill brownish horny, tip of upper mandible black, lower mandible paler; legs and feet dark leaden" (*Parker*, in epist.). Described as being like the adult; the orbital rim of feathers "dull white, and the outermost tail-feathers much paler than the rest; the forehead with indications of striae."

In a *young female* the terminal white spots on the lateral tail-feathers are almost absent.

Obs. In his paper on Ceylon birds (*Str. Feath.* 1873, p. 434) Mr. Hume calls attention to certain characteristics of Ceylon examples of this species, concerning which he remarks that "they have a much more decided green cast on the upper surface, especially on the rump and upper tail-coverts; they are slightly smaller, and the bills are a little shorter and somewhat less compressed towards the point." I have carefully noted these remarks and endeavoured to get together as large a series as possible for comparison; but skins of this little bird are by no means plentiful. I have examined four skins in the British Museum, two of which are from the North-west Himalayas, six of Mr. Ball's, and one of Mr. Elwes. The latter is from Saugor, Central Province, and Mr. Ball's skins are from Sambalpur, Satpura, and Talchin. The comparison of this small series with four Ceylon specimens tends to show that low-country Ceylon birds are smaller than Indian; but a hill example almost equals a Himalayan one. Two from this latter locality measure 2.4 and 2.45 inches. A Logole-oya (Uva) specimen measures 2.4. Sambalpur examples are as follows:—♀, wing 2.29; ♀, wing 2.38; ♀, wing 2.3; ♂, wing 2.4: Satpura, ♂, wing 2.3; Talchin, ♂, wing 2.4. In all these the wing is *slightly* more pointed than in the Ceylonese bird, the 1st quill usually almost equalling the 2nd, and in the others being a trifle shorter than it; in the Satpura specimen it is about $\frac{1}{16}$ inch less than the 2nd. The Ceylon specimens all vary in this respect, this feather in two falling short of the 2nd by nearly $\frac{1}{16}$. Were there, therefore, no variation in the continental birds our race might stand as a subspecies. With regard to the colour, the green of the Indian birds on the rump and upper tail-coverts is of a more yellow tinge than in the island race, which is characterized by its more olive tint. Newly moulted specimens are much brighter than birds in old feather. Males are greyer than females on the head. These several differences would appear on paper to have some weight; but on laying the two series of skins side by side I have been unable to separate them, the Ceylonese birds merely differing in that slight manner which one expects in such a small bird isolated somewhat from its fellows of the mainland.

Distribution.—This curious little bird, as far as it has yet been observed, seems to inhabit principally the midland portion of the northern forest tract. Layard obtained it on the Central road, and Mr. Parker, from whom I have received specimens, informs me that it is not uncommon at Madewatchiya and about Anaradjapura, and he has lately procured it at Uswewa in the month of July. I met with it in Uva, and obtained a specimen on the Logole oya at about 3000 feet elevation. It occurs, I believe, in the Kandy district, and would therefore appear to be scattered sparingly over a considerable portion of the island.

Jerdon writes of this bird, "It is found over the greater part of India, from the Himalayas to the Malabar coast. . . . most commonly in jungle-districts; but it is also seen occasionally in groves of trees in bare country. I have procured it at Goomsoor, on the Eastern Ghâts, in Malabar, and the Deccan. Blyth obtained it in the Midnapore jungles." Captain Beavan remarks, "This bird cannot be considered common in Maunbhoom, although it is certainly tolerably abundant during the breeding-season." In Kumaon it was observed by Mr. Thompson, who spoke of it also as breeding at Ramnuggur, which is on the borders of the sub-Himalayan range.

Habits.—The Thick-billed Flowerpecker frequents the tops of trees in forest, searching about among leaves and small boughs for insects, after the manner of *Dicaeum*. It is generally, according to my experience, solitary; but Mr. Parker shot one out of a troop of four or five in the Uswewa district. It feeds on spiders and minute insects; in Uva I noticed it frequenting small umbrageous trees overhanging a rocky stream in a glen. Jerdon remarks that it has a weak piping note and associates in small flocks; but Capt. Beavan testifies to the contrary, saying that he observed it alone, and says that its dull colours prevent its being seen. "Its note,"

he writes, "I should term a 'shrill' instead of a 'weak' piping, which can be heard at some distance, long before the bird itself is visible."

Nidification.—The present species breeds in India from the middle of February till the end of May, commencing, according to Mr. Hume, earlier in the plains than in the Himalayas. I imagine that in Ceylon it lays during the first three or four months in the year; but I have no certain data, beyond the fact of Mr. Parker shooting an immature specimen in June, and my own observations as to the old birds moulting in August. Its nest was beautifully figured in 'The Ibis' for 1867, together with the young birds, by Mr. Wolf, from specimens sent home by Captain Beavan. This naturalist writes ('Ibis,' 1865) as follows:—"The nest is very peculiar—a pocket-like structure suspended from a small bough which forms the roof, the entrance being from one side near the top. It is composed entirely of spiders' web and other silks, with which a pinkish-brown fluff (probably from some tree in flower) is felted together, making the nest look entirely of that colour. There is no lining; only the material employed is denser at the bottom than at the top of the nest. The great peculiarity is that the nest is as if woven in one piece, and, like a bit of cloth, can be shaken and compressed without doing it any injury. The length is 3 inches, breadth 2 inches; entrance-hole 1·5 inch long by 0·87 inch broad. The eggs are moderately elongated, of a light pink ground-colour, blotched indistinctly with pink spots, more frequent and massed at the obtuse end; they are large for the size of the bird, their length being 0·62 inch, and their breadth a little over 0·37 inch."

Mr. R. Thompson likewise writes to Mr. Hume:—"I obtained a nest of this bird at Ramnuggur, on the borders of the sub-Himalayan range, on the 12th May, which contained two eggs of a fleshy-white colour, thickly blotched with pinkish spots. The nest was a neat structure, pendent from a thin branch of a small leafless tree; it was entirely composed of the pubescent covering of the skins of a species of *Loranthus*, which the birds had scraped off, and, mixing with spiders' webs, had woven into a thin felt. The shape of the nest is that of a purse opening down the side." While taking another nest, he remarks that the old birds hovered about, and more than once perched close to his head. Writing from Modahpore, in March, he informs Mr. Hume that he "saw a couple fixing the foundation of their nest with cobwebs and the pubescent downy covering of the young shoots of *Butea frondosa*, which the birds bit off in small pieces and mixed with cobwebs, both birds at work alternating the time of arrival and departure with material."

From the above remarks it will be seen that this Flowerpecker constructs one of the most wonderful little nests known; indeed the editor of 'The Ibis' remarks that the one sent by Capt. Beavan was one of the most beautiful structures he had ever seen. Mr. Hume says two or three eggs are laid each time, and that he is inclined to believe that the birds have two broods at least in the year. The ground-colour varies from "rosy white to a decided pink, and the markings from brownish pink to claret-colour." They average in size 0·63 by 0·41 inch.

Genus ZOSTEROPS.

Bill somewhat curved, high and wide at the base, compressed towards the tip, which is obsoletely notched and very acute. Nostrils linear; a few rictal bristles. Wings with the 3rd quill exceeding the 2nd, which is longer than the 1st. Tail shorter than the wings, even at the tip. Tarsus longer than the middle toe and claw, and shielded with broad smooth scales; outer and middle toes slightly syndactyle, claws much curved. Eyes beset with a velvety fringe of white feathers.

ZOSTEROPS PALPEBROSA.

(THE COMMON WHITE-EYE.)

Sylvia palpebrosa, Temm. Pl. Col. 293. fig. 2 (1824).

Zosterops nicobaricus, Blyth, J. A. S. B. 1845, xiv. p. 563.

Zosterops palpebrosus, Blyth, J. A. S. B. 1846, xv. p. 44; id. Cat. B. Mus. A. S. B. p. 220 (1849); Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Jerdon, B. of Ind. ii. p. 265 (1863); Legge, J. A. S. (Ceylon Branch) 1870-71, p. 52; Holdsw. P. Z. S. 1872, p. 458, pl. xx. fig. 1; Adam, Str. Feath. 1873, p. 384; Hume, Nests and Eggs, ii. p. 397 (1874); Ball, Str. Feath. 1874, p. 417; Legge, Ibis, 1874, p. 22; Walden, *t. c.* p. 143; Morgan, Ibis, 1875, p. 322; Hume, Str. Feath. 1875, p. 143; Brooks, *t. c.* p. 252; Butler & Hume, *t. c.* p. 491; Hume, *ibid.* 1876, p. 463; Fairbank, *ibid.* 1877, p. 407.

Zosterops nicobariensis, Hume, Str. Feath. 1874, p. 242, et 1876, p. 291.

The White-eyed Warbler, Latham; *The White-eyed Tit*, Jerdon; *The Zosterops* of some.

Adult male and female. Length 4.1 to 4.4 inches; wing 2.05 to 2.1; tail 1.5 to 1.6; tarsus 0.6 to 0.65; middle toe and claw 0.5; bill to gape 0.45 to 0.49.

Male. Iris (very variable) brownish olive or olive-grey, or grey mottled with brown, and often with a pale outer circle; bill blackish, bluish at base beneath; legs and feet slate-blue.

Above uniform yellowish green, slightly yellower on the upper tail-coverts and sides of neck, where it blends into the primrose-yellow of the chin, fore neck, and upper part of chest; wings and tail brown, edged with a slightly greener hue than the back; lores black, above which the feathers are yellowish; a deep orbital fringe of white feathers; beneath albescent, shaded with greyish on the sides of the upper breast and on the flanks; centre of belly with a faint yellowish wash; under tail-coverts and edge of wing yellow; under wing-coverts white; the loreal spot varies in intensity, being blacker in birds which are in new feather than in others.

Female. Iris often tinged with reddish. I have myself only noticed this peculiarity in this sex; it may exist in the other.

Obs. Mr. Holdsworth remarks (*loc. cit.*) that specimens from the low country vary in size; I have found this to be the case as regards bulk, but not in the wing to any extent. Indian specimens have the grey of the flanks spreading more over the under surface than Ceylonese; they vary, however, in this respect, and the exceptions to the rule correspond too well with our birds to admit of any separation of the latter. The coloration of the upper surface and the throat are the same in both forms. As regards size, six examples in the national collection from various parts of India vary in the wing from 2.0 to 2.1 inches; one from Nilghiris, wing 2.05, tail 1.6 (this is paler beneath than some of the above-mentioned, but darker above); one from Tenasserim, wing 2.1, slightly darker than the Ceylonese examples; one from Nepal, wing 2.0; one from Darjiling, wing 1.95; four from

North-west Himalayas, wing 2.1 to 2.25. These data show that the species varies in size somewhat, the largest specimens, as may be expected, inhabiting the Himalayas. A Nicobar-Islands example has the upper surface of a darker green than most Indian ones, and possesses a well-defined pale superloral stripe, with the black of the lores passing under the eye. There are several closely-allied species of this genus; among them *Zosterops simplex*, Swinhoe, from China, is not distantly related to *Z. palpebrosa*; and *Z. buxtoni*, Nicholson (Ibis, 1879, p. 167), from Java, is a miniature of our bird, the back greener, the tail darker, the black of the lores passing under the eye, and the wings tinged with grey; throat and under surface as in *Z. palpebrosa*; wing 1.9 to 1.95.

Distribution.—The Common Zosterops, or White-eye, is a very numerous bird in Ceylon, and is more or less scattered over the whole of the low country, ascending likewise into the hilly regions to an altitude of about 3500 feet. In the Western Province and south-west it is particularly numerous, both on the seaboard and in the interior; but in the northern half of the island it appears to prefer the inland districts, for I always found it less abundant along the north-east coast than in the central forests; in these latter, however, it is local, and, like most other birds, comes much more into notice in one part than in another. It is common in the woods of the Eastern Province and in the jungles to the south of the Haputale ranges. In the mountainous country formed by the Morowak and Kolonna Korales I noticed it chiefly at the borders of forests, and in the Kandyan Province it is partial to the sparsely-timbered patnas in the wide valleys which are drained by the affluents of the Mahawelliganga; thus in the Pusselawa, Hewahette, Deltota, and other districts, as well as in that of Badulla, it is fairly common.

On the mainland it has a wide range, being found in various localities throughout the whole of India to the sub-Himalayan regions, and extends thence into Assam, Burmah, and probably to Tenasserim, in which province its presence is doubtfully recorded in 'Stray Feathers' by Mr. Hume. In the extreme south it is a common bird, being found both at the base and the summit of the Palanis, and also on the tops of the Nilghiri hills, where Jerdon remarks that it exists in great abundance. It therefore ascends to a greater altitude in the peninsula than in Ceylon. It likewise occurs in the Northern Ghâts, is common throughout the wooded portions of the Deccan, sparingly distributed in Chota Nagpur, rare in the Sambhur-Lake district, where Adam says he has only once seen it, and further west still is locally diffused, being common at Mount Aboo, but not found in the plains adjacent to it. Mr. Hume writes, "I have never seen it in or from Cutch or Sindh, nor have I specimens from Kattiawar; but Captain Hayes Lloyd reports it as common there, probably as pertaining to the Girwar region." It is found near Mussoori, and along the slopes of the Himalayas eastward; in Pegu it is likewise well known. Its *universal distribution throughout the Laccadives* is singular. Mr. Hume writes, "The White-eyed Tit is the one resident land-bird of the group; it occurs in every inhabited island that we touched at." The Andaman and Nicobar islands also come within its range, the representatives of the species there being somewhat different from continental birds, inasmuch as they appear, as a rule, to have longer bills and to be of a somewhat greener shade on the upper surface (the peculiarities of one example are noticed above). They were originally separated by Blyth as *Z. nicobarica*; but Mr. Hume considers that though they might form a variety of the true *Z. palpebrosa*, they cannot well be separated entirely.

Habits.—This little bird is most sociable in its proclivities, frequenting the leafy boughs and tops of trees in woods and forests, either in large flocks or smaller parties of a dozen or more. It searches about the leaves and blossoms of trees in flower, and feeds on insects, seeds, and buds; it is restless in its manners, the whole flock moving about in consort and uttering perpetually a plaintive monosyllabic whistle. On windy days it is more on the move than at other times, and its tiny note is heard above the roar of the storm in the forest more plainly than the louder voice of other birds. It is partial to the jack, bread-fruit, "tulip," and other trees growing about native villages; and in the afternoon, after its appetite has been appeased, little troops of four or five may be seen sitting huddled together on dead branches of, or bare twigs in, those umbrageous trees. At certain times of the year I have seen it in the Suriah-trees in the fort of Colombo, to which it is no doubt attracted when they are in flower. Although this White-eye partakes of insects, its diet is, for the most part, frugivorous, the consequence of which is that it is very destructive to gardens, picking off the buds of fruit-trees, as well as attacking the fruit itself. I have known caged individuals in England feed with avidity on dried figs.

Mr. Ball writes of the pluck which he observed these little birds display in the Satpura hills in attacking the Rose-Finch, a vastly more powerful bird, and driving it away from the flowers of the Mhowa (*Bassia latifolia*), which, he remarks, forms a favourite hunting-ground of this "Tit." In the gardens on the Nilghiris, Jerdon says it may be seen clinging to the flower-stalks and "extracting the minute insects that infest flowers, by the pollen of which its forehead is often powdered."

Nidification.—The White-eye breeds in June, July, and August, attaching its neat little nest to the horizontal fork of a small or moderately-sized tree, sometimes at a height of 20 feet from the ground, or suspending it between the twigs or branches of a small bush at a few feet from the soil. It is a frail but seemingly strong little work, made of fine tendrils of creepers, moss-roots, thin grass-stalks, and a little moss, carefully interwoven, and at the upper edges worked round the supporting twigs; the exterior is often mixed with pieces of seed-down, cotton, cocoons, &c., some of which substances are generally used for the lining of the interior as well; this is about $1\frac{3}{4}$ inch in diameter and is rather shallow. Mr. Morgan writes that it builds in the south of India a pretty little cup-shaped nest of golden-coloured moss and thistle-down lined with silk-cotton; he describes the eggs as being two or three in number and of an exceedingly pale blue colour, measuring in length 0.71 inch and in breadth 0.51. Some that I have examined were pale greenish blue and pointed at the small end.

In Mr. Hume's 'Nests and Eggs' will be found much interesting matter concerning the nesting of this White-eye in India, among which Captain Hutton tells us that the little oval cup is so slight and so frail "that it is astonishing the mere weight of the parent does not bring it to the ground; and yet within it three young ones will often safely outride a gale that will bring the weightier nests of Jays and Thrushes to the ground." The majority of the nests taken by him were composed of "little bits of green moss, cotton, and seed-down, and the silk of the wild mulberry-moth torn from the cocoons."

ZOSTEROPS CEYLONENSIS.

(THE CEYLONESE WHITE-EYE.)

(Peculiar to Ceylon.)

Zosterops annulosus, Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 267; Legge, J. A. S. (Ceylon Branch) 1870-71, p. 29.

Zosterops ceylonensis, Holdsw. P. Z. S. 1872, p. 459, pl. xx. fig. 2; Swinhoe, Ibis, 1873, p. 228; Layard, P. Z. S. 1873, p. 205; Legge, Ibis, 1874, p. 22; Holdsw. t. c. p. 123; Legge, Ibis, 1875, p. 410.

The Mountain Bush-creeper, Kelaart; *The Hill White-eye*, Europeans in Ceylon.

Suprà flavicanti-viridis, loris et plumis supra- et infraocularibus saturatè cinereis: annulo ophthalmico albo: tectricibus alarum dorso concoloribus: remigibus et rectricibus nigricanti-brunneis, dorsi colore marginatis: gutture toto et præpectore latè flavis: corpore reliquo subtùs albido, pectore flavicanti-viridi lavato, lateribus hypochondriisque delicatè cinerascens: tibiis, crisso subcaudalibusque latè flavis: rostro nigricante, ad basin schistaceo: pedibus plumbeis: iride brunnescenti-flavâ.

Adult male and female. Length 4.5 to 4.7 inches; wing 2.1 to 2.3; tail 1.6 to 1.75; tarsus 0.7; middle toe and claw 0.5 to 0.55; bill to gape 0.57 to 0.63.

Iris yellowish brown, or reddish brown, or pale brownish yellow (as variable as the last species); bill blackish, with the base beneath bluish or pale slaty; legs and feet bluish or pale leaden.

Above dusky olive-green, somewhat infuscated on the forehead and pale on the rump; wings and tail brown, edged with the hue of the back; a close, white, orbital fringe, as in the last species; lores, just beneath the eye, and from the gape down the side of the throat blackish; this gular streak varies in size and intensity; throat and fore neck pale greenish yellow, shading off into the green of the side neck; breast and lower parts albescent, shaded with greyish on the sides, and with a wash of yellowish down the centre of the breast; thighs and under tail-coverts greenish yellow; under wing-coverts whitish.

Females have the yellow of the throat greener, as a rule, than males, and appear, as in the common species, to have the eye reddish at times.

Obs. Although this species has long been known as a Ceylonese bird, it is only lately that it has been discriminated as new to science. Kelaart and Layard assigned to it the specific appellation of *annulosus*, which in reality was the name given by Swainson to an African species figured in his 'Zoological Illustrations.' The former, in writing of it as a Nuwara-Elliya bird, said ('Prodromus,' p. 102), "We fear that the Nuwara-Elliya *Zosterops* is wrongly identified; it is of a darker green than the common *Zosterops palpebrosus*;" he accordingly styled it, in his catalogue, by the above-mentioned name, which was likewise used by Layard*, who, however, doubted its distinctness from the low-country bird. In 1869 Mr. Holdsworth and myself examined specimens in the Asiatic Society's Museum, which he had presented to that institution, and but little doubt remained in our minds that it was a good species: in November of the following year I read a note on it at a Meeting of the Ceylon Branch of the Asiatic Society, and had the intention of giving it a name in my paper to be published in the Journal, p. 29 (1870-71); in the mean time, however, Mr. Holdsworth, who had taken up the subject more fully, informed me that he had worked it out, and was about to call it *Zosterops ceylonensis* in his paper in the 'Proceedings of the Zoological Society,' and I accordingly expunged my description from the Asiatic Society's Journal. It has been maintained by some that there is a *Zosterops* inhabiting the Nilghiris, which might be identical with the present species. Mr. Blanford called attention to this matter in the Journal of the Asiatic Society of Bengal, 1869, p. 170, in which he says that the Nilghiri race is "a little larger and appears to be darker in colour" than *Zosterops palpebrosa*. Mr. Swinhoe likewise writes, in 'The Ibis,' 1873, that he had a specimen from Captain Bulger's collection, marked "Madras,"

* Layard writes me to correct a mistake which occurred in his note on this species (P. Z. S. 1873, p. 205). The last sentence should read:—"I have not collected in Nuwara Elliya."

which he had shown to Dr. Jerdon, and pointed out the differences between it and *palpebrosa*, and further remarks that it appeared close to *Z. ceylonensis* in size and colour, but had no more yellow on the neck than the ordinary species. Nothing, however, seems to have been further noted of this supposed species; and whatever it may be, I doubt not that it is different from our bird.

Distribution.—This White-eye is a very abundant species in the main range, especially on the Nuwara-Elliya plateau; it is, however, numerous in all the circumjacent coffee-districts, down to about 3000 feet, and likewise in the Haputale, Badulla, and Madulsima ranges; beyond the valley of Dumbura it frequents the upper parts of the Knuckles and the east and west Matale hills. In Maskelya it is common, and in the Peak forests I met with it in great abundance down to an elevation of 2000 feet. On the south side of the great valley of Saffragam it reappears and inhabits the coffee-districts of the Kolonna, Kukkul, and Morowak Korales, and ranges thence into the subsidiary hill forests between the upper part of the Gindurah river and Galle. Here I found it, as recorded in 'The Ibis,' 1874, on the summits of the Opaté and Oodogamma hills, as low down as 1500 feet, which is the least elevation at which I have observed it. It would be interesting to know whether it inhabits the isolated Muneragala range, which stands out in the low country beyond the slopes of the Passara and Lunugala hills, and is quite disconnected from them.

Habits.—The Hill White-eye frequents both the interior and the edges of forest, patna-jungle, underwood, and low bushes in open places near woods and so forth, affecting the lateral branches of tall trees, the tops of smaller ones, and the foliage of shrubs and undergrowth. It has no partiality for any situation in particular, but consorting in very large flocks, where insect life abounds, the birds composing them may be found both high up and low down in their leafy haunts, little parties clinging to the twigs of the smallest bushes, others searching the branches of sapplings, while the foliage of the monarchs of the forest high overhead teems with dozens more, the whole concourse moving on by twos and threes in quick succession as the leaves are cleared of their insect-pests and all the tempting buds eagerly nipped off. It is seen much about the edges of paths in the jungle; and in such localities it exhibits an utter fearlessness of man, allowing so near an approach that I have often stopped to watch the movements of a pair feeding close to me, and been able to admire the handsome white eye-fringe as well as if I had had its tiny owner in my hand. Its principal note is a sparrow-like chirp, which it is particularly energetic in uttering when in large flocks.

Mr. Holdsworth writes of it:—"As these birds are very common, and constantly flying in small parties from bush to bush, uttering their lively chirp, they attract attention; and the little White-eye is familiar to most Europeans who visit Nuwara Elliya. In the winter the males associate in flocks of fifteen or twenty; and it is then rare to find a female in their company. I believe the latter are for the time solitary, as, with one exception, the numerous specimens I have shot from different flocks have proved to be males." In the months of December and January I have seen *hundreds* in a flock in the Nuwara-Elliya jungles.

Nidification.—This species breeds from March until May, judging from the young birds which are seen abroad about the latter month. Mr. Bligh found the nest in March on Catton Estate. It was built in a coffee-bush a few feet from the ground, and was a rather frail structure, suspended from the arms of a small fork formed by one bare twig crossing another. In shape it was a shallow cup, well made of small roots and bents, lined with hair-like tendrils of moss, and was adorned about the exterior with a few cobwebs and a little moss. The eggs were three in number, pointed ovals, and of a pale bluish-green ground-colour. They measured, on the average, 0.64 by 0.45 inch.

On the Plate accompanying my article on *Pachyglossa vincens* will be found a figure of the present species.

PASSERES.

Fam. HIRUNDINIDÆ*.

Bill short, very broad at the base, triangular when viewed from above; flattened, straight, the culmen gently curved at the tip, which is entire; gape smooth and very wide. Wings long and pointed, the first two quills longer than the third; the secondaries very short. Tail of 12 feathers, variable in shape and length. Legs and feet weak; tarsus short, generally bare, and covered with smooth scales, in some feathered.

Genus HIRUNDO.

Bill typical in shape, compressed near the tip. The nostrils basal, elongated and exposed, placed in a depression near the culmen. Wings with the 1st quill equal to or longer than the 2nd. Tail long and deeply forked. Tarsus equal to the middle toe, and shielded in front with *smooth* broad scutes. Middle toe much longer than the lateral ones, which are subequal; hind toe moderately large.

HIRUNDO RUSTICA.

(THE COMMON SWALLOW.)

Hirundo rustica, Linn. Syst. Nat. i. p. 343 (1766); Blyth, Cat. Mus. A. S. B. p. 197 (1849); Jerdon, B. of Ind. i. p. 157 (1862); Sharpe & Dresser, P. Z. S. 1870, p. 244; Holdsw. P. Z. S. 1872, p. 418; Shelley, B. of Egypt, p. 120 (1872); Hume, Nests and Eggs, i. p. 72 (1873); id. Str. Feath. 1874, p. 154 (Andamans); Salvadori, Ucc. Born. p. 125 (1874); Dresser, B. of Europe, pt. 39 (1875); Irby, B. of Gibraltar, p. 103 (1875); Legge, Ibis. 1875, p. 275.

Hirundo panayana, Gmel. Syst. Nat. i. p. 1018 (1788); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 91 (1854).

Hirundo gutturalis, Scop. Delic. Flor. et Faun. Insubr. ii. p. 96 (1786); Kelaart, Prodromus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 170; Swinhoe, P. Z. S. 1871, p. 346.

* The Swallows are classed by Jerdon and other naturalists (Van der Hoeven, Kaup, &c.) with the Swifts; and, on account of their outward similarity to them, it is the popular belief that the two families are closely allied. No greater error, I think, could exist, although, as Mr. Wallace pithily remarks in a letter to me on the subject, "*they constitute the most remarkable case known of outward resemblance and real diversity.*" The Swallow, in the formation of its sternum, legs, and foot, and in the structure of its wing, as also in the number of the tail-feathers, is strictly a *Passerine* bird. The Swift is a *Picariform* bird in its sternum and foot, which latter is most remarkable, all the toes being either directed forward, or the hind toe being reversible to the front. The bill is unlike that of a Swallow, resembling those of the Nightjars. Blyth, Huxley, and others hold the Swallow to be *Passerine* in all respects; the former, who took strong exception to what he styled Jerdon's antiquated notion of associating the two families, remarks (Ibis, 1866, p. 230):—"The *Hirundinidæ* illustrate and exemplify, even to the minutest detail, the special *passerine* type of conformation, which is merely modified externally to confer extraordinary vigour of wing." The hind toe, in some of the Sand-Martins, is said to have a tendency to reverse; this feature is not exemplified in the case of the two English species.

Hirundo jewan, Sykes, P. Z. S. 1832, p. 83.

The Panayan Swallow and *Javan Swallow* (Lath.); *The Chimney-Swallow*, popularly in England; *Golondrina*, *Oroneta*, Spain (Saunders); *Andorinha*, Portuguese; *Zwaluw*, Dutch; *Ababil*, Hind.; *Talli illedi kuravi*, lit. "Bird without a head," Tamul; *Wauna Kovala*, Telugu; *Paras pitta* of the Mharis (Jerdon); *Ui Karloghach*, Yarkandis (Scully); *Khotaifa*, Moorish (Irby); *Tāmm pādy*, Tamil; *Füsti Fecske*, Transylvania. *Wāhālanīya*, lit. "Rain-fowl," Sinhalese.

Adult male (winter, Ceylon, 3 examples). Length 6·8 to 7·0; wing 4·5 to 4·7; tail 3·5 to 3·8; tarsus 0·4; middle toe and claw 0·6; bill to gape 0·55 to 0·6; depth of tail-fork 2·0 to 3·0.

Iris brown; bill, legs, and feet black.

Head and upper surface glossy blue-black; wings and tail dull black, the quills with a bluish tinge on the inner webs; the longer tail-feathers with a greenish lustre, and the shorter with a bluish one; all but the central rectrices with a large white spot, which, on the lateral pair, runs out to a point; forehead, chin, throat, and upper part of chest ferruginous chestnut, bounded beneath by a black interrupted pectoral band of variable width; under surface, under tail and under wing-coverts white, tinged on the sides of the breast and at the vent strongly with rufescent.

Female. Wing about 4·5 inches; lateral tail-feathers about 0·75 inch shorter than in the male.

Iris, bill, legs, and feet the same.

Differs from the male in having the under surface almost pure white.

Young (Krasnoyarsk, Siberia, July). Head brown, glossed with metallic green; front of the forehead sienna-red; back and rump blackish green, with a greyish hue; wings dark greenish brown, coverts glossed with green; chin and throat pale sienna, beneath which is a broad brown pectoral band, well defined above, but washed in the centre with sienna; beneath white, suffused with delicate reddish buff, the centre of the breast less so than the sides; flanks dusky; outer tail-feathers 0·9 longer than the central pair; wing 4·9 inches.

On growing older the sienna colour of the forehead fades, and is encroached upon by the black, and also the reddish hue of the under surface vanishes, while the red throat changes to buffy white. On arriving in Ceylon in October the yearling bird has the edge of the forehead only *rufescent greyish*, the throat rufescent white (specimens often exemplifying the change of colour in the feathers by patches of red and whitish), and the under surface whitish, with the pectoral band brown; the lateral feathers are still short and rounded at the tips. When leaving the island during the spring moult, the forehead and throat become rufous, the pectoral band becomes black, and the under surface in the males is suffused with buff.

Obs. The above descriptions relate to the Asiatic race of the Common Swallow which visits Ceylon. Old birds arrive in the island in much the same plumage in which they leave England in October, the under surface in the males being only tinged here and there with buff. A Hampshire specimen in my collection corresponds in this respect with one shot at Galle in October. I do not know whether, as a rule, they arrive at their breeding-haunts, after leaving Ceylon, with the under surface as much suffused with reddish as is the case with the males on their arrival in England; some Central-Asiatic summer examples I have seen exhibit this character, so that it is probable that the spring plumage on both continents is the same.

As the Swallow ranges eastward from Europe it has a tendency to become smaller, and to acquire a pectoral band more or less interrupted at the middle by the rufous colour of the throat, thus approaching the American form, *H. horreorum* (found, according to Mr. Dresser, beyond Lake Baikal), which is closely allied to the European species, and has the band merely in the form of a black patch on the sides of the chest, and the underparts rufescent or yellowish brown.

This incomplete banded and usually small Asiatic form is the *H. gutturalis* of Scopoli; and it is customary to class most Indian specimens of the Common Swallow under that name. Chinese specimens, *as a rule*, are typical, and so are those from Tenasserim (Hume, Str. Feath. 1878, p. 41). Seven adults in the Swinhoe collection vary in the wing from 4·4 to 4·6, and have the pectoral band incomplete. Our Ceylon birds belong to this form, but they are intermediate in size between it and the true *rustica*. I state this with reserve, as I have only a small series; but one young female measures nearly 4·5, and this is about the average size of Swinhoe's adults.

On the other hand it must not be supposed that all Asiatic specimens can be strictly classed with this smaller race; they vary exceedingly, some being large, with the characteristic European black pectoral band, and some equally

so, with the rufous-marked band; and it is this fact which prevents my considering *gutturalis* a good species; at the same time it cannot be denied that birds from certain districts do run small. Whether these are all bred in the same locality it would not be possible to say. The results of my examination of a series of skins are as follows:—I find some Siberian skins, and one from Amoy, with the band quite as black as some from England; and, as regards size, a Hampshire specimen, one from Siberia, and one from as far east as Formosa measure 4·85, 4·8, and 4·75 respectively, and all have the same black pectoral band. Several examples from Central Asia (Kardatchino, Sargaschino, &c.) are very large (wing 5·0), and have the black band much interrupted by the rufous colour of the throat. These latter have longer tails than any others which I have seen, the outer feathers in one example being 3·5 inches longer than the centre pair. Finally, Mr. Hume finds that in Sindh and Western India the Swallows are of the true *rustica* type, with a wing of 4·8 to 5·0 (many English specimens do not reach 4·8) and the tail 4·7 to 5·0. The inference, therefore, to be drawn from these data is that in Asia the Common Swallow varies in size and colouring in different districts of the continent, and that its several races either intermix or contain here and there birds typical of each other in such a manner that the Asiatic form cannot be considered a good species.

In Palestine and India there is a resident and closely allied species to the common Swallow, viz. *Hirundo savignii*, Stephens. This bird (which is the *H. cahirica*, Licht., of Canon Tristram, and *H. riocourii*, Audouin, of Shelley, 'Birds of Egypt') differs from the present species in having the under surface from the band downwards chestnut-red instead of whitish or buff as in the latter; the spots on the tail are rusty white instead of pure white. Canon Tristram remarks that this colour is constant, "neither fading nor intensifying" at any time of the year. "Specimens shot at all seasons are precisely similar" ('Ibis,' 1867, p. 361). This bird is reported to visit Europe and to breed with *H. rustica*; but Mr. Dresser is of opinion that brightly coloured examples of the latter species in spring plumage have been mistaken for it. Canon Tristram, in the same article, says that the two never interbreed in Palestine.

Hirundo tytleri (Jerdon, App. vol. iii. B. of India, p. 870) is an Indian member of this group of Swallows. It appears to be scarcely distinguishable, as regards its plumage, from *H. savignii*. The original description is, "Glossy black above, beneath dark ferruginous chestnut; form and size of *H. rustica*." It was discovered at Dacca, and appears to migrate to Pegu and Tenasserim, affecting the first-named province from July till May.

From Messrs. Sharpe and Dresser's researches (P. Z. S. 1870, and 'Birds of Europe') it would appear that the European Swallows undergo, as immature birds, the same changes which I have described above; they state that the sienna frontlet entirely disappears when the bird is in its winter plumage in South Africa, and that there is a mere indication of it by the presence of a few pale buff-coloured feathers. This is just as it is in Ceylon with our birds.

Distribution.—The Swallow arrives usually in the north of the island about the second or third week in September, the young birds coming in first. The period of its arrival is, however, somewhat irregular, and perhaps depends upon the break up of the south-west monsoon to some extent. Its numbers are increased considerably in about a fortnight after its first appearance, and it then begins to spread southward, but does not do so always as regularly as might be expected. Mr. Parker has observed it at Puttalam as early as the 20th September one year, when my earliest date noted down at Colombo was not till after the 1st of October. At other times I have seen it at Colombo in the middle of September, and I observed it at Galle in 1872 on the 15th of that month. It inhabits the whole of the low country, and likewise ascends into the hill-districts to a considerable elevation, but does not inhabit the higher regions in any abundance. It leaves the island completely about the second week in April, quitting the southern districts a week or two prior to that date. It is, I think, commoner on the west coast than on the east.

About the first week in August, according to Captain Butler, the Swallow arrives in the Mount-Aboo district, and leaves again as early as February; it soon spreads throughout India, but does not seem to visit all districts at the same time, for Captain Beavan writes that they visit Maunbhoon in January and leave quite by the end of February. In the Andamans, according to Messrs. Hume and Davison, they do not disappear until May, from which I gather that the birds inhabiting those islands (although Mr. Hume, when writing of them in 1874, considered them identical with the English bird) must belong to the *gutturalis* type which visits Tenasserim, and which migrates in a different direction to those which inhabit Western India. Not a few breed along the Himalayas from 4000 to 7000 feet, while still more remain in Cashmere for that purpose, and Captain Hutton found them nesting abundantly at Candahar. On the plains of Eastern Turkestan Dr. Scully says they arrive (from the south I conclude) about the middle of April, breeding there

in May and June. Thence northward it is found throughout the vast extent of Central Asia and Siberia from west to east (except perhaps in the north-east of Siberia and Kamtchatka), and ranges above the 60th parallel of latitude. It inhabits all China and Formosa in summer; and Mr. Dresser says that there is a specimen in the Cambridge Museum from the Philippines, thus extending its range very far to the eastward. Dr. Meyer, in his "Field-notes from Celebes," records it from Menado, Tello (South Celebes), and likewise from the Togian Islands. It also visits Java, Sumatra, Borneo, Batchian, and Morty Island.

Migrating to the north from Africa it spreads in the spring through the whole of Europe, passing through Egypt, according to Captain Shelley, from the south in April. Further west, however, its advent in Europe is much earlier; for we find Col. Irby recording it as passing over from Tangier, where some remain to breed, in January and February; and Mr. Howard Saunders was informed that it usually arrived at Malaga on the 25th of the former month. It must remain, however, in Spain for some time before venturing into more northerly climes, as we seldom see it in England before the middle of April. The migratory stream from the south of Africa, where the Swallow winters in great numbers, continues to flow for some months after these Tangier birds commence to move. I saw it in considerable force at St. Vincent on the 15th of April, 1877; and Governor Ussher ('Ibis,' 1874, p. 62) obtained specimens in complete plumage in February and March at Cape Coast, Western Africa, and noticed that it left the Gold Coast before the 1st of May. Mr. Godman found it breeding abundantly in Madeira and the Canaries, but is unable to say whether it is stationary there; other observers remark that it only occurs on passage in the Canaries. In Teneriffe it arrives after the Swift. In Sardinia, according to Mr. A. B. Brooke, "it arrives in small numbers about the end of February or early in March, from which time they keep gradually increasing in numbers. Young birds were hatched about the 29th of May." Not content with overspreading the temperate parts of Europe, it perseveres in its onward journey to the very northern coasts, and thence further even to the shores of Nova Zembla, and even to Spitzbergen, it having been seen there by Mr. Arthur Campbell's exploring party in 1874. It is a rare straggler to Iceland, and has never yet been known to occur in Greenland.

Concerning its return to winter quarters in Africa, we find that some remain throughout the season in the northern part. Mr. Tyrwhitt Drake says that it is seen all the year round in Tangier and Eastern Morocco, so that it both breeds and winters there. Captain Shelley likewise considers that it may be resident in Egypt to a small extent, as he obtained an immature specimen on the 28th February; but the fact that it was abundant in Nubia in May is, I think, still more conclusive that it breeds in North-eastern Africa and doubtless remains throughout the year. Some examples would appear to remain in South Africa during the winter, or to return very early from breeding-grounds in the north of the continent; for Layard saw one on the 27th of July at Cape Town, and again another on the 30th August; this latter, he remarks, was probably a new arrival from the north.

Habits.—Much might be written concerning the habits of the favourite harbinger of our English spring; but they are well known to the most casual observer, and my space will not permit of any lengthened dissertation on the economy of this interesting bird. Of late years, since the climate of old England has undergone such changes, the saying that "one Swallow does not make a summer" is disagreeably true; but, nevertheless, the first welcome sight of the sweet bird, its shining plumage illumined by the fitful sunbeams of a chilly April day, conduces to the hope that soon the bitter east wind will have blown itself out, and that Nature must speedily array herself in that joyous verdant attire which makes the warm English May-day so inexpressibly lovely. To the resident in Ceylon the Swallow brings no such pleasant prospect; it arrives in the midst of the wind and rain with which the south-west monsoon dies out, and foretells nothing but the usual dry Christmas weather of this part of the tropics. Yet its presence on the Galle Face at Colombo, as it skims along just above the turf on a bright though windy morning, or sits in rows of a dozen or more twittering its winter notes on the telegraph-wires at noon, is not without a charm, and reminds one of the home that has been left behind far beyond the western horizon. The time and place, however, in which to see the Swallow to perfection is when it is careering over a beautiful English lawn on a bright June morning, sweeping round the handsome conifers and beneath the spreading oaks; or when, glancing out of some rustic barn, it darts like a polished arrow down the tiny brook or round the village green in search of a mouthful for the little brood so snugly housed against yonder beam. In Ceylon we miss the pretty little chattering song of the male in the

breeding-season, although it does commence it before leaving in March. Scores of these birds may be seen perched on the telegraph-wire crossing the "Lotus-pond" at Colombo, a spot which furnishes a never-failing supply of insects; and they may frequently, as in other countries, be observed seated on roofs or on some little eminence on the ground. As is the case in England, before leaving the island they collect in flocks, but of much fewer numbers, as there are no young birds to congregate together. Few birds enjoy such an immunity from persecution as the Swallow; it is rarely shot except by those who are really in want of skins for scientific purposes. Favier has an interesting note with reference to the Moors and the Swallow; he says "the Moors believe it offends God to kill these birds; in the same way they believe it pleases or soothes the Evil One to kill the Raven. The stories on which this superstition is founded are too long to relate; but I was informed by one person that the Swallow and White Storks were inspired by Allah to protect the harvest and the country from noxious insects and reptiles, and that the birds themselves (knowing the benefits they confer on man) ask in return protection for their offspring by building their nests on the walls of towns and houses."

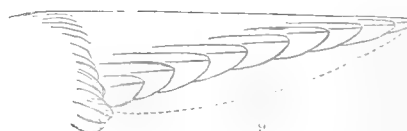
Nidification.—In India and on its northern confines (the only region we have to do with, as regards its nesting, in this work) the Swallow breeds during May and June. To the south of the Himalayas it breeds along the whole chain, from Cabool to Assam, at from 4000 to 7000 feet; it has been known to nest at Simla, Murree, Darjiling, Dhurumsalla, and at Asaloo on the Naga hills, in which latter place Col. Godwin-Austen observed it. In Turkestan, according to Dr. Scully, it makes a mud nest on the roofs of houses, the number of eggs laid being three or four.

The Swallow's nest is familiar to every Englishman; made of little pellets of mud brought by the birds in their mouths from the neighbouring brooks, ponds, or muddy roads, and fixed to the side of a beam or rafter, or against a wall, generally below the eaves, it is quite a work of art. It is very strong and durable; the very bottom foundation (as is only right and proper in architecture) is commenced first, the sides are then proceeded with, and then the bowed out part commenced and carefully worked at till the semicircle is complete. The interior is lined with a little grass and then with feathers, on which the eggs repose. The number of eggs is usually four, pure white, spotted all over with moderately sized specks, blotches, and spots of brownish red. Mr. Hume describes some taken in the Himalayas, where the bird builds in the corners of verandahs, as freckled and mottled all over with small specks of pale brownish red. The average size of seventeen eggs taken in India was 0.76 by 0.53 inch.

The subjoined woodcuts of the bill, wing, and foot of the Swift and of the Swallow will, I hope, illustrate to my non-scientific readers the distinguishing characters I have alluded to in this article. The wings are reduced, but the heads and feet are of the natural size.



10

Swift (*Cypselus affinis*).

11

Swallow (*Hirundo rustica*).

HIRUNDO HYPERYTHRA*.

(THE CEYLON SWALLOW.)

(Peculiar to Ceylon.)

Hirundo hyperythra (Layard), Blyth, J. A. S. B. 1849, xviii. p. 814; id. Cat. B. Mus. A. S. B. p. 198 (1849); Kelaart, Prodrömus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 170; Blyth, Ibis, 1867, p. 306; Gould, B. of Asia, pt. xx. (1868); Holdsw. P. Z. S. 1872, p. 419; Legge, Ibis, 1874, p. 13, et 1875, p. 280.

Cecropis hyperythra, Jerdon, Ibis, 1871, p. 352; Hume, Str. Feath. 1877, p. 266.

The Red-bellied Swallow, Kelaart; *The Red-breasted Swallow*.

Wəhalaniya, Sinhalese.

♂ ad. suprà purpurascēti-niger, interscapulio paullo fulvo vario, plumis basaliter et marginaliter fulvis: uropygio latè castaneo: alis caudaque cum supracaudalibus purpurascēti-nigris: loris pileo concoloribus, infrà castaneo variis: facie laterali et regione parotica saturatè castaneis, plumis obscurè purpurascēti striatis: corpore subtùs castaneo, gutture et pectore angustissimè nigro striolatis: subcaudalibus longioribus, purpurascēti-nigris: subalaribus pectori concoloribus: rostro nigro: pedibus vinascenti-brunneis: iride brunneà.

Adult male and female. Length 6·5 to 6·8 inches; wing 4·6 to 4·9; tail 3·1 to 3·3, centre feathers 1·4 shorter than the external; tarsus 0·5 to 0·6; middle toe and claw 0·6; bill to gape 0·6.

Iris sepia-brown; bill deep brown, in some blackish, base of lower mandible reddish; legs and feet vinous brown.

Head, hind neck, back, scapulars, wing-coverts, and longer upper tail-coverts glossy blue-black; the bases of the feathers of the back bright buff; wings and tail dull black, glossy near the tips of the feathers; the inner margins of the primaries brown; entire under surface, including the sides of the neck and a band from $\frac{1}{2}$ to $\frac{3}{4}$ inch wide across the rump, light, glossy, chestnut-red, each feather, except on the belly, vent, and rump, with a *plainly defined* black shaft-streak; the ear-coverts with a broader but less plainly defined blackish-brown shaft-stripe, and their bases black; lower portion of loreal region obscure chestnut; longer under tail-coverts blue-black; under wing-coverts paler chestnut than the breast, bases of the feathers along the edge of the wing black; shafts of primaries whitish beneath, brown above.

Young. Immature birds have the hue of the under surface paler than adults, and the shaft-streaks not so clear.

Obs. This Swallow, for years after its discovery in the island, was considered peculiar to it. The late Lord Tweeddale received a red-bellied Swallow from Malacca, which he considered identical with ours; and consequently *H. hyperythra* became a Malaccan bird, and, as such, appears in Mr. Holdsworth's excellent catalogue. Mr. Hume has, however, lately obtained Malaccan specimens, and finds that the peninsular bird is much larger, "wing 5·55 against 4·75 to 5·0" (my largest specimen measures 4·9), has a proportionately smaller bill, the chestnut rump-band much wider (1·2 against 0·8), and the shafts of the earlier primaries black instead of brown; the colouring of the underparts and the rump-band is likewise deeper than in our bird. I have examined a specimen in the British Museum, and it is clearly a good subspecies or local race of *H. hyperythra*. The upper surface is much more brilliant, and the deep chestnut underparts, which are devoid of striae, are at once noticeable. Mr. Hume has named it *H. archetes* (Str. Feath. 1877, p. 266), but it was previously named *H. badia* by Cassin (Gray, Hand-l. B. i. p. 69).

Distribution.—This fine Swallow was discovered by Layard, who met with it in 1849 near Ambepussa. It is widely distributed throughout all the low country, with the exception of the extreme north, where I have

* This Swallow is often placed under the subgenus *Cecropis* (Boie), which was established for the reception of certain species which have the underparts streaked and often rufous, as well as the head or rump, or both. I shall, however, retain all the Swallows under the one genus, and point out the characters upon which the different *subgenera* have been founded. These have either reference to plumage or to shape of tail—the first not always, in my opinion, of *generic* worth; and the latter a character of but little value in the Swallows, for it is unaccompanied by any corresponding structural variation, such as shape of bill or wing.

not noticed it. In the forest-districts lying between Dambulla and the latitude of Manaar it is local, being chiefly confined to small tracts of cultivation in the vicinity of tanks; in the Eastern Province, which is equally wild, it is restricted to similar localities, and in the Western Province is found principally in the interior. So plentiful is it, however, in the south-west of the island, that it is the common Swallow of the town of Galle, and seems to affect the sea-coast quite as readily as the interior, except during the wet windy weather of the south-west monsoon, when it retires for shelter to the secluded vales away from the sea-board. About Kandy, and in the Central Province generally up to 3000 feet, it is common, and in Uva and Haputale is found much higher than that elevation, for I have known it to breed at 4000 feet in the latter district. Mr. Bligh has seen it once at Nuwara Eliya; but it is rare on that elevated plateau, although in many of the coffee-districts it may be seen hawking at higher altitudes than that of the Sanatorium. In the Morowak-Korale district it is not uncommon.

Habits.—Our Ceylon Swallow frequents towns and villages alike with the country. In the latter, marshes and paddy-fields, open glades in secluded valleys, and lonely tanks in the wilds of the jungle are the places to which it is partial. It is found in the Central Province a great deal about estate-stores and bungalows, and often consorts there with the little Bungalow-Swallow, breeding in cattle-sheds and outhouses and permanently frequenting their vicinity. It is a characteristic bird of the wild village tanks in the Vanni, and its cheerful chirrup is often one of the first bird-sounds which meets the ear, on the sportsman suddenly emerging from the forest and finding himself standing at the brink of one of those interesting places. Several have perhaps been resting on a dead log, half covered with weeds and water, or sitting on the dried mud of the bed of one of these small reservoirs, and finding the solitude of their retreat suddenly invaded, glide off on the wing, uttering their curious guttural notes, at the same time that, from the same cause, half a dozen lazy-looking but watchful crocodiles rush, with a mighty splash, into the muddy pool. Such haunts as these literally teem with insect-life; and I have seen scores of these Swallows hawking about a small water-hole of about half an acre in extent, which was all that remained of what was, in the wet season, a fine sheet of water. Its flight is slower than that of most Swallows, and it often sails along on outstretched wings, now and then making a sort of circle in its course. In the south it is fond of frequenting paddy-fields made in the narrow glades lying between the low wooded hills characteristic of that part.

Nidification.—The Red-bellied Swallow breeds in the north, west, south, and centre of the island from March until June, constructing a Martin-like nest in outhouses, open dwellings, or under culverts and bridges. The nest is composed externally of mud and lined with feathers; it is large, and the entrance is situated usually at the end of a spout, running from 3 to 6 inches along the planks at the top of the nest; some have merely a circular orifice at the top. One which I frequently observed during the course of its construction was built in a merchant's office in Galle, the familiar little architects taking no notice whatever of the clerks who wrote at their desks just beneath; it was completed in about three weeks, the spout being added last, and after this was finished, one of the pair took up its position inside the nest and received the feathers brought by its mate to the entrance. The eggs are either two or three in number, and some brought to me as belonging to this bird were pure white and pointed lengthy ovals in shape, much resembling those of *Cypselus affinis*; they measure 0·85 inch by 0·56 inch. I have not taken the eggs myself.

The figure of this species in the Plate accompanying my article on *Munia kelaarti* is that of a male shot at Pan-kulam tank, Trincomalie.

HIRUNDO ERYTHROPYGIA*.

(THE LESSER MOSQUE-SWALLOW.)

Hirundo erythropygia, Sykes, P. Z. S. 1832, p. 83; Jerdon, Madr. Journ. 1840, xi. p. 237; Adam, Str. Feath. 1873, p. 370; Aitken, *ibid.* 1875, p. 212; Butler, *t. c.* p. 451; Cripps, *ibid.* 1878, vol. vii. p. 257.

Hirundo daurica, Blyth, Cat. B. Mus. A. S. B. p. 198 (1849, in part); Layard and Kelaart, Prodromus, Appendix, Cat. p. 58 (1853); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 92 (1854, in part); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 170; Jerdon, B. of Ind. i. p. 160 (1862, in part); Holdsw. P. Z. S. 1872, p. 419.

Cecropis erythropygia, Jerdon, Ibis, 1871, p. 352.

Lillia erythropygia, Hume, Nests and Eggs, ii. p. 76 (1873); *id.* Str. Feath. 1877, p. 255.

The Red-rumped Swallow, Jerdon. *Masjid ababil*, lit. "Mosque-Swallow," Hind.

Adult male and female. (Specimens in the British Museum.) Wing 4.4 to 4.5 inches; tail 3.0 to 3.3, centre feathers 1.1 to 1.4 shorter; tarsus 0.5; middle toe without claw 0.48; bill to gape 0.5 to 0.55. Females seem to be shorter in the tail than males.

Mr. Hume, in his valuable monographic notice of the subgenus *Lillia*, gives the length at from 6.5 to 7.0, average 6.75 inches; wing from 4.1 to 4.5. Weight 0.62 oz. (*Cripps*).

Iris brown; bill, legs, and feet black.

Head, nape, hind neck, back, scapulars, lesser wing-coverts, and longer under tail-coverts glossy blue-black; greater wing-coverts, primaries, secondaries, and tail-feathers brownish black, glossed chiefly on the outer webs with greenish; a superloral streak passing above the eye, spreading out over the ear-coverts, and running thence beneath the nape dark ferruginous chestnut; rump and shorter upper tail-coverts paler chestnut than the cheeks, forming a band about $\frac{3}{4}$ inch or more wide; in some specimens there are a few black-shafted feathers among the upper tail-coverts; a black spot immediately in front of the eye, between which and the bill the lores are whitish; entire under surface, with the under wing- and under tail-coverts, buffy white, palest on the throat, and most strongly washed with buff on the flanks, each feather, except on the belly, with a fine brown shaft-streak; terminal portion of the under tail-coverts black.

Young. A specimen from Behar has the inner secondaries tipped with rufescent, and is very strongly tinged with buff on the flanks and under wing-coverts. Another from the Godaveri River has the chestnut colour of the cheeks and ear-coverts of less extent and very pale; inner secondaries tipped with buffy white; stripes of the under surface bolder than in the adult; chestnut rump-band very pale, and with one or two *dark stripes*; a pale spot on the inner web of the outer tail-feathers.

The just-flown nestling, according to Mr. Hume, has hardly any trace of striations.

Obs. This Swallow was confounded by Layard with the larger northern form, *H. daurica*, Linn., = *H. alpestris*, Pallas, *apud* Hume, or rather with some one or other of the Himalayan birds, which were then considered identical with the Central-Asian species. Specimens of *H. alpestris* from Mongolia, Assam, and other parts of Central Asia, which I have examined, have the wing 4.8 to 5.1 inches and the tail 4.1 to 4.6; the striations of the under surface are bolder and the uropygial band wider than in *H. erythropygia*, and streaked in some specimens with dark shaft-stripes; a whitish spot on the inner web of the outer tail-feathers is present in some skins.

H. nipalensis belongs to this group, with the well-marked striations on the under surface. Wing 4.6 to 4.8 inches; no white on tail; wings and tail brown; rump-band 0.8 to 1.0; ears dingy yellowish white or pale dingy rufescent, densely striated with dusky. Its larger size and bolder striations distinguish it, too, from the subject of the present article.

* This species and its allies are placed by some in the subgenus *Lillia*, characterized by the rufous or pale underparts either striated or unstriated, and by the rufous rump-band striated in most.

H. intermedia, Hume, is another and a new species from the hilly regions of Northern India. Mr. Hume has received it from Assam; it is a large bird; wing 5.0 to 5.2 inches. It has no rufous nuchal collar, and the rump-band is uniform.

H. striolata, Temm., inhabits the Indian archipelago. A specimen from Flores has the wing 4.1 inches; outer tail-feathers 3.6; stripes of under surface much bolder than in a Mongolian example of *H. daurica*; the upper tail-coverts have broad stripes. An allied form, if really distinct, to the latter exists in Mr. Hume's new species, *H. substriolata* (Str. Feath. 1877, p. 264). It has the underparts more richly coloured, a less massive bill, and longer tail.

Distribution.—This little Swallow only finds a place in the avifauna of Ceylon as a straggler, and but two instances of its occurrence in the island have been brought to my notice. Layard, the first to get it in Ceylon, writes thus concerning it:—"I found one of these birds in the village of Pt. Pedro in December: it had probably been driven over from the opposite coast by stress of weather: it was hawking about the street. I fired at and wounded it, but it flew away. Next day it was again in the same place, and I succeeded in killing it." At this season of the year the north wind, styled at Colombo the "longshore wind," brings many Indian birds to our shores, and doubtless was the means of driving the present species southward of its natural habitat; but as it is an inhabitant of the Nilghiris and other parts of the south of India, it is strange that it does not more frequently visit Ceylon. In the second instance it was procured by Mr. Bligh on the Catton Estate in April 1877.

This Mosque-Swallow is found throughout India; it is recorded from the Nilghiris, Mysore, the Deccan, Mount Aboo, Deesa, and Cashmere, as far up as Chungus on the Tawi river, where Mr. Brooks observed it. Jerdon says that he has seen it in every part of India, from the extreme south to Darjiling, which remark, however, does not hold good as to its distribution in every respect, as the latter locality is inhabited by the larger species, *H. nipalensis*, not then discriminated by Jerdon from the present. Captain Butler remarks that a few birds remain at Deesa the whole year round, but most return to the hills during the hot weather, or between the 30th April and the 25th June. Mr. Adam writes that it is not very common at the Sambhur Lake, but that it breeds there notwithstanding. In Furreedpore Mr. Cripps found it abundant. At the eastern side of the Bay of Bengal it is replaced in Tenasserim by the Himalayan race, *H. nipalensis*. From some portion of the mainland it may perhaps stray across to the islands of the Bay, for Mr. Hume mentions seeing one between Preparis Island and Calcutta when out of sight of land.

It may not be out of place to mention here that the Swallow alluded to under the name of *H. daurica* by Swinhoe as breeding in Northern China, and which Jerdon refers to in his article on this bird ('Birds of India'), really belonged to another allied species, *H. striolata*, Temm. & Schlegel, mentioned above.

Habits.—This little Swallow in India is fond of frequenting mosques and other buildings, as well as the vicinity of walls or bridges, under which it hawks in search of the insects which affect the proximity of water. Mr. Aitken writes of it as follows:—"This is one of those birds which seem highly to appreciate the advantages of civilization, and to think, like Cowper's cat, that men take a great deal of trouble to please them! In Berar they have almost discarded the mosques which gave them their name, and have betaken themselves to the culverts of the roads which are now being constructed all over the country. Wherever a road is made some of the culverts are sure to be taken possession of, as soon as the rains commence, by pairs of these Swallows, which may be seen darting in at one end and out at the other, or hawking about for flies over the pools of water at the roadside. Their flight has, however, nothing of the extreme rapidity of that of the Swifts or Wire-tailed Swallows. During the cold season the young often assemble in large flocks; but these all disperse or perhaps migrate as the weather gets warmer, and only a few pairs remain to breed during the monsoon." I conclude that the numbers of these birds seen by Col. Sykes were young; he says "it appeared for two years in succession in countless numbers on the parade-ground at Poona; they rested a day or two only, and were never seen in the same numbers afterwards."

Nidification.—The breeding-season of this species is said to last from April to August. The nest, writes Mr. Hume, "which is usually affixed to the under surface of a ledge of rock or the roof of some cave or building, and which is constructed of fine pellets of mud or clay, consists of a narrow tubular passage like a

white-ant gallery on a large scale, some 2 inches in diameter and from 4 to 10 inches in length, terminating in a bulb-like chamber from $4\frac{1}{2}$ to 7 inches in diameter externally." The interior is lined with feathers or grass. These retort-shaped nests vary in the extent to which the tube is constructed, and some think that the larger ones are intended as roosting-places or residences. The following account of Mr. Davison's experience of one of these nests seems to confirm the idea, borne out by the anecdote in the next article, that Swallows have a peculiar instinct for immuring their enemies! While examining some of these nests at Ootacamund he came upon one which "had the tubular entrance walled up and the mud perfectly hard and dry. On breaking away a part of the nest I found a dead bird in it, which had come quite to the sealed end of the tubular neck and had there died. The nest contained three old eggs, of which the contents had partially dried up. I can only account for this walling up of the entrance to the nest by supposing that some of the other birds had coveted and failed to obtain this site for their nest. It is only natural to suppose that more than one pair were concerned in the business, as it would have taken at least one bird to keep the inmate from leaving the nest and another to keep its mate away from it, and probably another or several other pairs to close the entrance." The eggs, which are pure white, are long ovals in shape and sometimes a little pyriform; they have, says Mr. Hume, little or no gloss, and average in size 0.78 by 0.55 inch.

HIRUNDO JAVANICA*.

(THE BUNGALOW-SWALLOW.)

Hirundo javanica, Sparrm. Mus. Carls. fasc. iv. t. 100, "Java" (1789); Bourdillon, Str. Feath. 1876, p. 374; Fairbank, ibid. 1877, p. 392; Tweeddale, Ibis, 1877, p. 316.

Hirundo domicola, Jerdon, Cat. B. S. India, Madr. Journ. 1874, xiii. p. 173; Blyth, Cat. B. Mus. A. S. B. p. 198 (1849); Kelaart, Prodromus, Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 170; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 384 (1854); Jerdon, B. of Ind. i. p. 158 (1862); Blyth, Ibis, 1866, p. 336; Gould, B. of Asia, pt. xx. pl. 13 (1868); Jerdon, Ibis, 1871, p. 351; Holdsw. P. Z. S. 1872, p. 418; Morgan, Ibis, 1875, p. 313.

Hypurolepis domicola, Hume, Nests and Eggs, p. 73 (1873); id. Str. Feath. 1874, p. 155.

The Nilgherry House-Swallow, Jerdon, B. of India; *The Hill-Swallow* in Ceylon.

Wæhælaniya, Sinhalese.

Adult male and female. Length 4·9 to 5·0 inches; wing 4·0 to 4·1; tail 1·8; tarsus 0·35; middle toe and claw 0·4 to 0·5; bill to gape 0·47 to 0·51; wings exceeding the tail by 0·5 when closed.

Tail short and slightly forked.

Iris deep brown; bill blackish, base of lower mandible reddish; legs and feet brown, the edges of the tarsal scales whitish; claws black.

Head, upper surface, scapulars, and lesser wing-coverts glossy greenish black; wings and tail black, with a slight greenish gloss; the upper tertials tipped white; a bar-shaped white spot on the inner webs of all the rectrices but the middle pair; lores and ear-coverts black; forehead, chin, throat, and chest ferruginous, darker on the forehead than beneath; under surface cinereous brown, paling to whitish down the centre of the breast, the adjacent feathers being tipped whitish; under tail-coverts black, tipped white, the longer feathers glossed with greenish.

Young. The nestling when fledged does not differ much from the adult, its chief characteristic being the unglossed upper surface. The forehead is edged with pale rufous, the tertials the same; tail with the spots smaller than in the adult, and the rufous of the throat not so dark, paling to rufescent white on the breast; under tail-coverts tipped with rufescent.

Obs. The Swallow of the Nilghiris, with which the Ceylonese bird is identical, was described by Jerdon as *H. domicola*, but it has of late years been found that the Malayan species, *H. javanica*, cannot be separated from it. Lord Tweeddale ('Ibis,' 1877, p. 316), in speaking of a Lampong (south-east Sumatra) specimen, says, "Nilgherry examples (*H. domicola*, Jerdon) cannot be separated." Messrs. Hume and Davison likewise consider the Tenasserim birds identical with South-Indian. Jerdon, in commenting on Gould's plate ('Birds of Asia,' pt. xx.) of *H. domicola*, remarks that it appears to be very close to the true *H. javanica*, but that is said to be a good deal larger bird. As regards this, I have compared the Ceylonese race with specimens from Sumatra, Sarawak, Bouru, Lombok, Sula Islands, East Timor, West Java, Labuan, Penang, and find that the balance is slightly in favour of the eastern race. A Sarawak example measures 4·2 inches in the wing; a Bouru 4·35; a West-Javan 4·2; but others do not exceed my specimens; one from Timor has a wing of 4·0 only, two from Penang 4·15. I observe, however, that all these examples, except those from Labuan and Lombok, are conspicuous for the *bluer* tinge of the upper plumage, the two exceptions mentioned being *green*, like the Ceylonese, all of which present the same character. The outer tail-feathers also are more pointed than those of my specimens, the under tail-coverts are not so dark, and the rufous on the ear-coverts is brighter. I have not had the advantage of comparing my birds with a South-Indian series, and I therefore state these facts, as they may be of use to those who wish to investigate the matter. In any case this could only be looked upon as an interesting local variation of no importance.

* This Swallow has been placed in the subgenus *Hypurolepis*, as differing from true *Hirundo* in its shorter and subfurcate tail.

Distribution.—The familiar little Hill-Swallow is a resident inhabitant of the mountains of Ceylon, and is, as in the south of India, restricted to high elevations. Though common as low down as the valley of Dumbura, it appears resolutely to decline any descent into the hot regions round the base of the mountains, for I have never seen it, or heard of it being observed, in the low country. It is found in the open districts formed by the great valleys in the Central Province, about estates, and on the plains of the upper regions, being very common at Nuwara ELLIYA and in the neighbourhood. I observed it at Horton Plains, and in the southern ranges met with it in the Morowak and Kukkul Korales; and throughout the high tract formed by these and the adjoining Korales it is found down to the same altitude as in the Kandy country.

This little Swallow is found in the south of India on the Nilghiris, Palanis, and Travancore hills. It frequents the higher parts of these ranges, being recorded from the Palanis at 5500 feet elevation. Mr. Bourdillon remarks that they persistently remain about the same ravines and do not travel much. Jerdon writes that he saw some Swallows at Bangalore and observed their nests in the verandah of a house there, and that in all probability they belonged to this species. I find no recent observation of it at that place, but I have no doubt Jerdon was correct in his surmise. Its range extends eastwards from the south of the peninsula into the Andamans, Tenasserim, Malacca, and thence south into Borneo and Java, and furnishes an important instance of the affinity between the South-Indian, Ceylonese, and Malayan avifauna, which is exemplified in more than one species dealt with in this work. To the Andamans it is a monsoon visitant, being common there from the beginning of June to the end of September. In Tenasserim it is "rare and probably confined to the more southern portions of the province" (Hume); in fact Mr. Davison only met with it at Mergui in June. Judging from these dates it would appear that it migrates with the south-west monsoon from South India or Ceylon across to the last-mentioned localities, not straying above 13° or 14° N. latitude. It was procured in Borneo by Mr. Mottley and in Lampong by Mr. Buxton, and there are examples in the national collection from Lombok and Bouru. Dr. Meyer records it from Celebes (Tello, near Makassar).

Habits.—To the resident in the beautiful mountains of Ceylon this little bird has much the same interest as that which the Common Swallow possesses for the occupants of the many English homes to which it is so welcome a visitor; with this difference, however, that it is a constant attendant about the Ceylon bungalow throughout the year, flitting in and out of the rose-covered and trellised verandah, gliding over the spacious barbecues bestrewn with the rich produce of the estate, or settling on the roofs of the pulping-houses, from the tops of which it utters its merry little twitter while it prunes its glossy plumage in the rays of the morning sun. No wonder, then, that it is a general favourite with the planter, reminding him of scenes far away, and bringing back to him recollections of those from whom he is so widely removed. In the mind of the author this interesting bird is connected with pleasing memories, not easily forgotten, of much kindness received, and, moreover, of the glorious mountain prospects viewed from the verandah of many a hospitable bungalow, round which he has often seen it flying while resting after the exertions of a long toil up the zigzag

? COTYLE OBSOLETA.

(THE PALE CRAG-MARTIN.)

Cotyle obsolcta, Cabanis, Mus. Hein. i. p. 50 (1850); Dresser, B. of Europe, pt. 37 (1875).
Ptyonoprogne pallida, Hume, Str. Feath. i. p. 1 (1873).

- "Upper parts very pale greyish sandy brown, darkest on the head and palest on the rump; lores blackish brown; underparts creamy white; on the chin and upper throat almost pure white; flanks, lower abdomen, and under tail-coverts washed with dull rufous brown;" wings and tail brown; tail-feathers with a large white spot on the inner web of all but the central and outermost pair.
- "Length 5·2 to 5·5 inches; wing 4·5; tail 2·1.
- "Bill black, inside of mouth dirty yellow; tarsus dark brown, soles whitish; iris dark brown." (Dresser.)

paths of the estate. It is found about the villages of the Kandyans, and hawks for its food over patnas and cleared hill-sides, as well as round the stores and buildings of the estates. On some bare spot or on a pathway in the open it may sometimes be seen resting, and I have occasionally seen it perched on a dead branch or stake; but its favourite post is the eave of some building. Its flight is very buoyant but not at all swift, and its twitter is not unlike that of the Common Swallow.

Nidification.—The breeding-time of the Hill-Swallow is in April, May, and June; it nests in the verandahs of bungalows and outbuildings of estates, and under the eaves of native houses, building sometimes beneath the ceilings of rooms without evincing any fear of the inmates. Such a nest I once observed in the sitting-room of the old Banderawella Resthouse. It is usually placed against the side of a beam or projecting baulk of timber, and resembles in its construction that of the last species, though somewhat smaller. It is composed of mud and lined with feathers, threads, small pieces of rag, and such materials as it may pick up about its adopted residence. The eggs are usually three in number, stumpy ovals in shape, and of a white ground-colour, spotted pretty evenly with brownish red. In Southern India its nesting-habits are much the same; and it appears from the following interesting anecdote which I subjoin, from the notes of Miss Cockburn, that its domicile is sometimes invaded by the truculent Sparrow. Her remarks, as quoted by Mr. Hume in 'Nests and Eggs,' are as follows:—"They are fond of returning to the same places in which they build every year, and appear to prefer erecting their little nests in verandahs and eaves of outhouses. Many years ago I remember watching a battle between a Cock-Sparrow and a pair of House-Swallows. The latter had finished their neat nest in our verandah when the Sparrow discovered it, and never left it except for the purpose of satisfying his appetite. The poor Swallows saw they could do nothing, so they disappeared and told their friends the sad tale in Swallow language, and (as in the multitude of counsellors there is wisdom) some time after, to our surprise, we saw a number of House-Swallows each with a wee lump of clay in its bill. They flew up to the nest and succeeded in building up the sides, the Sparrow inside doing his utmost to stop the work, but they, being accomplished artisans in their own masonry, did not take a second to fix each piece of clay. It became a most exciting scene, and we fully expected the Sparrow would have been imprisoned for life; but no, he was much too crafty to allow that; with one effort he burst through the very small hole that was left unclosed and escaped, being attacked by all the Swallows at the same instant; and this conflict ended by the rightful owners having possession of their nest." This extraordinary feat is, I think, an instance of the most wonderful instinct on the part of birds that it is possible to conceive.

Both in South India and Tenasserim it commences to build in April, continuing in the former place until June. Mr. Morgan has found the nest on rocks and cliffs, and remarks that it is very firmly cemented to the object against which it is placed. I once found a Swallow's nest in a small cavern or recess in the face of a cliff in Haputale, and it no doubt belonged to this species. In some eggs there is a tendency in the markings to form a zone at the large end. They measure about 0·77 by 0·5 inch.

We have the authority of my friend and correspondent Mr. Bligh, Catton Estate, for the interesting occurrence of a Martin in Ceylon. The birds have been seen by him on several occasions during the north-east monsoon in the beautiful Kandapolla valley in the Haputale range; but he has been unable to procure a specimen so as to identify the species satisfactorily. I accordingly suggest, in this footnote, the possibility of it being the Pale Crag-Martin, and have given Dresser's description for the guidance of any who may hereafter procure specimens in Ceylon.

Possibly it may be the Cashmere House-Martin, which is very like the English Martin, but has the flanks brownish and the axillaries dark brown; but as Mr. Bligh mentions the dusky under surface of his bird, I have thought it more likely to be the species here indicated.

Mr. Bligh, in writing to me in March 1876, speaks of his discovery and remarks:—"I have seen several but could not obtain a specimen; it is not, I feel sure, the English bird, as it looks much darker underneath, or rather the white is not so pure." In the cool season of 1877-8 he again saw several, but had no gun with him at the time; and just as I am going to press with this I receive a letter in which he says:—"I saw a Window-Martin as late as April this year; it came within five yards of me; it is a smaller species than *C. urbica* and duller in colour."

This species is an inhabitant of Palestine and North-east Africa, and has been found in Beluchistan and in Sindh.

PASSERES.

Fam. FRINGILLIDÆ.

Bill short, thick at the base, conic, tip acute and entire; culmen more or less flattened. Nostrils round, basal, placed near the culmen; gape smooth. Wings moderately long, the first three quills nearly equal. Tail of 12 feathers, not longer than the wing, even or forked. Legs and feet stout. Tarsus covered with transverse scutes; hind toe of medium size.

Of small size.

Genus PASSER.

Bill very short, compressed towards the tip, tumid at the base; the culmen flattened. Nostrils small, round, placed in a membrane, partly concealed by tufts. Wings with the first three quills subequal, the 1st either shorter than, or equal to, the 2nd. Tail shorter than the wings, even at the tip. Tarsus longer than the middle toe and claw, protected by stout transverse scales; lateral toes subequal and much shorter than the middle one; hind claw moderately large.

PASSER DOMESTICUS.

(THE COMMON HOUSE-SPARROW.)

Passer domesticus, Linn. Syst. Nat. i. p. 323 (1766); Shelley, B. of Egypt, p. 148 (1872); Dresser, B. of Europe, pt. 48 (1876); Irby, B. of Gibraltar, p. 119 (1875); Seebohm, Ibis, 1876, p. 114; Newton's Ed. Yarr. B. Birds, vol. ii. p. 89 (1876).

Passer indicus, Jardine & Selby, Ill. Orn. pl. 118 (1848); Blyth, Cat. B. Mus. A. S. B. p. 119 (1849); Kelaart, Prodromus, Cat. p. 126 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 258; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 499 (1856); Jerdon, B. of Ind. ii. p. 362 (1863); Blyth, Ibis, 1867, p. 41; Holdsw. P. Z. S. 1872, p. 464; Hume, Nests and Eggs, ii. p. 457 (1874); id. Str. Feath. 1873, p. 209; Adam, t. c. p. 387; Ball, ibid. 1874, p. 421; Tweeddale & Blyth, B. of Burm. p. 93 (1875); Oates, Str. Feath. 1875, p. 156; Brooks, t. c. p. 254; Butler & Hume, t. c. p. 496; Fairbank, ibid. 1877, p. 408; Hume & Davison, B. of Tenass., Str. Feath. 1878, p. 406; Ball, ibid. vii. p. 222; Cripps, t. c. p. 294.

Pyrgita domestica (Linn.), Hodgs. Zool. Miscel. 1844, p. 84.

Philip Sparrow, Old English; *The Indian House-Sparrow*. *Gorrion*, Spanish; *Bertal*, Moorish (Irby); *Haussperling*, German; *Musch*, Dutch; *Pardal*, Portuguese; *Gouriya*, Hind. in North; *Churi*, *Khas churi*, Hind. in South; *Charia*, *Chatta*, Bengal.; *Uri-pickike*, Telugu; *Adike lam kuruvi*, Tam. (Jerdon); *Pastro pardal* or *Pardan*, Ceylon Portuguese; *Addikalan*, lit. "Sheltering bird," Tamils in Ceylon.

Gewāl-kurulla, lit. "House-bird," Sinhalese; also *Geh-kurulla*, Layard.

Adult male (Ceylon). Length 5·6 to 5·8 inches; wing 2·95 to 3·1; tail 2·3 to 2·4; tarsus 0·65 to 0·7; middle toe 0·6, claw (straight) 0·19; bill to gape 0·52.

Female. Length 5·6 inches; wing 2·7 to 2·8; bill to gape 0·5; tail 2·1 to 2·2.

Male. Iris olive-brown, greyish brown, or brown; bill black; legs and feet fleshy brown or reddish brown. Some specimens have the culmen abnormally ridged, and the contour of the bill varies somewhat in different individuals.

Breeding-plumage. Centre of the forehead, crown, and nape ashy grey; lores, upper part of cheeks and ear-coverts, chin, down the centre of the throat, chest, and upper breast black; this colour extends more or less over the eye (in some specimens hardly traceable) and also past the gape, uniting the black of the lores with that of the chin: cheeks, ear-coverts, and sides of throat just below the ears whitish, more or less faintly tinged with greyish, and bounded beneath by the black of the chest, which spreads out; a few white feathers occasionally above the eye, above which, extending down the sides of the nape upon the neck and uniting across the back of it, is a long patch of deep chestnut; lesser wing-coverts and upper part of back the same, the latter region striped broadly with black; median coverts deeply tipped with white, which is surmounted by a black patch on the inner webs of the feathers; greater coverts and tertials black, at the centres of the feathers broad margins of chestnut-brown; primaries and secondaries dark brown; primary-coverts blackish brown; the whole narrowly edged with fulvous, which encroaches on the web just beyond the primary-coverts, and also near the centre of the longer primaries, forming two patches on the closed wing; lower back and rump brownish grey, marked generally on the rump with fulvous; tail greyish brown, the feathers finely margined with tawny grey; beneath from the breast to under tail-coverts impure white, darkened with greyish on the flanks; shafts of the under tail-coverts dark; under wing whitish, the edge marked with black.

Winter plumage. After the autumnal moult the black throat-feathers are tipped with white, deeply on the chest and narrowly on the throat; the upper-surface feathers are tipped with yellowish brown, giving a tawny appearance to the head, and almost obscuring the chestnut of the hind neck; the greater wing-coverts and tertials are much more deeply edged with chestnut of a more fulvous hue than the breeding-colour. The chestnut patch just behind the eye is less obscured than other parts, but even there the feathers are tipped with fulvous.

As the breeding-season approaches these margins wear off and leave the black and chestnut pure, but at the lower part of the chest where they are deep they mostly do not quite disappear.

Female. Iris brownish olive; bill olive-brown; margin and base of tarsus fleshy; legs and feet fleshy.

Head, hind neck, and lower back greyish brown, with often a tawny tinge; back striped with black on one web of the feathers as in the male, the other webs being dusky tawny; wings brown, with the markings distributed as in the male, but of an obscure tawny colour, the white tips of the median coverts not so deep; tail pale brown; a buff-white stripe above and behind the eye, between which and the ear-coverts there is a brown stripe; ear-coverts grey; chin and throat sullied white; under surface whitish, washed with grey on the chest and the flanks; feathers at the sides of the breast with dusky shafts, under tail-coverts with blackish ones.

Young. Iris dark olive-brown. Above greyish brown, obscurely banded on the head, hind neck, and rump with a darker shade; the interscapular feathers fulvous, the inner webs blackish; wing-coverts and tertials tipped and broadly margined with buff-white, above which the web is blackish; secondaries very broadly edged with buffy; tail very pale brown; eye-stripe and ear-coverts as in the adult female; cheeks faintly barred with brownish; chin and throat pale isabelline grey; under surface whitish, tinged with buff.

Obs. The Ceylon House-Sparrow belongs to that normally somewhat smaller and, as regards the female, *slightly* differently coloured race which inhabits India, and which has been separated by Jardine as *P. indicus*. Seeing, however, that the Sparrow has evidently, from the region in which the species was first installed by a creative Providence, followed the march of those classes of the human race which dwell in permanent habitations, it cannot have been otherwise as regards India, if, indeed, it was not there that it was originally located. It has been found to vary in size and coloration in certain districts which it has perhaps, at no very remote period, invaded. Mr. Seeböhm remarks on the extremely bright colouring of the males he procured on the Lower Petchora, in Northern Russia, as compared with any thing he has seen; the Sparrow, therefore, in that region might be said to constitute a local race. In Siberia (whither, according to Professor Newton, it has wandered since the Russian conquest) it occasionally attains a very large size: an example from Krasnoyarsk measures 3·25 inches in the wing, showing that the climate of that region is conducive to robustness. I contend, therefore, that the difference in size of

Indian birds, which is chiefly apparent in the females, and the slight alteration in colour, is owing entirely to food and climatic influence.

Indian and Ceylonese examples are identical. A male from Madras in my collection measures in the wing 3.05 inches, and has the white cheek-patch and the under surface as much tinged with grey as in European birds. Specimens from Ceylon, and, as far as I have seen them, from India, have only a trace of the little white spot above and behind the eye and of the white edging above the lores; it is always more or less present, which, inasmuch as it is such an obscure characteristic even in the European bird, more than any thing, I think, tends to prove the identity of the two races. In England I find that the Sparrow varies in size, depending to a certain extent, as it would appear to me, on conditions of food. The largest birds I have seen are from farmyards in the country, where an abundant sustenance is afforded them. Five males in my possession measure from 2.9 to 3.05 inches in the wing, and females from 2.9 to 3.0.

Mr. Dresser, in his great work on European birds, unites the two forms, and Messrs. Hume and Blandford are likewise of opinion that the Indian bird cannot correctly be specifically separated.

Distribution.—As in other countries, the House-Sparrow is found about human habitations in almost every town and village in Ceylon. It evidently was formerly only an inhabitant of the maritime and large inland cities and villages of the natives, and probably affected the settlements in the valleys of the Kandyan province; thence it continued to follow the march of Europeans into the hills, during the opening up of the mountain forests from one elevation to another, until it has now established itself at Nuwara ELLIYA and is common there. Mr. Holdsworth remarks, in his catalogue, that old residents at the Sanatorium remember the time when “the now common Sparrows and Musquitos were unknown at that elevation.” I have no doubt that when the solitudes of the Horton Plains are invaded, and the many allotments now marked out are studded with bungalows, the Sparrow will make itself as much at home there as he has done in the somewhat lower plain of Nuwara ELLIYA. I have visited villages in the interior of the northern forest tract where there were no Sparrows; but it is found at Anaradjapura, and I think all along the Northern road. Mr. Parker tells me it inhabits the villages in the Uswewa district.

It is generally diffused all over India, from the extreme south to the Himalayas, where Mr. Brooks found it above Mussouri, not differing at all from its companions of the plains. It is abundant in Sindh, and throughout the Kattiawar, Kutch, Guzerat, and Sambhur-Lake districts. In the Deccan it is, of course, common, and found everywhere around human habitations; it occurs on the Nilghiris and in the villages in the Palanis up to 5000 feet elevation (*Fairbank*). It is of course very numerous throughout Bengal, but gradually gets more local in its distribution as we travel to the eastward. In Cachar Mr. Inglis did not notice it; but it is found throughout Pegu, according to Mr. Oates, and Mr. Blyth says it is not uncommon at Akyab in Arracan. At Rangoon Mr. Hume says it is as common as *Passer montanus* (which replaces it to the south), and occasionally strays over to Moulmein in the Tenasserim province; but south of this it has not been procured or seen by Mr. Davison and others collecting in the province. Crawford is said to have procured it in Siam.

At some distant period it has, if not originally indigenous to the country, perhaps invaded India from Beluchistan and Persia, which it inhabits plentifully, although it is not universally distributed through Western Asia to Europe; it is, however, says Professor Newton, the common species of the Levant. As regards Palestine, Canon Tristram remarks, “The Sparrow of the Syrian cities is our own *P. domesticus*, which in his westward migrations has acquired neither additional impudence, assurance, nor voracity.” Severtzoff records it from Yarkand, though Dr. Scully did not see it there or anywhere in Eastern Turkestan. In Siberia, as I have observed already, it is found, but only in certain localities: on the river Ob, Dr. Finsch observed it only near cattle-stations; in the town of Berezoff it occurred, but not in Obdorsk. Further east, Mr. Seebohm states that it abounds in all the towns and villages as far as Yenesaïsk, and he met with it once at Kooray-i-ka, within the arctic circle, although it had entirely disappeared about latitude 60°. Beyond the Yenesay it ranges as far east, according to Dr. von Middendorff, as Ust Strelka, the confluence of the Chilka and Argun rivers, which there join to form the Amour. Between this point and the Chinese Empire (the very place, above all others, suited for it) the solitudes of Mongolia must present a bar to its advance. It is found near Lake Baikal, straying thence to the island of Olchon (*Dresser*).

In Northern Africa it is resident in Egypt and Nubia, and is abundant there; Mr. E. C. Taylor found it

swarming in Cairo, and says that it breeds in Upper Egypt in holes in the mud banks of the Nile. Further east it is locally distributed in Algeria and Morocco, *Passer salicicola* being, according to Mr. Taylor, the Sparrow of the country. On both sides of the Straits of Gibraltar it is common, and is spread similarly throughout Spain. In Italy it is partly replaced by an allied species, *P. cisalpinus*; but in Turkey it is common, being the Sparrow of the district round Constantinople. It is spread commonly throughout Central and Northern Europe, including Russia, in which empire it is found as far north as Archangel. To the westward it is generally distributed throughout Finland. In Sweden we learn, from Professor Newton's edition of Yarrell, that it follows the settlers into the forest wilds, and the most northern point recorded for it is Karesuando; in Norway it occurs in most of the settlements "along the coast to the Loffodens and Alten," but further north it is only occasionally seen. From the same authority we learn that the only places in which it does not exist are the Outer Hebrides and the hill-farms in Ayrshire, and that there is also a certain moorland village in Devon, called Shepstor, in which it is never seen. There are, likewise, places in the highlands where it is very rare, but everywhere else in Great Britain it is to be found. As regards Ireland it is apparently universally distributed throughout the country, although the information concerning it is not so full as might be wished. It occurs in Madeira occasionally, according to Mr. Godman, but is not recorded from any other of the Atlantic isles.

Habits.—In common with the Crow, which is an equally familiar feathered citizen in the East, the Sparrow is possessed of an extraordinary amount of domesticity and utter disregard of the human dwellers in the buildings which afford him shelter. His impudence and assurance are charming, and he by far excels his European relations in this respect. If he is not making his nest in your verandah, littering the whole place with straw, grass, rags, and a miscellaneous variety of building-materials, he is flying in and out of your breakfast-room, where he feasts on the crumbs beneath the table; and when he cannot supply himself from that source, he thinks but little of flying up and levying contributions, after the manner of the Crow, on the loaf, the moment the Appoo's back is turned. The Sparrow is seldom seen away from houses, except when the corn near villages is in ear; and then he may be found in the paddy-fields, feasting on the grain in common with Munias. In England, the hedgerows in early spring are resorted to, and it wanders away from its accustomed haunts, returning, however, at nights to roost; but in Ceylon it is not much found about isolated houses in the country, and has not the same opportunity of ruralizing as at home. The males are just as pugnacious as they are in colder climes; and during the breeding-season many a good sparrow-fight is carried on in the bungalow verandah, several neglected suitors sometimes setting on a coveted female and administering a most unmerciful chastisement; and it is a question whether, in the excitement of the fray, she does not receive an equal punishment at the beak of her favoured lord.

Owing to the open nature of buildings in Ceylon, the Sparrow comes more under human observation than he does in Europe, and is often voted a great nuisance; even the sanctity of the church is not the means of repelling his inroads, for he frequently disturbs a congregation by his loud chirpings underneath the tiled roof and by flying about in the most casual manner, as if the building were empty and he had a perfect right to do as he liked.

The general habits of the Sparrow are too well known to require recapitulation; and I have merely taken up room to say what I have on the subject in order to give my European readers some idea of its behaviour in the East. Its diet is both insectivorous and granivorous; and I have no doubt that the quantity of insects which it destroys counterbalances the evil which it is said to do in its attacks on grain.

Nidification.—As in England so in Ceylon, the Sparrow breeds all the year round; but the greater number of nests are built between the months of May and October; and during this period, in the Western Province at any rate, August is, I think, the favourite month. The nest is placed anywhere in a building or in a roof where there is sufficient cavity or space for its formation; it sometimes is built in a thickly foliated lime-tree near a house, and is then a large structure of grass and straw lined with feathers, the entrance being a hole at the side. The natives, who are fond of the Sparrow, often fix an old chatty, pierced with a small hole, on their walls for it to nest in; and the offer thus made does not often seem to be refused, as these earthen vessels are just suited for the reception of a large and untidy bundle of straw, such as "Philip Sparrow" delights

in making. The number of eggs varies from three to six or seven; but I think four is the usual quantum. They vary much in colour and marking; and in the same nest I have found eggs totally differing from one another, such as several of a dark grey ground, thickly speckled and blotched with dark brown, and one, or perhaps two, of an almost pure white ground, openly marked with a few large spots of dark brown and inky grey; the usual type is a greenish-white ground, speckled throughout, but chiefly in a zone at the larger end, with dark brown and greyish brown. They vary much in size, some measuring as small as 0.75 inch in length by 0.57 in breadth, but the usual dimensions are from 0.8 to 0.85 by from 0.62 to 0.66.

Both sexes commonly share in building the nest; but occasionally it appears to differ as to choice of site. My correspondent, Mr. Parker, writes me, in March last, of an incident connected with this peculiarity which occurred in the Kurunegala Resthouse:—"About three days ago a pair of Sparrows began to build a nest in the roof of the verandah. I was surprised at the amount of straw and grass that they wasted, and, while enjoying a pipe, determined to watch their proceedings. It was soon evident that the two birds were not of one mind with regard to the site for the nest, and that each had selected a separate place. As soon as one bird went away in search of straw, the other industriously employed the time in removing to *its* nest the unprotected materials left by the other; and this went on without any intermission, though the birds appeared on the best of terms whenever they met. The result is, that after three days the floor is littered with straw that has fallen, but neither nest has made the slightest progress!"

Martins' nests are sometimes taken possession of; and doubt has been expressed as to whether the building-up of their enemy by the rightful owners in revenge for their eviction has ever really taken place; but in a former article I have given indisputable evidence in the matter from the pen of Miss Cockburn, one of the most accurate observers of birds in India; and though the species was not a Martin, yet the habits of these birds and Swallows are so similar, that one cannot doubt that they would be capable of treating the intruder after the same fashion.

Illustrative of its generally tame and literally domestic habits is the following racy account by Mr. Hume of its nesting in India:—"If domesticity consists in sitting upon the punkah-ropes all day, *chit, chit, chit, chattering* ceaselessly when a fellow wants to work, banging down in angry conflict with another wretch on the table, upsetting the ink and playing 'Old Harry' with every thing, strewing one's drawing-room daily with straw, feathers, rags, and every conceivable kind of rubbish, in insane attempts to build a nest where no nest can be—if, I say, these and fifty similar atrocities constitute domesticity, heaven defend us from this greatly lauded virtue, and let us cease to preach to our sons the merits of domestic wives!"

"Now everybody does, or ought to, know all about the nidification of Sparrows, that their nests are shapeless bundles of straw, grass, rags, wool, or any thing else that they can lay their bills or feet on, thickly lined with feathers stuffed into any holes or crevices about houses, huts, walls, old wells, &c. that they can find, and even, though rarely, into the centre of some thick bush."

The Sparrow, with all his faults (some more alleged than real), displays great attachment for its young. An instance of this is given by Professor Bell (Zool. Journ. i. p. 10, 1824), his account being thus rendered by Professor Newton in his edition of Yarrell's 'British Birds':—"A pair of Sparrows, which had built in a thatched roof at Poole, were seen to continue their regular visits to the nest long after the time when the young usually take flight. This went on for some months, till, in the winter, a gentleman, who had all along observed them, determined on investigating the case. Mounting a ladder he found one of the young detained a prisoner by a piece of string or worsted which formed part of the nest, having become accidentally twisted round its leg. Being thus unable to procure its own sustenance, it had been fed by the continued exertions of its parents." The same author cites a parallel instance which "had been recorded by Graves, who finding a nestling Sparrow in like manner entangled by a thread, observed that the parents fed it during the whole of the autumn and part of the winter; but the weather becoming very severe soon after Christmas he disengaged it lest its death might ensue. In a day or two it accompanied the old birds, and they continued to feed it till the month of March, by which time it may be presumed to have learnt to get its own living."

PASSER FLAVICOLLIS.
(THE YELLOW-THROATED SPARROW.)

Fringilla flavicollis, Frankl. P. Z. S. 1831, p. 120.

Gymnoris flavicollis, Blyth, J. A. S. B. 1844, xiii. p. 948; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 497 (1856); Hume, Nests and Eggs, ii. p. 461 (1874); id. Str. Feath. 1873, p. 420; Ball, *ibid.* 1874, p. 421; Fairbank, *ibid.* 1877, p. 408; Davidson & Wender, *ibid.* 1878, vii. p. 85; Ball, *t. c.* p. 223.

Ploceus flavicollis, Sykes, P. Z. S. 1832, p. 94.

Petronia flavicollis, Blyth, Cat. B. Mus. A. S. B. p. 120 (1849).

Passer flavicollis, Jerdon, B. of Ind. ii. p. 368 (1863); Blyth, Ibis, 1867, p. 42; Brooks, Str. Feath. 1875, p. 254; Butler & Hume, *t. c.* p. 497; Fairbank, *ibid.* 1876, p. 261.

The Yellow-necked or *Jungle-Sparrow*, Jerdon. *Raji*, Hind., or *Jangli-churi*; *Adavi-pichike*, also *Konde pichike*, Telugu (Jerdon).

Adult male (Futtehgur). Length 5·5 inches; wing 3·25; tail 2·3; tarsus 0·6; middle toe 0·55, claw (straight) 0·19; bill to gape 0·55.

Female (Futtehgur). Length (from skin) 0·5; wing 3·02 to 3·2; tail 2·2.

"Iris brown; bill black; legs cinereous brown" (*Jerdon*).

Above from the forehead to the upper tail-coverts, including the scapulars, pale sandy brown; wings and tail plain brown; the least coverts cinnamon-red, forming a conspicuous shoulder-patch, the next row with deep white tips, and the greater series with pale external edges and tips; the secondaries with less pale margins, and the primaries and tail with fine light edges; throat whitish, paling into sandy grey on the cheeks; fore neck, chest, and flanks very pale greyish brown, becoming albescent on the breast, belly, and under tail-coverts; on the centre of the fore neck a *large rich yellow spot*.

Female. Slightly paler above, with the red shoulder-spot not so deep in colour as in the male; yellow neck-spot slightly smaller and of a somewhat less rich yellow.

Young female (Madampe, Ceylon, October). Length 5·2 inches; wing 2·8; tail 1·8; bill to gape 0·55.

Iris brown; bill dark brown, lower mandible fleshy; legs and feet dusky bluish.

Above darker brown than the male above described; wing-patch brownish cinnamon; the coverts wanting the white tips; quills, primary-coverts, and secondaries dark brown with pale edges; beneath whitish, tinged with brownish grey, except on the throat and lower parts; yellow throat-spot very pale. Another example in moult has the yellow throat-spot almost imperceptible from abrasion; the wing-spot is of the same dull colour.

Female (Futtehgur, January). Chestnut wing-spot brighter than the above, the median coverts conspicuously tipped with white; the neck-spot small, but pure yellow in colour; this is the plumage after the first moult, the breeding-season being in May, and my birds being in first autumn plumage.

Obs. This interesting Sparrow belongs to a little group which was separated by Hodgson as *Gymnoris*; there are, according to Jerdon, two other species—*P. petronius*, Linn., of Europe, and *P. superciliaris*, A. Hay, from Africa. They have the bill slightly longer and less robust, and the tail proportionately shorter than the other Sparrows, and are characterized by the peculiar throat-spot. Blyth considers the Yellow-throated Sparrows are "linked to the ordinary Sparrow by the African *Passer simplex*, Licht., which has an intermediate form of bill and wants the yellow pectoral spot;" and, to avoid a multiplicity of genera, I keep this bird in *Passer*, though it forms, perhaps, a recognizable subgenus.

Distribution.—The Yellow-necked Sparrow is new to the avifauna of Ceylon, and has not yet been published as occurring in the island. I intended to have included it among the few species on which I made remarks

(This, 1878, p. 201), but omitted to do so. I met with it in October 1876, while on a trip to Chilaw, close to Madampe. A considerable flock were together, in company with a number of Weaver-birds, on some openly-wooded grass-land near the sea. I only procured two specimens, as it was just sunset; and on returning a couple of days afterwards, I did not see the flock. One of the birds in question was in heavy moult, acquiring new primaries, so that I am not of opinion that it had recently arrived from India, although the locality favours the idea that it and its companions may have been visitors to the island.

Its occurrence in Ceylon is very interesting, as it ought by rights to be an indigenous bird there, being found over most of India.

It is spread throughout the empire, from the Himalayas (in which it occurs to an elevation of 5000 feet) to the extreme south, extending in a westerly direction as far as Sindh, where Messrs. James and Blanford procured it, but not passing into Burmah. In the south, of late years, it has been noticed by the Rev. Dr. Fairbank, who obtained it at Periakulam near the base of the Palanis; he likewise remarks that it is found everywhere in the Khandala district, though in small numbers. Messrs. Davidson and Wender, too, met with it in the Sholapoor districts of the Deccan, where it was rare, but breeding notwithstanding. Mr. Ball records it from many localities between the Godavari and the Ganges, and says that it is nowhere so abundant in Chota Nagpur as in the Satpura hills, where he hardly passed a day without seeing numbers, and in some places found it in the thickest jungles. About Mount Aboo it is common on the hills and in the plains, according to Capt. Butler, breeding on the mount in April. Mr. Hume says that he believes it to be only a seasonal visitant to Sindh and Kattiawar; and Mr. James is of opinion that it breeds in the former region. Mr. A. Anderson procured it at Futtahgur, and Mr. Adam at Oudh, and remarks that it is very common all about the Sambhur Lake. Captain Marshall found it at Murree in July, and Mr. Brooks procured it at Dhunda above Mussoori.

Habits.—Jerdon writes of this Sparrow as follows:—"It frequents thin forest-jungle, also groves of trees, avenues, and gardens in the better wooded parts of the country. It lives in small parties, occasionally, during the cold weather, congregating in very large flocks; feeds on various seeds, grains, and flower-buds, and has much the same manners and habits as the common House-Sparrow. It has also a very similar note." On the occasion of my meeting it, it was associating in a flock in a characteristic spot of the north-west coast—open country, dotted here and there with clumps of by no means luxuriant wood, about the borders or in the middle of which stood ragged-looking trees with half-clad branches; the troop was settling on the tops of the trees and uttering such a Sparrow-like chirp as they flew from one to the other that I took them for Common Sparrows, more particularly as they had the same style of flight. The food of the specimens procured consisted of seeds of various herbs. Mr. James writes that it is common to see them in Sindh feeding on the pollen of the flowers of the wild Caper.

Nidification.—This Sparrow breeds in the plains of India in April and May, but in the Himalayas nests as late as July. It is said to breed throughout India, except in the extreme south, and in Orissa and Bengal proper (*Hume*). Good-sized trees, such as mangos, are generally chosen; and the nest is invariably placed in a hole, sometimes at a height of 30 feet from the ground. Mr. Hume writes:—"On one occasion I found a nest in a hole in a stem of an old Heens-bush (*Capparis aphylla*), which stem was barely 5 inches in diameter. The nest is generally only a little bundle of dry grass, thickly lined with feathers. If in a mango-grove much frequented by the common Green Paroquets, the feathers of these latter are sure to be chiefly used. Sometimes, however, a more or less cup-shaped nest is formed of fine strips of bark and tow being added to the grass; and, again, at times it is a regular pad of hair, tow, and wool, with a few feathers, all closely interwoven, and with only a little central hollow." Four is the greatest number of eggs laid, three being often found. They are described as dull, glossless, moderately elongated ovals, sometimes pointed towards the small end. The ground-colour, of which little is visible, is "greenish white, thickly streaked, some edged and blotched, all over with dingy brown, usually more a mixture of sepia or chocolate-brown than any other shade." They average in size 0.74 by 0.55 inch.

PASSERES.

Fam. MOTACILLIDÆ.

Bill lengthened, more or less slender, straight; the culmen curved at the tip. Nostrils placed nearer the margin than the culmen. Wings with the first three feathers nearly equal; the tertials greatly elongated, often exceeding the primaries. Legs and feet variable. The tarsus more or less lengthened and covered with transverse scales; hind claw variable, in some much lengthened. Tail of 12 feathers, lengthened and narrow.

Of small size, elegant form, and mostly of terrestrial habit.

Genus MOTACILLA.

Bill lengthened, typically slender, compressed towards the tip; the culmen sloping from the base, curved at the tip. Wings with the first three quills nearly equal, and either the 1st, 2nd, or 3rd the longest; tertials nearly equal to the primaries. Tail equal to, or longer than, the wings; narrow and rounded at the tip. Tarsus longer than the middle toe and claw, the lateral toes subequal, the outer, if any thing, the shorter; hind claw short and curved.

MOTACILLA MADERASPATENSIS.

(THE INDIAN PIED WAGTAIL.)

Motacilla maderaspatana, Brisson, Orn. iii. p. 478 (1783); Blyth, Cat. B. Mus. A. S. B. p. 137 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 268; Jerdon, B. of Ind. ii. p. 217 (1863); Hume, Nest and Eggs, ii. p. 377 (1874); Ball, Str. Feath. 1874, p. 415; Brooks, *ibid.* 1875, p. 246; Butler & Hume, *t. c.* p. 489; Davidson & Wender, *ibid.* 1878, p. 84; Ball, *t. c.* p. 219.

Motacilla maderaspatensis, Gm. Syst. Nat. i. p. 961 (1788); Holdsw. P. Z. S. 1872, p. 458.

Motacilla picata, Frankl. P. Z. S. 1831, p. 119.

Black-and-White Wagtail; *Bergeronnette de Madras*, Buffon; *The Great Pied Wagtail*, Gould.

Mamula, sometimes *Bhuin mamula*, also *Khanjan*, Hind.; *Sakala sarela gadu*, Telugu (Jerdon).

Adult male and female. Length 8.5 to 8.75 inches; wing 3.7 to 4.0; tail 4.0 to 4.1; tarsus 1.0; middle toe and claw 0.8; bill to gape 0.8 to 0.82.

Iris dark brown; bill black; legs and feet brownish black.

Male, breeding-plumage. Upper surface, from the forehead to the upper tail-coverts, and also the entire neck and throat glossy black; wings and all but the two outer pairs of tail-feathers less intense black than the foregoing parts; a broad stripe passing from the nostril over the eyes and down as far as the nape, the tips and outer webs of the median and greater secondary-coverts, a very broad outer margin to the secondaries, and the two outer pairs of tail-feathers white; the base of the primaries and secondaries, a narrow outer edging to the former, and the under surface from the chest to the under tail-coverts also white, as are likewise the under wing-coverts; flanks greyish at the junction with the black of the upper surface.

Female in breeding-plumage has the distribution of the colours the same, but the black of the upper surface less pure.

Nonbreeding-plumage. The chin and face just beneath the eye and the gorge are white; upper surface not so intense a black as the breeding-dress. An example shot by Mr. Adam at the Sambhur Lake in August is in this plumage; it must have bred early in the year and changed at once.

Obs. This Wagtail, which carries off the palm as regards size among all the pied group, resembles somewhat the common Water-Wagtail of England, *M. lugubris*, in summer plumage, the latter differing in the large amount of white which encompasses the forehead, whole face, and ear-coverts, and the less intense black of the upper surface, with a proportionate paleness of the wing. It is a much smaller bird, the wings of those I have examined varying from 3.3 to 3.6 inches.

In most species of this group the forehead is white. The black forehead in the Indian species has a parallel in the fine African Wagtail, *M. vidua*, in which also the colour of the crown extends down in a point to the base of the bill.

Distribution.—This, the largest of the four Indian Wagtails, appears to be only a straggler to Ceylon in the cool season, there having been but one example recorded in the island. This is mentioned by Layard (*loc. cit.*), who remarks that he detected a single specimen in a collection of birds formed by Mr. Gisburne, C.C.S., in the Jaffna peninsula, the exact locality from which it came being supposed to be the island of Valenny. It may perhaps be a regular visitant to the extreme north of the island; but this is, I think, doubtful, as if so it would have been otherwise recorded from districts south of the Jaffna Lake.

This Wagtail has a wide but local distribution throughout India. It is found in suitable localities in various parts of the peninsula, and in both the east and west of continental India. It occurs in the south, for Jerdon remarks:—"It is found throughout the whole of India . . . but it does not appear to extend to the east of the Bay of Bengal. It also occurs within the Himalayas, for I found it at Sikhim." Messrs. Davison and Carter record it from the Nilghiris and the Cauvery river. "In the Deccan it is common and breeds"

(*Davidson*); and Dr. Fairbank writes that it affects the rivers in the Khandala and Mahableshwar districts. Mr. Aitken writes of it at Poona, and the Rev. H. Bruce at Ahmednuggur. Mr. Ball, on the eastern side of the peninsula, records it from "Sambalpur, north of Mahanadi, Godaveri valley, Singhbhum, Lohardugga, Maunbhum, and the Rajmehal hills," and he considers it, with regard to the whole division of Chota Nagpur, to be one of the birds most commonly met with on its rivers. Captain Beavan found it rare in Singhbhum, only meeting with it on the Cossye river. Across the Central-Indian districts it is noted from various places, such as Agra, Etawah, Futteghur, the great river-system of this well-watered portion of India affording it abundant localities suitable to its tastes. From Sambhur Mr. Adam records it common about all the open wells and tanks; but at Mount Aboo it is, according to Capt. Butler, not very plentiful; he observed it there about the lake, and occasionally in the plains round the edges of tanks, river-beds, &c. It is a resident species in the sub-Himalayan region. Mr. Brooks records it from Mussouri, and says that he also obtained it in Cashmere, while beyond the great Himalayan range it was found breeding by Severtzoff in Turkestan.

Habits.—This fine species is essentially a water Wagtail, being rarely found away from water, and frequents the banks of rivers, ponds, tanks, wells, brooks, &c. I observe that it is said, like other members of its group, to have a partiality for that seemingly eccentric situation the roof of a house, on which it often perches when opportunity offers; and I have no doubt that, like its congeners, it would also seat itself on a telegraph-wire. Captain Butler, who noticed its habits at Mount Aboo, remarks that "it delights in a large rock standing out by itself in the water at some distance from the shore to settle and run about upon. In the absence of a rock, an old stump suits its habits and answers the purpose equally well." It is very active in its motions and possesses all the grace of deportment which so remarkably distinguishes the whole of this interesting group of birds. It feeds on insects, at which it darts, adroitly seizing them, and has been observed to catch as large prey as a dragonfly with which to feed its young. Jerdon states that it has a sweet song in the breeding-season.

Nidification.—The breeding-season of the Indian Pied Wagtail, in most parts of India, is in March, April, and May; but, like many other birds which nest in the southern hills, it rears its young there during the north-east monsoon at the end of the year. It is said always to nest in the vicinity of water, “but with this sole reservation, that it places its nest almost anywhere. These may be found in holes in banks, crevices in rocks, under stones, under clods of earth, amongst the timbers of bridges, in drains, holes in walls, on roofs, in fact anywhere except on shrubs or bushes” (*Hume*). It appears that when these birds, like the Common Wagtail* of England, make up their mind to build in a particular spot no amount of adverse circumstances will deter them from carrying out their plans. In Mr. Hume’s interesting article on the nidification of this Wagtail ample testimony is given concerning the extraordinary spots chosen by it; and I append the following interesting particulars from the pen of this author:—“In the middle of the river Jumna, at Agra, there is an iron buoy attached to the pontoon-bridge which is surmounted by an iron ring, which lies down nearly horizontal; and in this ring, for several successive seasons, a pair of Pied Wagtails nested, within five yards of the roadway, and in full view of the thousands of passengers who daily cross the bridge. In the Chumbul, a little above its junction with the Jumna, a pair built in the old ferry-boat, which was but seldom used; and when the female was sitting she allowed herself to be ferried backwards and forwards, the male all the while sitting on the gunwale singing, making from time to time short jerky flights over the water, and returning fearlessly to his post.

“In this latter case the nest was nothing but one of those small circular ring-pads, say 4 inches in external diameter and 1 inch thick at the circumference, which the women place on their heads to enable them to carry steadily their round-bottomed earthen water-vessels; a dozen tiny soft blades of grass had been laid across the central hole, and on these, of course blending them down to the surface of the massive boat-knee on which the pad had been accidentally left lying, the eggs were laid.

“The character and materials of the nest are quite as various as are the situations in which it is placed. As to character, it varies from nothing up to a neat, well-formed ‘saucer’ or shallow cup; as to materials, nothing soft seems to come amiss to them: fine twigs, grass-roots, wool, feathers, horse-, cow-, and human hair, string, coir, rags, and all kinds of vegetable fibres seem to be indifferently used.” My late friend Mr. A. Anderson writes that “a favourite situation at Futtehgur was the bridge of boats, the nests being usually placed inside a pigeon-hole either at the bow or stern of a boat.” The eggs are usually four in number, sometimes three, and vary from a greenish or greenish-white to a pale earthy-white ground: those of the former type are marked with greenish-brown streaks, spots, clouds, and specks distributed sparingly over the surface, or chiefly confluent round the large end; the latter have dingy wood-brown markings, and, as in the former case, are divisible into two types—one in which the colouring takes the form of close speckling, and the other close smudgy mottling (*Hume*). The average size of a number of eggs is 0.9 by 0.60 inch.

* It will, no doubt, be fresh in the minds of many of my readers who peruse the ‘Times’ newspaper that a pair of Pied Wagtails last summer (1878) built a nest on a beam beneath a third-class carriage belonging to the train which runs backwards and forwards on the little loop-line connecting the Cosham and Havant stations near Portsmouth. The train makes four or five trips a day; and during the time the female was incubating her eggs she remained on them while the train performed its journey, and her partner patiently sat on the telegraph-wires till she returned. I can vouch for the truth of this story, as I am acquainted with the station-master from whom the particulars of the occurrence were gleaned.

MOTACILLA MELANOPE.

(THE GREY WAGTAIL.)

Motacilla melanope, Pall. Reis. Russ. Reichs, iii. p. 696 (1776); Dresser, B. of Europe, pt. 41, 42.
Motacilla boarula, Gm. Syst. Nat. i. p. 997 (1788); Blyth, Cat. B. Mus. A. S. B. p. 137 (1849);
 Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii.
 p. 268.

Motacilla sulphurea, Bechst. Gem. Naturg. Deutschl. iii. p. 459 (1807); Newton, ed. Yarrell's
 Brit. B. p. 552 (1873); Shelley, B. of Egypt, p. 127 (1872); Irby, B. of Gibraltar,
 p. 108 (1875).

*Calobates** *sulphurea* (Bechst.), Kaup, Natürl. Syst. p. 33 (1829); Horsf. & Moore, Cat. B.
 Mus. E. I. Co. i. p. 349 (1854); Jerdon, B. of Ind. ii. p. 220 (1863); Holdsw. P. Z. S.
 1872, p. 458; Legge, Ibis, 1874, p. 22; Butler & Hume, Str. Feath. 1875, p. 489.

Calobates boarula (Gm.), Hume, Str. Feath. 1873, p. 201; id. Nests and Eggs, ii. p. 381 (1874);
 id. Str. Feath. 1874, p. 237.

Calobates melanope (Pall.), Swinhoe, P. Z. S. 1871, p. 364; Brooks, Str. Feath. 1875, p. 250;
 Hume, B. of Tenass., Str. Feath. 1878, p. 362; Ball, Str. Feath. 1878, vii. p. 219.

Bergeronnette jaune, French; *Alvelõa amarella*, Portuguese; *Jungle-Wagtail* (Jerdon), *The
 Grey-and-Yellow Wagtail*. *Mudi tippudu jitta*, Telugu (Jerdon); *Alveola*, in Azores
 (Godman); *Kisekiri*, Japan (Blakiston); *Piepita*, Spanish (Saunders).

Adult male and female (Ceylon). Length 7.3 to 7.5 inches; wing 3.1 to 3.2; tail 3.55 to 3.9; tarsus 0.8; middle toe
 and claw 0.65; hind toe 0.3, its claw (straight) 0.25; bill to gape 0.6 to 0.65.
 Iris olive-brown; bill blackish horn, pale at the base beneath; legs and feet brown or reddish brown.

Winter plumage (Ceylon). Above ashy grey, slightly tinged with brown on the back, and the head somewhat pervaded
 with olive-greenish; least wing-coverts grey like the back; secondary and primary coverts, primaries, and secondaries
 blackish brown, the greater coverts with paler edges than the rest of the feathers; the tertials with the
 distal part of the outer web edged whitish; bases of the secondaries and tertials and the basal part of the inner
 web of all but the 1st four primaries white, running out towards the tip of the longest tertial feather; rump
 greenish yellow, blending with the grey of the lower back, and brightening into yellow on the upper tail-coverts;
 the 6 centre tail-feathers brownish black, with the margins near the base greenish yellow, the outer pair wholly
 white, the next two white, with all but the tip of the outer webs black, and the innermost pair with a black inner
 edge as well; a yellowish superloral streak passing over the eye (where it widens and becomes white) to above
 the ears; lores blackish; ear-coverts dark grey, with a yellowish patch just below the eye; throat and chest
 yellowish, deepening into bright yellow on the centre of the breast, abdomen, and under tail-coverts, the latter
 being the brightest; a few small brownish streaks on either side of the chin in some; thighs dusky yellowish.
 The above is the plumage of the majority of adult birds while they are in Ceylon; many have a trace of the black
 summer throat in the dark markings just alluded to. The supercilium and cheek-patch vary in extent and in the
 amount of yellow in their colouring, some being whiter than others. Some have the head more olivaceous than
 others.

* This Wagtail has been generically separated as *Calobates* by Kaup from the Black-and-White Wagtails (*Motacilla*
 restricted) on account of its different plumage. Its wings are said to be somewhat shorter, and its tertials less elongated;
 these distinctions will not hold good if it be compared with a series of species of *Motacilla*. The hind toe is perhaps a
 little shorter; but, on the whole, I prefer to follow Messrs. Dresser, Newton, and others, and keep the present species in
Motacilla.

There is no *constant* appreciable difference in the plumage of the sexes in winter; both have the back in some examples more olive than in others.

Male, summer plumage (China, end of April). Lores, chin, and throat black, abruptly defined against the yellow of the fore neck; above the lores a whitish streak, narrowing as it passes over the eye, and widening again above the ear-coverts; from beneath the eye a broader white streak passes beneath the cheeks to the ear-coverts; chest, breast, and underparts bright sulphur-yellow; head, hind neck, scapulars, and back ashy grey, with the rump, upper tail-coverts, wings, and tail as in winter. The supercilium is more developed in some birds than in others. A *March* example, with the throat changing to black, shows the colour down the centre of the throat and along the lower edge of what will eventually be the black gorget, which appears to be acquired by a *change of feather*.

Female, summer plumage. Some birds do not assume the black throat; and in those which do "it is not so well defined as in the males" (*Irby*). Ornithologists, as a rule, have not clearly described the plumage of the female, some omitting to make any mention of the throat, others (*Macgillivray*) saying that the throat "becomes dark grey, mottled with yellowish grey," while others, again, describe the throat as white. Col. *Irby*, however, explains the matter from personal observation. A female which I have this season watched breeding in Wales had a white throat. A female from Lake Baikal, says Mr. Dresser, has the throat greyish white, with a few blackish feathers on the chin. It is probable that birds in the second year do not change the colour of the throat, while older ones do.

Young. A nestling, just fledged, in the museum of Mr. Seeböhm, is in the following plumage:—Head, neck, back, and scapulars brownish slate-grey, with a slight rusty tinge on the hind neck and scapulars; orbital fringe and a postorbital stripe buff; ear-coverts tinged with fulvous; wing-coverts broadly edged with fulvous-grey; secondaries externally margined with whitish; rump dusky greenish, but with a greyish tinge not present in the adult; longer upper tail-covert feathers yellowish; the tail, which is only 1·7 inch long, has the three outer feathers all white, except a streak on the base of the outer web of the third, the remainder blackish, edged with white; throat and fore neck greyish white, deepening on the chest and the upper part of the breast into rusty fulvous, washed slightly with greyish; lower part of breast and belly whitish; vent and under tail-coverts reddish grey, with the longer feathers of the latter part yellow.

Mr. Dresser describes a young bird shot by himself near Baden as follows:—

"Upper parts grey with a slight greenish tinge, the rump greenish yellow, a yellowish-white streak passes over the eye, and under the eye there is an indistinct white mark; wings and tail as in the adult, but the secondary coverts have greyish tips; underparts greyish white with a primrose tinge; lower tail-coverts pale yellow; fore neck marked with greyish; breast washed with pale reddish grey; bill dark brown; legs pale fleshy grey; claws dark brown."

Immature male (Ceylon, January). Iris olive or light brown; bill dark brown, base beneath whitish. Legs and feet fleshy brown.

Hind neck, back, and scapulars ashy grey, pervaded somewhat with olive-brown on the back; the forehead and crown greenish brown; lores blackish; superloral streak fulvous white, becoming whiter as it passes over the eye; a yellowish-white patch just beneath the eye, encompassing the orbital fringe just above it; wings as in the adult, as also the rump and upper tail-coverts; ear-coverts dark grey; chin and throat white, washed on the chin with yellow; chest whitish, with a *just perceptible rusty hue* on it, and gradually becoming yellowish on the breast and flanks down to the abdomen and under tail-coverts, which are fine sulphur-yellow.

Young birds visiting Ceylon are in the above or nearly similar plumage. Some of them have the chest yellower than others, but there is a tell-tale rusty appearance on it which stamps them with the signs of youth.

A female (Asia Minor, February) corresponds with an October Ceylon example; the yellow of the throat is slightly washed with fulvous, giving it a reddish appearance; it is evidently a bird in the 2nd spring, showing that this immature chest-character is not put off until the 2nd year.

Obs. The Western or European form of Grey-and-Yellow Wagtail (*M. sulphurea* of Bechstein) was formerly kept distinct from the Eastern or Asiatic race, the *M. melanope* of Pallas, on account of its longer tail; they have, however, of late years been united, and the species takes the older title of Pallas. The alleged difference consisted in the length of the tail, the European bird being said to measure more than the Asiatic. A widely-collected series has shown that the tail does decrease in length towards China and India; but it likewise does so as we travel westward to the Azores, so that this character was found to be unstable, and the two races have rightly been made into one. The British examples which I have examined vary in the tail from 3·9 to 4·2

(coll. Swinhoe) vary from 3.3 to 3.8; and Mr. Dresser gives one at 3.9; he states that the Azores birds have shorter tails than any others, averaging 3.5.

Distribution.—The Grey-and-Yellow Wagtail arrives in Ceylon about the middle of September, taking up its quarters along the whole of the northern and western sea-boards. Stray birds arrive at the beginning of the month. Mr. Bligh has seen it as early as the 6th September in Haputale. It remains on the coast for a few days, and then moves into the forests of the northern half of the island, taking up its abode on the sandy beds of all the partially dried rivers. The majority of the birds, however, betake themselves to the hills in the centre and south of the island, resorting to the streams in the coffee-districts and following up the Mahawelliganga and its affluents to their source. About Nuwara Eliya it is very common, frequenting the roadside ditches, the borders of the lake, and every little stream on the plain. It is also found on the Horton Plains about the banks of the Maha Eliya, which, even at that great altitude, is a stream of considerable magnitude. Soon after its first arrival in the Western Province, it, for the most part, quits the low country to the south of the Maha oya, and, with the exception of the northern forests, may be considered a hill-visitant. It leaves again in March.

This Wagtail has, when viewed as being identical with the European bird, a very wide range. I will first consider its habitat in Asia, and then in Europe and Africa. It is a winter visitor to continental and peninsular India, arriving in September and leaving in April. Captain Butler's dates for its migration in the north-west are Sept. 5th to 30th April. It spreads throughout the empire, ascending the hills and taking up its quarters on mountain-streams, as in Ceylon. Mr. Bourdillon says that it is a common winter visitor in Travancore. Many remain to breed in Cashmere and along the Himalayas, which is the only part of India in which it can be said to be stationary. On the eastern side of the Bay it passes through Burmah to Tenasserim, in which province it is sparingly distributed on the more open portions; thence it finds its way across to the islands, where Mr. Davison remarks of it, "Not common on the Andamans or Nicobars;" he procured it on Pre-paris as late as the 26th of March. Down the peninsula of Malacca it must also wander, as it is found in Sumatra and still further east in Java. In the former island Mr. Buxton lately procured it. It is found throughout China, probably breeding in the northern hilly parts, and is a winter visitor to the east coast, Hainan, and Formosa (*Swinhoe*). Although it is doubtless resident in many regions beyond the Himalayas, yet there is a northward migration to some of them; for Col. Prjevalski, in his 'Birds of Mongolia,' remarks that it arrives at Muni-ul, South-east Mongolia, on the 22nd April. It passes through parts of Turkestan, and is found rarely in the north-western portion in winter up to 4000 feet altitude. Further north it occurs all across the southern parts of Siberia to Japan, where it must be resident, as Messrs. Blakiston and Pryer record it breeding on Fujisan and Tokio. It is found in Trans-Baikal; and Mr. Seeborn procured it, during his travels on the Yenesay, within the Arctic circle. In Palestine it is, according to Canon Tristram, a winter visitor, departing before it acquires its breeding-plumage. It occurs likewise in Arabia, but only on passage.

Turning to Europe, we find Mr. Dresser stating that it is met with there "as far north as the British Isles and Northern Germany;" and in these parts it is mostly a resident, although it moves about, extending its wanderings, as it does in England, after the breeding-season. In Sardinia, Mr. A. B. Brooke says it is common all the year, breeding in the mountains; and Mr. C. A. Wright found it to be a winter visitor to Malta, some few remaining to breed. In Portugal it is said to be common; and at Malaga Mr. Howard Saunders often observed it in winter, and found it abundant in the Sierra Nevada and other ranges, while Col. Irby states that it is abundant in Andalucia in winter and on passage. It is resident throughout the year in Turkey, and visits Greece in the autumn, passing the winter in the Cyclades according to Professor Newton. It is recorded by De Filippi from the Caucasus. It is found on the Carpathian mountains; and its range north of that locality is thus described by Professor Newton:—"This Grey Wagtail does not visit Iceland, the Faroes, or Norway. It has been observed in Heligoland, and a single example is said by Prof. Nilsson to have been shot in the extreme south of Sweden; its most northern occurrence in Germany, near Kiel, was recorded by F. Boie, more than 40 years ago; and in that country it is chiefly confined to the mountainous districts, which only exist in the central and southern parts. It is, however, also said to have occurred once in Posen."

It is found throughout the British Isles, but does not breed south or east of a line drawn from Start Point through the Derbyshire hills to the Tees. It is a summer visitant to Orkney, and occurs at the end of the

summer in Shetland, but has not been met with in the Outer Hebrides, and is rare as a resident in Scotland north of Inverness (*Newton* in *Yarrell*). In the winter there appears to be a movement from the south of Europe to North Africa. It is, according to *Favier*, a winter visitor near Tangier, appearing in September and October, and departing in February and March. Captain *Shelley* writes that it is probably a winter visitor to Egypt, and observes that Dr. *Adams* met with it in Nubia. In the highlands of Abyssinia it also winters; and *Brehm* says that it is resident at Mensa. How far south it goes on the west coast of Africa is not very clear; but Professor *Newton* has met with it in Madeira; and Mr. *Godman* (*Ibis*, 1866, p. 96) says that it is resident in the Azores, being common wherever there is water throughout all the islands, and elsewhere (*Ibis*, 1872, p. 176) remarks that it is abundant in all three of the Atlantic archipelagos.

Habits.—In Ceylon this elegant little bird frequents the banks of rivers, both sandy and rocky streams in the hills, the rivulets flowing through the "Plains" in the upper ranges, and even the roadside drains. It perches on the roofs of houses in the Kandy country, on stumps of trees and on rhododendron and other bushes, perpetually shaking or "balancing" its tail, and uttering its sweet little twittering note, which is very distinct from the louder and coarser cry of the Field-Wagtail. It is very tame in its disposition, getting up on being approached, and flying a little distance down the road or stream, and, if pursued, continues this for a long distance, turning round at the last and returning to where it was first disturbed. Its flight is very undulating, but it is, at the same time, swift, soon carrying the little bird out of sight when it is darting down the steep rocky streams of the Kandyan hills.

To be seen to perfection it must be espied standing on its favourite haunt—an isolated rock amid some foaming torrent in the deep glens of the coffee-districts; here it will rest for an instant under observation, but not long (for it is impatient when watched), "balancing" its graceful form, which looks all the more tiny when contrasted with the huge rocks and dashing waters, and then uttering its cheerful whistle, will dart away; or, if the rock be large enough, it will run to and fro, as if delighting in the wildness of the scene, meanwhile snapping right and left at the insects which swarm around it, or picking up some minute mollusk from the edge of the stream. In England it is equally aquatic in its mode of life, dwelling on brooks, and especially mountain-streams, in Wales or the northern counties. It is occasionally known to take up its quarters near a farm-house; and I have seen it among outbuildings in company with its Pied congener. *Jerdon* considers that "it has the jerking motion of the tail more remarkably than any other of the group, for it appears unable to keep it motionless for a moment."

Nidification.—In the Himalayas this species breeds in May and June, laying four or five eggs. Mr. *Brooks* has taken its nest in Cashmere on mountain-streams up to 6000 feet. He writes, "One nest that I found in Cashmere, at Kagan, was placed in a small bush on an island in the Sindh river, about 5 feet above the ground. The situation was that of a finch's nest! It was composed of moss, fibres, &c., and lined with hair, a neat compact nest, and placed in the fork of the branches near the top of the bush. Another nest was placed under a large boulder on the dry bed of the river, and was composed of the same materials." The eggs from these nests are described as "broad ovals at the larger end, and much compressed and pointed towards the smaller end. Typically the ground-colour is yellowish or brownish white, closely mottled and clouded all over with pale yellowish brown or brownish yellow. These markings, always pale dull and smudgy, are somewhat darker in some specimens and lighter in others; almost all have a very fine black hair-like line near the larger end." They vary from 0.68 to 0.73 inch in length by 0.53 to 0.55 inch in breadth (*Hume*).

Near Gibraltar, according to Col. *Irby*, they breed in April and May, generally in holes of the brickwork of the water-mills, sometimes close to the wheel, or in holes of rocks overhanging streams. In England it likewise builds, as a rule, near water. Professor *Newton* states that other sites are sometimes chosen, and instances one case in which it was known to build on a shelf in a room, which the bird entered through a broken window. He describes the eggs as "French-white, closely mottled, suffused, or clouded with very pale brown or olive, varying in depth of tint and also in the extent of the ground shewn between the markings; they measure from 0.79 to 0.72 inch by from 0.57 to 0.53."

Subgenus LIMONIDROMUS*.

Differs structurally from *Motacilla* in its slightly stouter bill and shorter tail, as also in its different style of coloration.

Of sylvan and partly arboreal habits, and with a different motion of the tail.

LIMONIDROMUS INDICUS.

(THE WOOD-WAGTAIL.)

Motacilla indica, Gmelin, Syst. Nat. i. p. 962 (1788); Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 268.

Nemoricola indica, Blyth, J. A. S. B. 1844, xvi. p. 479; id. Cat. B. Mus. A. S. B. p. 136 (1849); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 353 (1856); Jerdon, B. of Ind. ii. p. 226 (1863); Fairbank, Str. Feath. 1875, p. 260.

Limonidromus indicus, Gould, B. of Asia, pt. xiv. (1862); Holdsw. P. Z. S. 1872, p. 458; Swinhoe, P. Z. S. 1871, p. 365; Hume, Str. Feath. 1874, p. 239; Hume, ibid. 1875, p. 142; Armstrong, ibid. 1876, p. 329; Bourdillon, t. c. p. 401; Hume & Davison, ibid. 1878, B. of Tenass. p. 364; Ball, ibid. vii. p. 219.

The Black-breasted Wagtail, Jerdon. *Nget Rahat*, Arrakan (Blyth); *Uzhalla-jitta*, Telugu (Jerdon); *Rode Rode*, Malay (Blyth).

Gomarita, lit. "Dung-spreader," Sinhalese (Layard).

Adult male and female. Length 6.5 to 6.7 inches; wing 3.0 to 3.2; tail 2.9 to 3.1; tarsus 2.7 to 2.75; middle toe and claw 0.72; hind toe and claw 0.55; bill to gape 0.7 to 0.75. The largest example in my series is a *female*. Iris olive-brown; bill, upper mandible dark brown, lower fleshy; legs fleshy, feet washed with brownish, claws brown. Above brownish olive-green, slightly duskier on the forehead and above the supercilium, which, with the orbital fringe, is whitish; upper tail-coverts, tail, and wings blackish brown, deepening to black on the wing-coverts and part of the secondaries; tips of major and median wing-coverts yellowish white, forming two conspicuous bands across the wing; outer edge of primaries about the centre of the feather, a marginal patch near the tips of the secondaries, margins of some of the longer tertials, and a band at the base of the primaries the same; outer tail-feathers white, except at the base of the inner webs, and the outer edge and terminal portion of the penultimate the same; beneath white, tinged with yellowish on the chest, across which there is a black band succeeded by a black-brown one, incomplete in the centre and generally joined there to the upper; flanks shaded with smoky grey; primary under wing-coverts brownish with yellow tips; long secondary under coverts whitish. The pale portion of the face in some specimens is barred with brownish.

Young (?). I have not seen any very young examples; but a specimen which appeared, on examination of the organs, to be immature is whiter beneath, and has the flanks less dusky than other skins in my collection.

Obs. Mr. Hume gives the following dimensions of specimens from Tenasserim:—"Male. Length 6.7 to 6.75 inches;

* This is an isolated form of Wagtail, differing chiefly from *Motacilla* in its habits, and I therefore adopt Gould's term *Limonidromus*. The difference in bill and tail is barely appreciable, for true *Motacillæ* vary *inter se* in this respect; and as to the band across the chest, we have it in some of the Black-and-White Wagtails—for instance, in the African *Motacilla vidua*, in the winter-plumage of *M. alba*, &c. The motion of its tail is a slow lateral one, and not a vertical shaking as in all other Wagtails. This I consider to be its distinguishing characteristic. It was first named *Nemoricola* by Blyth; but this name was changed by Gould to the present, it having been adopted previously by Hodgson for another genus of birds.

expanse 9.5 to 10.0; wing 2.95 to 3.15; tail 2.8 to 3.0; tarsus 0.8 to 0.9; bill from gape 0.7; weight 0.55 to 0.6 oz. *Female*. Length 6.5 to 6.75 inches; expanse 9.4 to 9.75; wing 3.05; tail from vent 2.7 to 2.8; tarsus 0.8; bill from gape 0.75; weight 0.62 oz.

“Legs, feet, and claws pinkish flesh-colour; upper mandible dark brown, lower mandible fleshy pink; irides deep brown.”

Distribution.—This charming little Wagtail, which is a denizen of the dry forests of the island, arrives in Ceylon about the first week in October, and spreads through the region north of the central zone, its limit on the western side being the Kurunegala district, in which part I have traced it as far south as the forests lying between Madampe and the Maha oya. Thence it extends round the base of the hills to the eastern forests; but I do not know if it ranges higher than about the foot of the mountains. On the eastern side I have never seen it further down than the country between Vendeloos and Dambool. It is principally located in the central forests to the north of Dambool, and is numerous in the district between Trincomalie and Anaradjapura, in the Seven Korales, and other places north of the mountain-zone.

At Trincomalie I have found it in wood close to the sea-shore. It disappears from the island about the end of March. On the mainland it has a wide eastern distribution, extending from the south of India chiefly up the east side of the peninsula to Arrakan and Pegu and across to China, down the province of Tenasserim to Malacca, taking in the Andaman Islands, and thence to Sumatra, at the west of which island Mr. Davison saw it in Acheen. Mr. Buxton does not seem to have met with it in Lampong at the other extremity; but it is doubtless found in most parts of this comparatively little-known island. Jerdon says it is found throughout the whole peninsula of India, but is common nowhere; he considered it rare in the south of India, and he only procured it himself at Nellore and on the Malabar coast. Mr. Bourdillon records it as a *winter visitor* to the Travancore hills; Mr. Blanford procured it in the Godaveri valley; Blyth states that he obtained it at *all seasons* near Calcutta. In the Irrawaddy delta Dr. Armstrong obtained it in dense forest a few miles from China Ba-keer; and up the country Captain Feilden got it at Thayetmyo, and Mr. Oates in the hills. In Tenasserim, where it is generally distributed throughout the less elevated portions of the province, it was not procured later than April. From the evidence of observers in various parts of India, Mr. Hume affirms that it leaves the country in May, returning in September; but where it breeds is still a mystery, although we may, from a glance at its distribution, surmise that it passes northward through Burmah, and thence perhaps retires to the eastern confines of Thibet, or still further north to the southern part of Mongolia. Here, however, once we pass to the northward of the line of the Himalayas, we are dealing with a region so vast that there would be room in it for numbers of Indian birds to breed unknown to any who have yet explored it; and any conclusions which one might arrive at with reference to our little Wagtail could only be the veriest conjecture indeed. It is noteworthy that Mr. Swinhoe procured it as far north as Peking, which would decidedly suggest a very northerly breeding-place. Its distribution in India is perhaps as singular as its migration, for it does not seem to be governed by a preference for the is-ombral tracts which Mr. Hume has so well delineated in the useful map he has lately published (*Str. Feath.* vii.), and in Ceylon it is essentially a dry-district species.

Habits.—The Wood-Wagtail frequents the interior of the forest, being more often seen away from water than near it. I have sometimes met with it on the sandy beds of dry rivers in heavy jungle, but most frequently running about on the leafy ground among trees, or along the edges of paths and roads in the depths of the woods. It is very arboreal in its habits, often flying high up and alighting on the gigantic limb of some huge “Koombook”- or “Palu”-tree, about which it will run with as much confidence as on *terra firma*; it just as often, however, flies off and realights on the ground. Its actions are very graceful, and there was always, to my mind, no little charm in watching its elegant form in the wild and solitary jungles of Ceylon. It is, to a surprising degree, fearless and inquisitive in its manner, and will approach within a few yards of man, quietly tripping over the fallen leaves of the forest, with its characteristic “balancing” and swaying to and fro of its tiny frame, twisting its head awry, and giving out its tinkling cry of *clink, clink*, resembling somewhat that of the Chaffinch; for a moment it will then survey the intruder with quiet curiosity, hopping perhaps on to a low adjacent branch, and after running along it for an instant will realight and

continue its busy chase after the teeming insects of the tropical jungle. He who can then deprive it of its happy existence must have a hard heart indeed! It runs with considerable speed, and darts at its prey as other Wagtails. It sways its body from side to side, thus giving its tail a horizontal motion instead of a vertical, as in other Wagtails.

It is said to be much like the Asiatic Tree-Pipits (*Pipastes*) in its habits; these I have not had the pleasure of seeing in their native haunts, and I cannot therefore venture on an opinion touching its affinities in that direction. It would appear to approach these birds in habits about as much as *Budytes* does the Titlarks (*Anthus*). Its bill, feet, wings, and graceful form, and its gait and deportment are essentially those of a Wagtail. It certainly displays an abnormal character in the black chest-bands; but we see this developed to a small extent in the young of *Budytes*, and its wings-markings are those of this genus exaggerated.

It may often be seen under tamarind- and banyan-trees in the Sinhalese jungle hamlets; and here it was, I conclude, that Layard noticed it scratching among cattle-ordure, for in its accustomed sylvan haunts it has no opportunity of doing this. Mr. Davison thus writes of its habits in Tenasserim:—"It is generally met with in forest-covered ground in small parties, in pairs, or even singly, walking about under the trees and bushes and hunting for insects. Its habits are very similar to those of the Pipits, *Pipastes maculatus*, &c. When disturbed they fly up into the surrounding trees, uttering a sharp Pipit-like note; and there they sit, walk along the branches, or fly from one to the other, shaking their tails all the while. They soon redescend again to the ground when every thing is quiet. This bird combines in its habits something both of the Pipits and Wagtails. Like the former they are found in shady places, walking about in a demure way, uttering now and then a sharp single note; but, like the latter, they usually seize their prey with short sharp dashes, and when disturbed do not generally rise at once, but run on in front of one, taking short runs, stopping every few feet, and shaking their tails violently the while; but, again, when they *do* rise they, Pipit-like, fly up into the trees."

Subgenus BUDYTES.

Differs from *Motacilla* in its longer tarsus, larger feet, and long hind claw.

Mostly of non-aquatic habits.

BUDYTES VIRIDIS.

(THE GREY-HEADED FIELD-WAGTAIL.)

Motacilla viridis, Gm. Syst. Nat. p. 962, "ex Brown," Ceylon (1788); Dresser, B. of Europe, pt. 40 (1875); Severtzoff in Dresser's Notes, Ibis, 1876, p. 178; Seebohm, Ibis, 1878, p. 352.

Budytes cinereocapilla, Bp. Comp. List B. p. 19 (1838); Swinhoe, P. Z. S. 1871, p. 364; Hume, Str. Feath. 1874, p. 237; Oates, ibid. 1875, p. 142; Davison & Hume, Birds of Tenass., Str. Feath. 1878, p. 363; Ball, Str. Feath. 1878, vii. p. 219; Cripps, *t. c.* p. 286.

Budytes viridis (Gm.), Blyth, Cat. B. Mus. A. S. B. p. 138 (1849); Kelaart, Prodromus, Cat. p. 121 (1852); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 268; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 350 (1854); Jerdon, B. of Ind. ii. p. 222 (1863); Blyth, Ibis, 1865, p. 50; Holdsw. P. Z. S. 1872, p. 458; Shelley, B. of Egypt, p. 129 (1872); Legge, Ibis, 1874, p. 22, et 1875, p. 398; Tweeddale, Ibis, 1877, p. 228.

La Bergeronnette verte, or *Green Wagtail*, Brown, Ill. Zool. pl. 39. fig. 2; *Bergeronnette à tête cendrée*, French; *Wagtail Lark*, Latham. *Pilkya*, Hind.; *Pastro marillo*, Portuguese in Ceylon.

Adult male and female. Length 6·5 to 7·0 inches; wing 3·1 to 3·3; tail 3·0 to 3·1; tarsus 0·9; middle toe and claw 0·8; hind toe 0·4, claw (straight) 0·45; bill to gape 0·65.

Iris dark brown; bill blackish, base of lower mandible whitish or greenish grey; legs and feet blackish; soles yellow.

Male, summer plumage (Futtehgur, 28th April). Forehead, crown, occiput, nape, and sides of the neck, just lower down than the ear-coverts, uniform sombre bluish grey; lores, cheeks, and ear-coverts black, over the *left lore* a white streak, not extending to the eyebrows, above and *behind the right eye* another short white streak; hind neck, back, scapulars, lesser wing-coverts, rump, and upper tail-coverts brownish olive-green, sharply defined against the blue neck; the centres of the upper tail-covert feathers brownish: wings umber-brown; the median and greater secondary wing-coverts and the tertials broadly edged with pale yellowish; the primary-coverts and the primaries with fine pale edgings; inner webs of the secondaries white at the base: tail brownish black, the outer feather all white but the inner half of the inner web, which is brown to within $\frac{1}{2}$ an inch of the tip; the adjacent pair with their inner webs the same, and the outer brown to within $\frac{1}{2}$ an inch of the tip; the dark central feathers edged with olive-yellowish; entire under surface from the chin to the under tail-coverts deep yellow, brightest on the lower parts; extreme point of chin white; thighs brownish yellow, under wing-coverts yellowish.

A *female* has the head not so blue, and a broader yellow eye-stripe.

Male, winter plumage (Ceylon, 29th November). Above dusky olive, greenest on the rump and upper tail-coverts, and pervaded with slate-colour on the hind neck, and slightly brownish on the back; lores and cheeks dark brown; a moderately-defined narrow supercilium, *longer over one eye* than the other; wing-coverts, secondaries, and tertials edged with whitish, tinged on the tertial margins with yellowish; tail as above; chin and throat white, washed with yellow on the fore neck; the under surface pale yellow, not nearly so rich as in summer; chest washed at the sides with brownish.

Other examples have the head browner, and some the back more olive or the opposite (that is, browner); some want the eye-stripe altogether; in one it is present on one side and not on the other; in fact scarcely any two examples are perfectly alike.

A *male in change* (Colombo, 17th April) has the forehead dusky olive, and the head partly bluish slate, these new feathers appearing among the old greener ones; the back is dusky olive-green, being clothed still with the winter feathers; wing-coverts and secondaries margined with yellowish white; cheeks and lores changing to blackish; a narrow supercilium, which is evidently disappearing from the moulting of the old feathers; chin and throat whitish; under surface pure yellow, with a few whitish feathers down the centre of the breast, the remains of the winter plumage.

Another male (27th October) is in the following singular plumage:—Head and hind neck dusky bluish slate, blending almost imperceptibly into the brownish olive of the back, the feathers on this part being brown at the centre and olive at the margins, those which are abraded are mingled with a few olive-green ones; wing-coverts margined with greyish white; rump pale olive; lores, cheeks, and ear-coverts black; beneath yellow, of medium brightness; chin and along the lower mandible whitish; chest dashed with dark brown, like a young bird; thighs slate-coloured.

This specimen has the appearance of a young bird, were it not for its partially summer-coloured head and total absence of eye-stripe. It is probably a bird which is in the 2nd year, and from some cause has not properly assumed the breeding-plumage in the first season.

A Lapland specimen (29th June: wing 3.2) is not unlike the above (27th October), except that, being in summer plumage, the head is bluer and the back greener, the face and ear-coverts are very black, and there is no supercilium; the under surface not so yellow as in the summer male from Futtehgur.

Young (mus. Seeböhm: Yenesay, 8th August, 1877). Scarcely full-grown. Above brownish, tinged with green; some of the feathers on the head and hind neck nearly all black; a whitish supercilium; longer upper tail-coverts blackish; wings dark brown, the coverts very dark and broadly edged with dusky whitish; tertials edged whitish, the tail as in the adult; chin, throat, and lower part of face yellowish white; ear-coverts mixed with black; a blackish moustachial stripe; most of the feathers across the breast black, edged with yellowish; beneath yellowish white; flanks dusky.

Another, shot on the same day, is greener above, wants the black head-feathers, is not so dark on the chest, and has the under surface dusky whitish.

A third example, likewise killed on the same day, has a conspicuous supercilium and above it a black line, a white patch behind the ears, a very bold moustachial streak; chest patched with black; under surface whitish. Wing 3.0.

A yearling (Colombo, 23rd October). In moult to first winter plumage. Wing 3.3 inches. Above olive-brown, mixed on the back with a few olive feathers; the head browner than the back, with imperfect yellowish-white supercilia; rump olive-green; upper tail-coverts dark brown, edged with olive-green; wing-coverts broadly margined as in the nestling; chin and throat white, with the new yellow feathers appearing; fore neck and under surface yellow; chest tinged with fulvous, the feathers partially brown; the sides of the chest almost entirely brown.

This example proves that before migrating the long wing is acquired, together with most of the yellow under surface, and that after arrival the new face- and throat-feathers are donned.

Nearly all immature specimens possess, during winter, in Ceylon the eye-stripe; but it is of varying size, and rarely only present on one side. Many examples, which are apparently young, from the brown marks on the chest, have the head dusky cinereous, and separated from the more olive-colour of the back by a perceptible margin on the hind neck; they have the cheeks, just beneath the centre of the eye, striped with white. In March, the summer plumage is commenced to be acquired by moult. A female shot on the 17th is donning a narrow whitish supercilium and dusky bluish head; the quills are those of winter, and there is no sign of them being shed, and the old wing-covert feathers are acquiring a yellowish tinge. The male above described (17th April), which is in full moult as regards the head and under surface, retains the old quills. I am therefore under the impression that these are not moulted until arrival at the breeding-haunts, and perhaps not until the bird is going to return in the autumn.

Examples may be obtained as late as June with the summer livery not complete; such a one in Mr. Seeböhm's museum, dated Yenesay, 4th June, has the head slaty, patched with greenish; the green of the back is lighter than my Futtehgur example. Another from Tromsø, Norway, which is perhaps a yearling in change to breeding-plumage, has the head pure bluish grey, and is brownish olive, like immature birds, on the back.

Obs. This species takes the name of *viridis*, which is much senior to *cinerocapilla*. Specimens from Europe are inseparable from Asiatic ones, although, as a rule, they seem to have darker heads and more sombre-green backs; and I have seen one from Transvaal which I cannot separate from an Indian specimen.

Closely allied to *B. viridis*, and almost entirely resembling it in winter plumage, are two other species of Yellow Field-Wagtail found in India, viz. *B. flava* and *B. melanocephala*. The first-named is scattered over the whole of Europe and most of Africa and Asia. In summer plumage the male has a pale bluish-grey head, a broad white supercilium, the upper surface pale yellowish green, with the wing-coverts very broadly edged with yellowish; under surface very rich yellow. The female has a brownish head, with broad white supercilium. Wing 3.1 in both sexes; the bill is slenderer and sharper than in either of the other species.

B. melanocephala in summer plumage has the head, nape, and face coal-black, without a supercilium, as a rule—though

very rarely, Mr. Brooks says, a thin white line is present. The female has a browner head, with no supercilium. It has the bill stouter than *B. flava*, but not so deep at the base as in *B. viridis*. When the three species are laid side by side, the difference in the bill is at once perceptible. The Black-headed Wagtail is found in Eastern Europe, India, and China.

Distribution.—To the student of Ceylon ornithology it must be interesting to know that this widely-spread species, inhabiting the better part of Europe and Asia, and also the north of Africa, was first described from Ceylon, where it is only a winter visitant, from a specimen sent home by that indefatigable collector, Governor Loten, to Brown, who figured it in his 'Illustrations.' From Brown's drawing Gmelin took his description.

It arrives in Ceylon about the 20th of September in small numbers in the young stage; a week or two later a large influx, many of which are old birds, takes place, and by the 10th or 15th October the species is abundantly diffused through all the low country, but is withal more numerous in the maritime portions than far inland. It is less partial to the extremely dry and arid region of the south-east than to other portions of the sea-board; on the grass-lands surrounding the northern tanks of the interior it is plentiful. It does not ascend the hills, either in the centre or the south of the island, not having been recorded in any part above 1000 feet. In the Western and Southern Provinces it commences to pass northwards about the 20th March, migrating chiefly in the mornings, and its numbers decrease gradually through the month of April until the last birds disappear about the 5th of May. This latter date is the very latest in the district of Colombo that I have noted; and long ere this, as will presently be seen, it has begun to pass through some parts of Asia to northern regions.

This Wagtail is also a cold-weather visitant to India, and is spread, more or less, over the whole empire, extending into Burmah and southwards to Tenasserim. Thence it ranges as far as some of the Malay islands, as I observe that Lord Tweeddale includes it in Mr. Buxton's Lampong collection (S.E. Sumatra). It doubtless inhabits, during the season, the intermediate tract of country, the Malay peninsula, down which it must pass to reach Sumatra. In the Andaman Islands it also takes up its quarters; but it is not so numerous as the allied and perhaps more widely-distributed species, *B. flava*. Mr. Hume only records (in his List, Str. Feath. 1874) the procuring of two examples. It extends eastward to China, where it is, according to Swinhoe, found in pairs in the spring; to this region it probably finds its way from Mongolia or from Trans-Baikal, if it ranges so far eastwards. When Jerdon wrote his work on the Birds of India, he included the present and the other two species of Field-Wagtail (*B. flava* and *B. melanocephala*) under the title of *B. viridis*, and said that it was exceedingly abundant in every part of India. Since that time, however, Messrs. Anderson, Brooks, Hume, and others have paid much attention to this group (which is somewhat puzzling in winter plumage) and have demonstrated the fact that all three species inhabit India, so that they have been heretofore confounded with one another. It transpires accordingly that *B. flava* is quite as common, if not commoner, in some parts of the empire than our bird. There is no reason why it should not occur in Ceylon, although it does not seem to have generally such a southerly range as the present. As regards various observers in India, we find that Dr. Fairbank records it from Ahmednagar, and that Mr. Davidson says it is common in the Deccan. In the district of Furreedpore it is numerous during the cold weather. Captain Beavan writes that it is very "abundant at Barrackpore in the beginning of the cold weather;" he likewise found it numerous at Umballah. Further south, on the east side of the peninsula, Mr. Hume records it from Sambalpur. In Central India, I understand, it is common in localities. Mr. Anderson sent it to me from Futtchgur, where he also procured its two allies above mentioned. In the north-west I observe that neither Captain Butler nor Mr. Hume record it from the Guzerat district; but here it has, no doubt, been overlooked, as it must diverge to that part in migrating into India. In Sindh, it is, however, common, as also at the Sambhur Lake. In Pegu it is abundant, according to Mr. Oates, and it is likewise common in Tenasserim, and has occurred as high as 3000 feet in Karennee. In Turkestan it occurs in passage, according to Severtzoff, but does not breed there. Dr. Finsch met with it in the valley of the Irtisch in Western Siberia; and Mr. Seebohm found it on the Yenesay, where it breeds as far north as $69\frac{1}{2}^{\circ}$ N. lat., thus ranging into the Arctic circle; it arrived, he says, in the valley in great numbers on the 5th of June. It passes through Palestine in April on its way north, perhaps from Egypt or Arabia. Canon Tristram thus writes of it:—"When at Jericho, April 14th, I observed a large flock of *Budytes cinereocapilla*, evidently on their migration; they remained but one evening, and I secured several specimens, all of this form; on the next morning the flock took its departure for the north."

In Egypt it remains, according to Captain Shelley, throughout the year, and is there the most abundant of the Yellow Wagtails. It is found in North-western Africa, likewise inhabiting, says Col. Irby, both sides of the Straits of Gibraltar in great abundance. It arrives on the north side about the 20th of April, and leaves again in August and September. Mr. Saunders procured it in Southern Spain, and it is also found in Malta and Corfu. It inhabits Germany, and is common in Scandinavia, Lapland, and Finland; according to Sundevall it has been found as far north as Hammerfest. There has been no evidence, as yet, of its having occurred in England, although its near ally (*B. flava*) has many times been procured there. This latter species has been recorded from Transvaal and Damara Land, but the present bird has likewise occurred in South Africa, for I have seen a specimen in Mr. Seebohm's collection, procured by Mr. Andersson, which cannot be separated from unmistakable Ceylon examples of *B. viridis*.

I omitted to remark above that it visits Borneo, where it has been obtained in several localities, and in Sarawak has been shot as early as the 10th October. Horsfield records it from Java, Wallace from Moluccas, and Lord Tweeddale from Celebes; Gray notes it from Timor.

Habits.—This species frequents open lands covered with short grass, pasture-grounds, newly-ploughed paddy-fields, bare pasture, and so forth, resorting, whenever it can, to the vicinity of cattle, round which it congregates in little troops of three or four to catch the flies which torment oxen to such a degree in hot climates. Hundreds of these Wagtails are always to be seen in the season on the Galle face, Colombo, running to and fro, and darting along the ground in quest of food; little flocks of them associate in scattered company, and some are seen trooping across the road, or running along the curb-stone of the promenade, while others take up an elevated position on fragments of cattle-ordure, and plume their sober attire, making up, together with our Titlarks and Dotterels (which latter are generally to be found there after a heavy night's rain), quite an animated picture of bird-life. They are restless birds, constantly on the wing; but their flight is not so darting nor so undulating in character as that of the more graceful *Motacilla melanope*. They roost in long grass, resorting from far and wide to some chosen ground just before sunset, and starting back to their haunts in large flocks on the following morning. It was for years a matter of conjecture with me as to where all the Wagtails and Pipits which frequent the "Galle face" went at night; some time before sunset they became restless, and I used to observe that one by one they would take a longer flight than usual, and then mounting in the air, would fly off in the direction of the Pettah. About six, or a little before, the next morning they were to be seen returning in twos and threes, flying over the fort and making direct for the Galle face. It was not until shortly before I left Ceylon that I saw, on several occasions, great numbers of these birds coming from the south and settling down in the Mutturajawella swamp just before sunset; and I therefore conclude that these birds came from the environs of Colombo, as well as from other grass-lands in the neighbourhood. This Wagtail, to a great extent, catches its prey, consisting of small flies, while they are flying, darting at them very quickly from its terrestrial perch; it also picks up small terrestrial insects.

This species and its allies, in their non-aquatic habits, as well as in the structure of the leg and foot, show their affinity to the Pipits. In Ceylon I have never seen it near water; large flocks may be observed in the interior collected in newly-ploughed paddy-fields, where they procure a good supply of food from the upturned soil. In their breeding-haunts they would appear to resort to moist or marshy places. At Gibraltar Col. Irby says it keeps to marshes, nesting in the vicinity of water in grass and herbage and sometimes among sedges.

Nidification.—Our Indian birds, which breed in Siberia, would appear to nest in June or July; for Mr. Seebohm's nestlings, which he procured at the Yenesay on the 8th of August, were scarcely full-grown. In Southern Spain, according to Col. Irby, it lays at the end of April; but I am unable to give particulars concerning its nest and eggs.

Genus CORYDALLA*.

Bill straight, stouter and higher at the base than in *Motacilla*; tip slightly decurved. Nostrils as in the last genus; rictal bristles well developed. Wings long, pointed, the 1st, 2nd, and 3rd quills subequal and longest; tertials not exceeding the primaries. Tail shorter than the wings, even or emarginate; the outer feathers shorter than the others. Tarsus long, smoothly scutellate in front; toes moderately long, with the hind claw lengthened, in some species to a considerable degree.

Plumage pale-margined above, and more or less spotted or striated on the chest.

CORYDALLA RICHARDI.

(RICHARD'S PIPIT.)

Anthus richardi, Vieill. Nouv. Dict. xxvi. p. 491 (1818); Gould, B. of Europe, pl. 135; Blyth, Cat. B. Mus. A. S. B. p. 135 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 268; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 355 (1854); Newton in Yarrell's Brit. B. p. 598 (1874); Dresser, B. of Europe, pt. 26 (1874); Irby, B. of Gibraltar, p. 110 (1875); Seebohm, Ibis, 1878, p. 343.

Corydalla richardi (Vieill.), Vigors, Zool. Journ. i. p. 411 (1825); Kelaart, Prodrum, Cat. p. 121 (1852); Jerdon, B. of Ind. ii. p. 331 (1863); Swinhoe, P. Z. S. 1871, p. 366; Holdsw. P. Z. S. 1872, p. 458; Brooks, Str. Feath. 1873, p. 358; Hume, ibid. 1874, p. 239; Legge, Ibis, 1875, p. 398; Scully, Str. F. 1876, p. 152; Armstrong, *t. c.* p. 330; Prjevalski, B. of Mongolia, Rowley's Orn. Miscell. ii. p. 195 (1877); Hume & Davison, B. of Tenass., Str. Feath. 1878, p. 365; Ball, ibid. vol. vii. p. 220; Cripps, *t. c.* p. 288.

Corydalla chinensis (Bp.), Swinhoe, P. Z. S. 1871, p. 366.

Slender Lark, Latham; *Large Titlark*, Europeans; *Marsh-Pipit* of some writers. *Sairam*, lit. "Singing-bird," Turkestan, Scully; *Pastro marello*, Portuguese in Ceylon; *Pulla puraki*, lit. "Wormpicker," Tamils; also *Meta kâlîe*, lit. "Long Legs."

Gomarita, Sinhalese.

Adult male and female. Length 7.5 to 7.9 inches; wing 3.6 to 4.0; tail 2.9 to 3.2; tarsus 1.2 to 1.3; middle toe and claw 1.07 to 1.18; hind toe 0.6, its claw 0.65 to 0.82; bill to gape 0.75 to 0.85.

These dimensions are taken, as is the invariable rule in this work unless otherwise stated, from Ceylon birds.

There is, as will be seen, much variation in the length of the hind claw; but it has always the same *straight* character, differing in that from *C. striolata*.

Iris pale brown or light hazel; bill, upper mandible dark brown, lower fleshy with dusky tip, inside of mouth yellow; legs and feet fleshy, the toes brownish and the soles yellow, claws brown.

* Structurally this genus is but little different from true *Anthus*. It was adopted by Vigors for the species first to be noticed, and has been adopted generally for the allied hair-brown fulvous-margined Pipits, *C. richardi*, *C. striolata*, *C. rufula*, and *C. malayensis* of the Indo-Malayan region. I retain the generic term here because these birds appear to differ from true *Anthus* in not having a marked breeding-plumage. Blyth says that they only moult once; but this is erroneous, for I have detected examples of both the commoner Ceylon species acquiring new feathers in spring, although they do not shed the quills and rectrices at that season.

Winter (Ceylon). Above sepia-brown; head and back more or less deeply margined with ochreous grey or brownish buff, the edgings on the back of the neck generally paler than elsewhere; wings and tail deeper brown than the back; the tertials, major wing-coverts, and centre tail-feathers boldly margined with brownish buff; outer primary with a white edge; lateral tail-feathers white, except at the base of inner web; the next pair with more brown on the inner web, and the next with a white outer edge; above the eye a broad streak of buff; lores and face mingled ochreous and brown, with a dark streak on the lower part of the cheek; beneath buff-white, the chin paler than the fore neck; a dark stripe on each side of the throat; chest and flanks washed with fulvous, the former with dark centres to the feathers; under wing buff, the longer feathers rufescent at the tips.

Obs. This species is said to have a summer plumage which is darker and more distinctly edged than that of the winter bird. I have not been able to detect much difference myself. An example shot in May at Galle, just on the point of leaving for northern parts, is no darker than winter specimens, although the edgings of the upper-surface feathers are more ochraceous; new feathers are being acquired on the chest, which are more fulvous than the old ones. One autumn Heligoland example is *somewhat* darker than my winter series from Ceylon; but this may be a local peculiarity.

Young (nestling: Yenesay, mus. Seebohm). Centres of head-feathers very dark brown, the margins rufescent; back-feathers narrowly edged with whitish; wing-coverts very broadly margined with whitish and rufous; outer tail-feathers, with the base of the inner web blackish, sloping to a point at an inch from the tip, the adjacent pair blackish, the tip of the inner web white, running up the web; ear-coverts fulvous; a *broad, dark, complete stripe* down each side of the throat: the chest and fore neck with broad, blackish, central, drop-shaped markings.

Immature birds in Ceylon have the legs duskier than the adults; lores not so dark; the edgings of the upper surface paler, the centre of the back not presenting that uniform appearance which old birds have; the throat less fulvous, the stripes on each side conspicuous, and the striæ of the chest more pronounced.

Obs. Examples of this Pipit vary somewhat according to locality. Some specimens from China are particularly dark; and the hind claws and bills of these Eastern birds seem to be shorter than those from Europe and India. In five specimens the claw varies from 0.4 to 0.7 inch; the wings from 3.7 to 3.8; tail from 3.3 to 3.4; bill from gape to tip 0.75 to 0.8. Two adults from Heligoland, with shorter wings (3.5 to 3.6 inches), measure each in the bill 0.8, and in the hind claw 0.62 and 0.7 respectively. The chests in the China birds have the same fulvous wash on the chest and the same softened brown stripes that our winter birds in Ceylon have. A specimen from Siam corresponds exactly with these Chinese birds.

Dr. Armstrong gives the dimensions of examples shot in the Irrawaddy delta as—wings 3.45 to 3.7 inches, bill from gape 0.8 to 0.85; Mr. Cripps of Furreedpore specimens—length 7.75 to 8.16 inches, wings 3.5 to 3.75, bill from gape 0.76 to 0.86, hind claw 0.7 to 0.83. A Yarkand bird shot by Dr. Scully measures—length 8.0 inches, wing 3.95, tail 3.3, bill from gape 0.85. The majority of these Indian birds appear to exceed slightly those I have examined from Europe; but I have not seen a large series of the latter. Mr. Brooks, in his table of measurements of this and *C. striolata* (Str. Feath. i. p. 360), gives the hind claw at 0.65 to 0.7.

Distribution.—This large Pipit is migratory to Ceylon, arriving at the beginning of October and departing as late as the middle of May, about which time I have procured examples in the Galle district. It is widely diffused through the low country, affecting chiefly the maritime regions. It is particularly numerous on the pastures lying on both banks of the Virgel, and likewise on the open lands and grass-cheenas to the south of Batticaloa. In the west it is abundant at Puttalam, Negombo, Colombo, and other places on the coast. In the south it is frequently met with about Galle and Matara, but becomes scarcer towards the east. It is probable that the large species of Pipit I observed in the Hambantota district belonged to this species and not to *C. striolata*. In the Central Province it inhabits some of the lower highlands and patnas; but I do not know that it ranges to any altitude. It is common all through the Jaffna peninsula and in the islands adjacent.

We may safely assume that this Pipit is only a cold-weather visitant to the whole of India, as Mr. Hume states; though it breeds at Ladak it does not do so at Simla, nor, I conclude, at any station on the southern slopes of the range. Jerdon sketches out its distribution in India as follows:—"It is found from Nepal and the Himalayas to the extreme south; more rare in Southern India, especially in the Carnatic, but tolerably common, indeed abundant, in Lower Bengal. It is also found in Burmah and other countries to the eastward." As regards the various localities here referred to, we find that of late years Mr. Ball records

it from Bardwan, Nowargarh, and Karial, and that Mr. Cripps says that it is common in Furreedpore. At Assensole, on the borders of the province of Chota Nagpur, it is, according to Mr. Brooks, not so common as its two congeners next referred to here. We do not find it recorded from the hill-districts in Southern India; but this is only natural, as it is essentially a bird of the low country. In the dry north-west of India it does not seem to locate itself at all, as it is not found in Sindh or Rajpootana; in fact, as regards this part of Asia, it has more of an easterly than a westerly distribution. On the opposite side of the Bay it evidently locates itself near the coast, as Mr. Oates did not find it up country in Pegu, whereas Dr. Armstrong says that it is extremely abundant in the paddy-fields near Elephant Point in the Irrawaddy delta; it likewise occurs in the maritime province of Tenasserim, in all cultivated and open lands throughout it. In the Andamans it was procured at Pt. Blair in April, but was not met with so far south as the Nicobars. It has been met with in Siam, and is found throughout China in the winter, also in Hainan, and rarely in Formosa.

Turning northwards now, in order to trace out its summer quarters, I observe that Dr. Scully states that it is a seasonal visitant to the plains of Eastern Turkestan, where it breeds; he observed it there in June and July, but not in winter. Further east, in the little-known regions which he explored, Col. Prjevalski states that it breeds in limited numbers at Kan-su in Mongolia, and that it is tolerably abundant at Lake Hanka from the end of April until the beginning of September. It breeds on the steppes, avoiding the tall thick grass of the marshes. Mr. Seeböhm found it breeding in great numbers on the Yenesay, and Dr. Dybowski met with it in Dauria. Severtzoff did not meet with it in Western Turkestan, nor does it appear to inhabit Palestine, although it is said to visit Smyrna by Dr. Krüper. As regards North-eastern Africa, Shelley says nothing of it in Egypt, nor does Mr. T. Drake mention it as having been seen by him in Morocco. On the European side of the straits, however, we have Col. Irby's evidence as to its occurrence at Gibraltar in passing in April, from which we infer that it must also be found on the African side too. Its distribution in Europe is somewhat noteworthy, for it seems to confine itself to the countries just on the north of the Mediterranean, on the east of which it inhabits South-eastern Russia and on the west France, straying into England and up to Heligoland, and thence into Sweden and Norway (where it has very rarely occurred); whereas in the intervening region of Central Europe it is almost unknown, it having only once been met with there, and that near Vienna. Mr. Saunders obtained it at Malaga; and one of the first few examples ever procured came from the Pyrenees. In France and Lombardy it is well known; in fact it was described by Vieillot from specimens procured in Lorraine in 1815 by M. Richard; while in Lombardy it is said by Signor Bettoni to be a characteristic species. To England it is of course a visitor, arriving in autumn and departing in spring; and since the first specimen made known to science was obtained near London in 1812, about sixty have been recorded. It has chiefly, according to Professor Newton in his edition of Yarrell, occurred in the southern counties from Kent round to Cornwall, even having occasionally found its way to the Scilly Islands. Mr. John Hancock records three examples in his interesting catalogue as having occurred in Northumberland, and it has also been procured in Shropshire and Staffordshire.

Habits (Ceylon).—This Pipit is usually found consorting in scattered company with the common Titlark, *C. rufula*. It frequents pastures, particularly those covered with short grass or on which cattle are much fed, bare ground in the Jaffna peninsula, cheenas in the forest, and marsh-land. To the latter sort of locality, however, in Ceylon it is certainly not so partial as to the barest ground, although it *has* been named the "Marsh-Pipit." I have generally found it in long grass on wet marshes, either just after its arrival or before leaving the island for northern climes. It is a handsome bird in its carriage, holding itself erect, running swiftly, and frequently mounting on to some little eminence, where it stands pluming itself, and in this attitude is very apt to deceive the eye as to its size. It has a soft-sounding yet louder note than *C. rufula*, and constantly utters it, both on the ground and when flying with its rapid undulating flight from one spot to another. It is as fond of dusting itself on roads as the next species, and on the Galle face, Colombo, where it is common, becomes discoloured with the red *Kabook* soil. It feeds on worms and grasshoppers, and often seizes a passing butterfly or insect on the wing.

Mr. Brooks, who has devoted much attention to this species and *C. striolata*, has some interesting notes on his observations of it at Assensole in Bengal. He remarks that there it is particularly shy and difficult to shoot, and that its note is a soft double chirp, reminding one strongly of the note of a Bunting. The

places it "frequented were low grounds occurring below jheels or *talaos*; the water constantly percolating through the reservoir-bank kept the low grounds adjacent rather damp, and in many places quite wet. Over a greater part of this low ground, the rice-crop having been gathered, there now grew a small vetch with blue flower, and in these vetch-fields the large Pipit of which I am speaking delighted. Before retiring among the vetches to feed they sat for some time, as a rule, upon the little bunds which divide the fields; and when they did this I found the best plan was to wait till the lookout was over and the birds had retired among the crops to feed. It was then possible to creep up within shot." In Ceylon the Marsh-Pipit exhibits none of this shyness when inhabiting public resorts, but is, on the contrary, very tame. In wet weather in the Eastern Province I have, however, found it somewhat wary in marshes. Mr. Seebohm observed that it hovered like a Kestrel at its great breeding-grounds on the Yenesay. In Furreedpore it is said to frequent fields of peas, linseed, &c.; and, according to Jerdon, it is always found "in swampy or wet ground, grassy beds of rivers, edges of tanks, and especially wet rice-fields, either singly or in small parties."

Nidification.—There is not much known about the nesting-habits of this fine Pipit. It is probable that our birds all breed in Thibet and Turkestan. Col. Prjevalski, the celebrated Russian traveller and ornithologist, found it breeding in Kan-su, where it arrives in May; and Dr. Scully considers that it hatches its young about the beginning of July in Eastern Turkestan. In Northern Asia Mr. Seebohm shot the young in August on the Yenesay, so that its breeding-season throughout Central Asia must be June and July. Concerning its breeding in Dauria, Mr. Dresser writes as follows:—"Dr. Dybowski writes (J. f. O. 1868, p. 334) that it is common in Dauria, and remains there to breed; but he gives no information as to its habits or nidification, excepting that he found its nest, and that it deposits five or six eggs. . . It is curious that, although this bird has been so frequently met with in various parts of Europe, and must breed there (for I have before me European-killed specimens in young plumage), there does not appear to be any reliable instance on record of its nest having ever been taken in Europe; and, in fact, next to nothing is known respecting its nidification. I have a clutch of five eggs collected by Dr. Dybowski in Dauria; but they were sent to me without the nest, which I am therefore unable to describe." These eggs are described as being greyish white, closely spotted with greyish olive, and as measuring 0.9 to 0.78 by from 0.67 to 0.62 inch.

CORYDALLA RUFULA.

(THE COMMON PIPIT.)

Anthus rufulus, Vieill. Dict. d'Hist. Nat. xxvi. p. 494 (1818); Blyth, Cat. B. Mus. A. S. B. p. 135 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 268; Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 356 (1854).

Corydalla rufula, Kelaart, Prodromus, Cat. p. 121 (1852); Jerdon, B. of Ind. ii. p. 232 (1863); Holdsw. P. Z. S. 1872, p. 458; Hume, Nests and Eggs, ii. p. 384 (1874); Ball, Str. Feath. 1874, p. 416; Hume, *ibid.* 1875, p. 142; Brooks, *t. c.* p. 252; Butler & Hume, *t. c.* p. 490; Fairbank, Str. Feath. 1876, p. 260; Armstrong, *t. c.* p. 330; Bourdillon & Hume, *t. c.* p. 401; Hume, *t. c.* p. 458; Fairbank, *ibid.* 1877, p. 407; Hume & Davison, B. of Tenass., *ibid.* 1878, p. 366; Ball, *ibid.* vii. p. 220; Cripps, *t. c.* p. 288.

The Indian Titlark, Jerdon. *Rugel*, Hind.; *Chachari*, Hind. at Monghyr; *Gurapa-madi pitta*, Telugu; *Pastro marello*, Portuguese; *Meta kâlîe*, lit. "Long Legs," Tamils.

Adult male and female. Length 6·2 to 6·75 inches; wing 3·0 to 3·3; tail 2·5; tarsus 1·1; middle toe and claw 0·8; hind toe 0·4, claw 0·45 to 0·52; bill to gape 0·75 to 0·8. This species varies much in size. The claw is straight, like that of *C. richardi*.

Iris dark brown, olive-brown, or earth-brown; bill, upper mandible dark brown, gape fleshy, lower mandible fleshy, with dark tip; legs and feet fleshy grey, joints darkish, claws brown.

In general character this bird is very similar to Richard's Pipit, of which it is a miniature, differing structurally also in its shorter hind claws. The margins of the upper plumage are perhaps, as a rule, more clearly defined than in the larger bird, and the broad edgings of the wing-coverts and tertials more tawny in hue; but, at the same time, the character of these markings is subject to variation; the penultimate has the brown portion of the inner web, as a rule, more extensive than in the large bird; the buff supercilium, ear-coverts, and cheeks are similar, but the streak at the side of the throat is, in low-country birds, less clearly defined; chest and flanks washed with fulvescent, the former streaked, and the under tail-coverts tinged, with buff, as in *C. richardi*.

Some individuals from the patnas in the upper hills are very tawny in general hue, and have the tail darker than in low-country birds; the stripe running down from the bill on each side of the throat is also bolder, and the bill very large in some,—in a Horton-Plains specimen it is 0·8 inch, quite as large as any Richard's Pipit; the wing measures only 3·3, and the hind claw 0·5; the anterior claws are very long, the middle one 0·26. In fact, had I large series exhibiting throughout the same character, it would, I think, be justifiable to separate the hill-race as distinct. An example from Lindula patnas measures—wing 3·2, hind claw 0·52.

The edgings of the feathers above are very ochraceous, as is also the entire colour of the under surface.

Young. Immature birds of the year scarcely differ from adults; the feathers are perhaps rounder on the head, as in the Larks, and the centre tail-feathers rather conspicuously edged with buff.

This species moults completely in September and October, but only the clothing-feathers before breeding. It has a strong propensity towards albinism: examples may occasionally be seen with two or three white feathers in the tail; and I possess one in which the terminal portions of all the clothing-feathers above, most of the central tail-feathers and tertials, and the entire occiput are *pure white*.

Obs. The same variation in size appears to exist in continental members of this species; and this fact exposes a propensity in its nature which makes it unsafe to try any expedient of dividing it into races. Many such uncertain birds exist, and they are, perhaps, better left alone, to enjoy an undisturbed and intimate relationship with one another. Mr. Hume, in dealing with Mr. Bourdillon's specimens from the Travancore hills, says that local races differ as much as those of *Alauda gulgula*, the Indian Sky-Lark. In the southern examples, he remarks, the bills are longer and slenderer, the hind claw shorter, and the markings of the upper surface better defined and more pronounced. As regards size from various localities, Dr. Armstrong records the wing of an Irrawaddy specimen

as 3.27, and Mr. Cripps that of a Furreedpore example 3.08 inches, both being males. Jerdon, generalizing from India, fixes the wing dimension at 3.0 to 3.25.

C. malayensis, the Malay Pipit, is the representative of this species in that peninsula. It is closely allied, differing, according to Mr. Hume, in the darker upper surface, more strongly marked spotting of the breast, stouter bill and feet: I have not seen any examples; but it must be remarkably close to our hill-bird, and can at best be only looked upon as a *subspecies*. *Male*, wing 3.5; *female*, wing 3.1 to 3.15.

Distribution.—The Common Pipit, or Indian Titlark, is one of our most familiar birds, being distributed over the whole island, and almost as abundant on the lofty lying patnas and “plains” of the Nuwara Eliya plateau and other elevated regions of the hill-zone as on the plains of the north. It is, however, scarcer at the Horton Plains than at the Sanatarium, Elephant Plains, or the Agra patnas, that upland region being probably too cold for it. It moves about in districts exposed to the force of the monsoons, seeking shelter at that time in more secluded localities than its favourite open lands on the sea-coast. There is a marked increase in its numbers on open places near the sea-coast during the N.E. monsoon, owing to its retiring in the breeding-season to grassy places in the interior. This may be plainly observed by noticing it throughout the year at the Galle face.

It is abundant in most parts of India, except, perhaps, in the north and north-west portion of the empire. Jerdon remarks that it is numerous from “the Himalayas and Nepal to the extreme south, more rare in Southern India, especially in the Carnatic, but tolerably common and abundant in Lower Bengal.”

As regards the south, however, it is found in Ramisserum Island, in the hills of Travancore, and in the Palani ranges. Further north, in the Deccan, it is common, and also on the hills, according to the same authority. The same is true in the open parts of Chota Nagpur; and Mr. Ball likewise records it from various places between the Godaveri and the Ganges, from Calcutta and the Satpura hills; in Central India it is found, and, in fact, it breeds, says Mr. Hume, all over the plains. In the north-west its distribution is local. Mr. Adams records it as common at the Sambhur Lake; and Captain Butler says it is likewise so in the plains round Mount Aboo in the cold weather, though it does not ascend the hills; it, however, sparingly remains in that district throughout the year, as subsequently he found it breeding at Deesa. Mr. Hume says it is common at Ajmere, but not found at Jhodpoor, or in Sindh, Cutch, and Kattiawar. In the Himalayas Mr. Brooks procured it in the narrow part of the Bhagirati river above Mussoori; and Mr. Hume says that it builds up to 6000 feet elevation. It is abundant in parts of the Irrawaddy delta according to Dr. Armstrong, but is rare in Pegu, where Sir Arthur Phayre procured it in the Tongoo district. In Tenasserim it is “a permanent resident in the more open and cultivated tracts throughout the province,” not ascending the higher hills. Mr. Davison remarks that “there is not a bit of open land anywhere about Moulmein, Tavoy, or Mergui where numbers may not be seen.” It has not been found in the Andamans, if the Marquis of Tweeddale’s identification of *C. striolata* in Lieut. Wardlaw Ramsay’s collection was correct, which I have no doubt was the case. It is replaced to the south of Tenasserim by the Malaccan form, *C. malayensis*.

Habits.—This tame bird frequents fields, esplanades in towns, pastures and open ground of all sorts, ploughed paddy-land, and bare patnas in the hill-districts. It is fearless in its disposition, taking no notice of man, but merely moving out of his way or running leisurely before him. It rises with a two-syllable note, and is capable of taking long-sustained flights, which are noticeable in its evening passage from the Galle face over Mutwal to the Mutturajawella swamp, where it roosts in great numbers in sociable company. It associates in flocks at some seasons of the year, notably before pairing in June, and is then very restless in its habits. Both this and the last species, adapted by nature to open and bare localities, are capable of sustaining the powerful midday rays of a tropical sun without any apparent inconvenience; and when all other insessorial birds are seeking the cool shade of green foliage, or panting with heat, these salamander-like little birds may be noticed running on the burning soil, or quietly feathering themselves on some half-baked clod! It feeds on worms and various terrestrial insects, and likewise partakes of small grass-seeds. It is in a constant state of moult in the autumn.

Mr. Davison remarks concerning this species:—“It is a very familiar and tame bird, running about the gardens and along the paths and roads, and even coming to within a foot or two of one’s door. Though

numbers are seen within a very small circumference, yet they all seem to act quite independently of one another; their flight is undulating, and they utter as they rise and during flight a short sharp note. I have seen them often rise into the air, however, for a few moments, sing a sort of song, and then descend." They do not all sing thus as a constancy when breeding, like the Bush-Larks; but I have on one or two occasions seen them rise and make a poor attempt at a Pipit-like warble. Jerdon likens it to a "mere repetition of one note, during its descent from a short flight of a few feet from the ground."

Nidification.—This species breeds in the west and south of Ceylon during May, June, and July, placing its nest in a depression in the ground, under the shelter of a tussock or small tuft of herbage. It is generally well concealed or artfully situated, so as to escape observation, for it is seldom found. In shape it is a shallow cup, the bottom being thick and tolerably compact, while the edges are fined off to correspond with the grass at the surface or edge of the hollow in which it is placed; it is made of roots, dry grass, stalks of plants, &c., and lined with fine grass, hair, or very small roots, the egg-cavity being about $2\frac{1}{4}$ inches in diameter. The eggs are usually two or three in number, of a whitish or greenish-white ground-colour, speckled and spotted all over, but chiefly at the large end (where the markings unite to form an irregular zone), with greenish brown, light brown, or purplish brown, over which, in some, are more sparingly distributed blots of dark or inky brown. Some eggs are openly marked all over with dark brown without the lighter wider spottings. In size they vary from 0.76 to 0.89 inch in length by from 0.56 to 0.64 inch in breadth. The female sits closely to preserve her eggs from the attacks of vermin and lizards; and incubation lasts from 12 to 14 days.

In India the breeding-season lasts from March until July, April being the favourite month. The nests are made of grass and roots, and lined scantily with finer roots. Some nests are almost entirely composed of roots, and they are usually placed under the shelter of a tuft of grass.

The eggs are said to be three in number, and are described as "typically of a brownish or greenish stone-colour, thickly streaked, clouded, and streakily spotted with dull brownish and purplish red, and sometimes with brown of different shades, or brown intermingled with pale purplish grey;" the markings have a tendency to become confluent at the large end. In size the eggs vary from 0.75 to 0.86 inch in length, by 0.57 to 0.63 inch in breadth (*Hume*).

CORYDALLA STRIOLATA.

(THE LARGE MEADOW-PIPIT.)

Cichlops thermophilus, Hodgs., Gray's Zool. Miscell. 1844, p. 83 (without description).

Anthus striolatus, Blyth, J. A. S. B. 1847, xvi. p. 435; id. Cat. B. Mus. A. S. B. p. 136 (1849); Layard, Ann. & Mag. Nat. Hist. 1853, xii. p. 268.

Corydalla striolata (Bl.), Kelaart, Prodromus, Cat. p. 121 (1852); Jerdon, B. of Ind. ii. p. 233 (1863); Holdsw. P. Z. S. 1872, p. 458; Brooks, Str. Feath. 1873, p. 359; Ball, ibid. 1874, p. 417; Fairbank, ibid. 1876, p. 260; Hume & Davison, B. of Tenass., Str. Feath. 1878, p. 366; Ball, ibid. vii. p. 220.

Anthus thermophilus (Hodgs.), Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 356 (1854).

The Mountain-Pipit, Kelaart.

Adult male and female. Length 7.1 inches; wing 3.6; tail 2.8; tarsus 1.05; middle toe and claw 0.8; hind toe 0.43, claw 0.5; bill to gape 0.75 to 0.8. The tarsus and toes are short, and the hind claw *much curved* in this species. The bill is also small for the bird.

Iris brown; bill, upper mandible dark brown, lower fleshy yellow, tip dusky; legs and feet fleshy yellow, claws dusky.

Ceylon (October). Above sepia-brown, the feathers more narrowly margined with a paler hue than *C. richardi*, giving the edgings a more conspicuous appearance than in that species; the penultimate rectrice has more white, and its shaft is also white near the tip; median and greater wing-coverts broadly edged with *whitish*, forming two bars across the wing; tertials and secondaries edged with tawny; primaries pale-edged, the outer edge of the 1st white; from the nostril to the ear-coverts, the upper feathers of which are brown, a buff streak; beneath fulvescent whitish; throat and abdomen the palest; a series of spots forming a line down the sides of the throat and spreading over the chest, which is lightly washed with greyish buff; the flanks are paler than in the other two species.

Obs. The above is a description of the only Ceylonese example in my collection, about the identification of which I have no doubt. I am therefore unable positively to say whether it is a fully adult bird. It, however, corresponds well with specimens collected by Mr. Brooks at Dinapore, and with a skin in the late Mr. A. Anderson's collection; and therefore if due regard be paid to the peculiarities in the plumage of this specimen, taken in conjunction with the well-marked character exemplified in the short and *curved* hind claw, the species ought to be correctly identified by my readers in Ceylon. The hind claw varies in length in the last species, but it is always remarkably straight, or, more correctly speaking, *very gently* curved; whereas in the present species it is fairly curved, slightly more so than in the Common Pipit next to be considered. Mr. Brooks's specimens are all characterized by the same slender small beak; the chests are marked with clearly-defined, small, rather pointed stripes, which have a different appearance altogether from the softened down striæ in the last; the centres of the back-feathers are darker brown. Four examples from Dinapore measure respectively as follows:—wings 3.5, 3.6, 3.6, 3.6 inches; tails 3.5, 3.5, 3.5, 3.7; hind claws 0.5, 0.55, 0.4, 0.52. Mr. Anderson's specimen measures—wing 3.6 inches, hind claw 0.5. The claw, therefore, varies but little. In my specimen the terminal portion of the shaft of the penultimate feather is *white*, whereas in *C. richardi* it is black to the tip. In one of Mr. Brooks's skins it is the same, but in all four the amount of white on the webs of this feather is somewhat less than in mine. Mr. Ball states that in the Satpura hills specimens have very faint or no spotting on the breast.

Distribution.—This species, which, like Richard's Pipit, is migratory to Ceylon, arrives in October, and, according to some writers, is widely distributed. I have no doubt that it is so; but it cannot be so numerous as Richard's Pipit, which is probably taken for it by those who are not well acquainted with its distinguishing characters. Kelaart speaks of it as being common at Nuwara ELLIYA; but here he is evidently speaking of the Common Titlark, which, on the hills, is a more robust bird than in the low country. Mr. Holdsworth says it is not uncommon at Colombo in the north-east monsoon. I was unfortunate in not procuring it at the Galle face; many large Pipits which were shot by me on the Galle face during successive seasons all proved to be the

larger long-clawed species. My specimen was obtained in the flooded pasture-lands near the Virgel. I was struck by the peculiar appearance of the head and bill of certain Pipits I met with during a forced march to Trincomalie, and shot one (the only individual I had time to get), which proved to be the desired species. I have no doubt it is commoner on the extensive pastures and grassy plains in the great delta of the Mahawelliganga than anywhere else in Ceylon.

Concerning its distribution in India, Jerdon says, "Hodgson sent it from Nepal; Blyth first procured it from Darjiling, where I found it tolerably common about the station and in stubble-fields. I also procured it in the Nellore district, in the south of India, generally near low bushy hills, not approaching houses like the last (*C. rufula*); it is not rare at Saugor, in Central India, in similar localities. It does not breed, that I am aware of, in India, even at Darjiling, coming in towards the end of September." It is possible that the species noted from Kangra, North-west Himalayas, as *C. rufula* by Herr von Pelzeln may have been the present. It is recorded from the Deccan by the Rev. Dr. Fairbank, and Mr. Ball notes it from the Rajmehal hills, Bardwan, Singhbhum, Nowargah, and Karial. He likewise obtained it in the Satpura hills and in all the districts of Chota Nagpur. Mr. Brooks met with it at Assensole, and says that it is more abundant in that part of Bengal than the "Marsh-Pipit." I do not find any record of its occurrence on the eastern side of the bay north of Tenasserim, to the southernmost district of which province Mr. Hume says it is a rare visitant: it was there procured at Mergui and Bankasoon. The Marquis of Tweeddale identified this species in Capt. Wardlaw Ramsay's collection from the South Andamans; but Mr. Davison does not appear to have met with it there. Where it retires to during the breeding-season is still a mystery; but its haunts must be beyond the snowy ranges, if it does not nest anywhere in India.

Habits.—This fine Titlark frequents pasture-lands and plains covered with short herbage, moist fields, and, according to Indian writers, stubble-land. Mr. Davison found it in turfy and rice-land, and Mr. Brooks met with it in vetches and paddy-fields in Bengal. It appeared to me to be solitary in its habits, and it ran quickly about, stopping suddenly and holding itself very erect. Jerdon remarks that it has a stronger flight than the Common Titlark, and takes shelter under trees and shrubs. Mr. Brooks says that it rises with a loud discordant note, very different from that of any other Titlark; and by this it may be readily distinguished from Richard's Pipit, which it so much resembles at a distance. It feeds on worms and insects, which it takes from the ground or from the cattle-ordure on the pastures which it frequents.

PASSERES.

Series C. STURNOID PASSERES.

Wing with 10 primaries, the first of which is rudimentary. (Wallace, Ibis, 1874, p. 412.)

Fam. ALAUDIDÆ.

Bill variable, more or less conical and slender in some, stout and slightly curved in others; tip entire. Wings pointed, with the 1st quill normally present, but absent in one or two recognized genera of the family*; the tertials elongated. Legs more or less slender. The tarsus *scutate both before and behind*; claws straight; the hind claw generally elongated. Head in most crested.

Genus ALAUDA.

Bill rather conical, but slender, the culmen slightly curved. Nostrils *concealed* by a tuft of hair-like feathers. Wings moderate, pointed; the 1st quill minute, less than the primary-coverts; the 2nd, 3rd, and 4th quills subequal, the 3rd usually the longest. Tail moderately long, emarginate at the tip, the centre feathers shorter than the lateral ones. Tarsus moderate, equal to the middle toe and its claw, covered in front and behind with broad transverse scales, those behind being smoother than those in front; inner anterior claw longer than the outer; hind claw very long and straight.

ALAUDA GULGULA.

(THE INDIAN SKY-LARK.)

Alauda gulgula, Franklin, P. Z. S. 1831, p. 119; Jerdon, Cat. B. South India, Madr. Journ. 1840, xi. p. 30; Blyth, Cat. B. Mus. A. S. B. p. 132 (1849); Kelaart, Prodrum, Cat. p. 126 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 259; Jerdon, B. of Ind. ii. p. 434 (1863); Brooks, Ibis, 1869, p. 60; Holdsw. P. Z. S. 1872, p. 465; Hume, Str. Feath. 1873, p. 487, note; id. Lahore to Yarkand, p. 269, pl. 29 (1873); id. Nests

* The variation in the wing in this family is very remarkable, and precludes the satisfactory classification of the Larks as a group according to a given wing-formula. They appear to me, notwithstanding, to be better located in this series next the Pipits (the last family of the preceding group), than actually with them, because the 1st quill is normally present as an abortive or rudimentary feather, and the wing is consequently of *Sturnoid* formation. In the character of their plumage, as a rule, and in the structure of the foot, the Larks are allied to the Pipits through the genus *Corydalla*; and some genera, such as *Otocoris* (the horned Larks), might perhaps be placed in the latter family. The peculiar structure of the tarsus, in having scales behind as well as before, is, however, common to *Otocoris*, as well as to other genera; but the scales are scarcely perceptible with the naked eye. Were it not for its conical bill and short tertials, *Otocoris* would have quite the aspect of a Pipit, and may, I think, be considered as a connecting link between the Motacillidæ and the Alaudidæ.

and Eggs, ii. p. 486 (1874); Legge, Ibis, 1874, p. 25, et 1875, p. 399; Oates, Str. Feath. 1875, p. 342; Hume & Butler, ibid. 1876, p. 2; Armstrong, *t. c.* p. 337; Davison & Hume, B. of Tenass., Str. Feath. 1878, p. 409; Davidson & Wender, ibid. vii. p. 86; Ball, *t. c.* p. 223.

Alauda leiopus v. *orientalis*, Hodgs. Gray's Zool. Miscell. 1844, p. 84.

Alauda malabarica (Scop.), Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 467 (1856, in pt.); Hume, Str. Feath. 1873, p. 41.

Alauda australis, Brooks, Str. Feath. 1873, p. 486.

The Common Indian Lark, Horsf. & Moore. *Buruta pitta*, Telugu, also *Niala pichike*, lit. "Ground-Sparrow;" *Manam badi*, lit. "Sky-bird," Tamil; *Bhurut*, Hind. (Jerdon); *Pullu*, lit. "Wormpicker," Ceylonese Tamils.

Gomarita, Sinhalese.

Adult male. Length 6.2 to 6.3 inches; wing 3.35 to 3.7; tail 2.0 to 2.15; tarsus 0.95 to 1.0; middle toe and claw 0.85 to 0.95; hind toe 0.45, claw 0.55 to 0.7; bill to gape 0.68 to 0.72.

Individuals vary much *inter se* both as to wing and robustness of bill even when shot in the same locality.

Adult female. Length 6.0 inches; wing 3.1 to 3.5.

Iris hazel-brown or chocolate-brown; bill, upper mandible brown, paling towards the margin, lower mandible fleshy, tip dusky; legs and feet brownish fleshy, toes dusky towards the tip, claws brown.

Above rich sepia-brown, the feathers broadly edged on the hind neck, back, scapulars, and rump with fulvescent yellowish, passing with a rusty hue into the brown next the shaft, and more narrowly margined with the same on the head; the margins of the feathers on the back generally pale to whitish at the tips, and on the hind neck they are broader than elsewhere; wing-coverts broadly edged with rufescent grey, and the secondaries and inner primaries deeply with brownish rufous, the margins of the outer primaries being narrower, and the outer web of the 1st long quill wholly pale; tail with the lateral rectrice whitish buff, except at the base of the inner web, and the next with the outer web and tip the same; lores dusky, surmounted by a whitish supercilium; beneath the eye and on the ear-coverts the feathers are edged and tipped with brown, and the lower part of cheeks more or less spotted with the same; chin, throat, and under surface fulvescent white, the lower part of fore neck and chest sepia-brown, centres and the basal portion of the upper breast-feathers rufescent; lower flanks striated with brown.

Examples vary in the depth of rufous coloration. Jaffna specimens are palest.

Young. Birds of the year have the feathers of the upper surface rounded at the tips, especially on the head, where the tips are whitish; the back-feathers are likewise tipped with white, and have one web mostly rufous, the other being margined with the same; greater wing-coverts boldly margined with rufous-buff; tertials tipped and edged with fulvescent rufous; the rufous margins of the quills very bright; supercilium and under surface more rufescent than in the adult.

Immature birds are at once recognizable by the white-tipped rounded upper-surface feathers, and by their more rufous coloration.

Obs. The Ceylonese Sky-Lark belongs to the rufous type of *Alauda gulgula*, the typical form of which was described from the North-west Provinces by Franklin. Typical examples of this bird from the northern parts of India are much paler than those from the south of the peninsula and from Ceylon; but the species has been found (by accumulating a large series from all parts of India) to divide itself into so many local races, running, as Mr. Hume says, into one another in such a manner, that it is not possible to consider them worthy of specific rank.

The Nilghiri race (*A. australis*, Brooks) appears, from this gentleman's description, to be a larger and more rufous bird than ours. He gives the wing-measurement as 3.84, and the upper surface would appear to correspond in tint with that of a yearling *A. gulgula* from Ceylon. A North-Indian example in the British Museum from Behar is quite as rufous as any Ceylon skin in my collection; it measures—wing 3.6 inches, tarsus 0.8, bill to gape 0.68. Another from Mogul Serai (wing 3.6) is not very much paler than specimens I have shot at Jaffna, although the margins of the back and wing-feathers are not so rufous. One or two Futtehgur specimens collected by

Mr. A. Anderson are paler above and beneath than my birds, and the hind claws are longer than in most Ceylonese specimens. I notice particularly the absence of rufous tinting on the breast-feathers. The wings in two skins measure 3.6 and 3.7.

Messrs. Sharpe and Dresser, in their article on the European Sky-Lark (*A. arvensis*), look upon the Indian form as a diminutive of that bird, having the tail-feathers more pointed and the outer pair more tinged with isabelline rufous. In addition to this it must be noted that *A. arvensis* is not so rufous on the under wing, and the 4th primary is considerably shorter than the 3rd, whereas in the Indian bird it is only slightly so.

Distribution.—The Indian Sky-Lark is a resident in the northern half, east, and south-east of the island, as well as in the eastern parts of the Kandyan Province, and a north-east monsoon visitant to the western and south-western portion of the country between Colombo and Hambantota. It is found throughout the year as far down the west coast as Chilaw; and from that district to the Jaffna peninsula it is very common, inhabiting the islands of Karativoe, Manaar, and all those in Palk's Straits. As regards the east of the island, it is most numerous round the south-east coast. At Colombo it makes its appearance after the rains in October, and does not quit the district until May, on the 5th of which month I have even seen it at Galle. It is not unfrequent on most of the patnas of Uva throughout the year, the highest point at which I have seen it being Carey's Gap, 5200 feet.

On the mainland this Lark is diffused throughout India from the extreme south to the Himalayas, extending on the one side westwards into Sindh and on the other into the countries eastward of the Bay of Bengal as far south as Moulmein, being confined to the neighbourhood of that town and the tract between the Sittang and Salween rivers. In the south it is found abundantly on the Nilghiris, and from Ootacamund came the type of Mr. Brooks's *A. australis*. Miss Cockburn found it breeding on this range of hills, and Mr. Wait likewise at Conoor. It has not been recorded from the Travancore hills or from the Palanis by either of the oft-quoted writers in 'Stray Feathers;' but it may possibly occur in them, particularly on the grassy slopes of the latter. It is not mentioned either from the Deccan by Dr. Fairbank; but Messrs. Davidson and Wender say that it is not uncommon in Satara. In the Mount-Aboo district Captain Butler says it is not very plentiful, and he does not note it from the mount itself. It occurs in all the surrounding region, though it is not common in Sindh. It was procured in that province by Messrs. James and Blanford. It extends from this section of country up into Cashmere and along the Himalayas, in many of the tracts at the foot of which mountains, such as Kumaon, it is common. In the North-west Provinces and in Bengal it is as much at home as anywhere else in India; but in Chota Nagpur does not seem to be well distributed, as I find that Mr. Brooks only procured it at Assensole. Mr. Ball notes it in his list of birds from the Godaveri and Ganges region, from Bardwan, Sirguja, Jashpur, Udaipur, and Bilaspur. Eastwards Dr. Armstrong found it evenly distributed in the Irrawaddy delta; and in Burmah Mr. Oates notes it as a visitant; further south it extends, as above remarked, as far as Moulmein.

Habits.—This songster frequents the same situations as its European congener—pasture-land, stubble-fields, bare commons, and so forth. It is, however, with us particularly noticeable on the rich pastures surrounding the great inland tanks of the northern half of the island. No meadows in old England in the merry month of May sound more pleasantly with the sweet song of Larks than do these lovely spots in Ceylon, surrounding the lasting monuments of the might of its ancient kings! These verdant lands remind the sojourner in tropical Ceylon of home; the long meadow-like grass, the browsing hundreds of cattle driven down by the Kandyans to fatten, and the air filled with the song of the Sky-Lark recall pleasant memories; but let the wanderer awake from his reverie and only cast his eye around on the boundless circle of dark forest, and the broad, wooded lake, its surface broken here by the head of a stealthy crocodile and there by the stately form of a huge Pelican slowly floating along its glassy waters, and the vision of green English meadows is quickly dispelled. A more peaceful existence obtains for the Sky-Lark in Ceylon than in India; in the latter country, when "flocked" in the cold season, it is caught in great numbers for the table, and is sold in Calcutta, in common with various Pipits, as "Ortolan." Its home in Ceylon, however, is in the woods and plains far away from the epicurean wants of large towns; and were it ever found in abundance near Colombo, the Buddhists of Ceylon are so averse to bird killing, that I do not think the Lark would have many enemies to fear.

Its European relative fares worse still, for it is captured, as nearly every one knows, in fabulous numbers for the table (we read, in Professor Newton's edition of Yarrell, of 1,255,500 having been taken into the town of Dieppe during the winter of 1867-8); but in addition to this danger it is forced to migrate in vast flocks to southern districts when deprived, by a heavy snowstorm, of its sustenance, great numbers never again returning; and it is therefore a wonder that this species remains so numerous as it is.

But to return to the habits of our bird. It sings, I think, quite as sweetly as the European Lark, but not so loudly, and its song is not so long sustained, neither does it mount so high in the air. At times this Lark maintains its position on the wing by a continued fluttering of its pinions; but it may be more often seen making several powerful strokes and then suddenly closing its wings, which movement causes it to dip in the air, from which it rises again by the same vigorous strokes, continuing this alternate rising and falling until it descends to earth.

The flesh of the Indian Sky-Lark is excellent eating. It feeds on small insects and various kinds of grass-seeds, and during the cool season congregates in flocks, which lie close in the long grass and get up in the same manner as the European species, flying off with a low straight flight and suddenly dropping again to earth.

Mr. Brooks styles it a most delightful songster and quite equal to the Sky-Lark, with even a sweeter song. Jerdon noticed that it frequented, as a favourite resort, the grassy sides of tanks and also the bunds of rice-fields, on which, he says, it often breeds. In the islands off the Jaffna peninsula I have observed it in long grass among bushes, the usual haunt of the Bush-Lark.

Nidification.—The breeding-season of this Lark in Ceylon is from May until July or August. The nest is placed in a depression in the ground and sheltered generally by a tuft of grass; sometimes a rut protected by a corresponding inequality in the surface is chosen, and at others the hollow would seem to have been partly prepared by the bird herself. The nest is rather neatly made of fine grass and roots of the same, lined sometimes with a little cattle-hair; the egg-cavity is a broad cup in shape, about 3 inches in diameter and $2\frac{1}{2}$ in depth. The eggs are three or four in number, of a whitish or greyish-white ground-colour, spotted or freckled all over with light-brown or greyish-brown ill-defined markings. The brown is of various shades, and the character of the markings varies somewhat, some eggs being more closely freckled than others.

Much information concerning its nesting is given in Mr. Hume's work, Miss Cockburn, as usual, supplying many interesting details. She is of opinion that the birds scratch the hole for themselves, and says:—"I have noticed a bare, smooth, round hole from which a pair of Larks had flown away, and some days after as neat a Lark's nest as possible occupied the same spot. The material they use is entirely fine grass twisted round and round the hole nearly half an inch thick; this fine grass is also placed a little over the edge on the side at which they enter . . . Sky-Larks never lay twice in the same nest, but always build a new one for every brood."

As to the eggs of the Indian bird, Mr. Hume says that all the different races lay precisely similar eggs, those he has received from the Nilghiris, Central Provinces, Sharunpoor, Almorah, and Cashmere being undistinguishable. They are of two types—the one a cream-coloured ground, freckled *finely* with small spots of purplish grey and brownish yellow; the other a nearly pure white ground, with larger and less densely set markings of the same hue. The average size is 0.8 by 0.61 inch.

[N.B.—A further species will be treated of in an extra article in the Appendix.]

Genus MIRAFRA*.

Bill stout and curved, deep at the base; the culmen keeled. Nostrils elongated and *exposed*. Wings moderate, rounded; the 1st quill *unusually long*, the 2nd shorter than the 3rd, which is the longest, 4th and 5th longer than the 2nd. Tail short, emarginate, the lateral feathers longer than the central pair. Tarsus long, covered in front with transverse scales and behind with obsolete plates; middle toe and claw shorter than the tarsus; hind claw long and curved.

MIRAFRA AFFINIS.

(THE MADRAS BUSH-LARK.)

Mirafra affinis, Jerdon, Cat. B. S. India, Madr. Journ. xiii. pt. 2, p. 136 (1844); id. Ill. Ind. Orn. pl. 38 (1847); Blyth, Cat. B. Mus. A. S. B. p. 133 (1849); Layard & Kelaart, Cat. Ceylon B. Prodromus, App. p. 59 (1852); Layard, Ann. & Mag. Nat. Hist. 1854, xiii. p. 259; Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 475 (1856); Jerdon, B. of Ind. ii. p. 417 (1863); Holdsw. P. Z. S. 1872, p. 465; Ball, Str. Feath. 1874, p. 422; Hume, Nests and Eggs, ii. p. 474 (1874); Legge, Ibis, 1875, p. 399; Fairbank, Str. Feath. 1877, p. 408; Ball, ibid. 1878, vii. p. 223.

The Lark, Europeans in Ceylon. *Eeli-jitta*, Telugu; *Leepee*, in Central India; *Chirchira*, Hind. (Jerdon).

Gomarita, Sinhalese.

Adult male and female. Length 5·8 to 6·4 inches; wing 3·0 to 3·35; tail 1·6; tarsus 1·0 to 1·15; middle toe and claw 0·9 to 1·0; hind toe 0·4, claw 0·6. Females average smaller than males.

Iris varying from reddish to yellowish brown; eyelid brownish fleshy; bill, upper mandible dark brown, margin and the lower mandible, with the exception of the dusky tip, fleshy; gape fleshy; legs and feet fleshy, edges of scales brownish.

Above sepia-brown, margined on the head with fulvous-buff, on the back and rump with fulvescent greyish, and on the hind neck and wing-coverts with buff-white, imparting a whitish appearance to the former part; quills and tail sepia-brown; secondaries and all but the outer primaries, which have pale edges, margined with rufous, and with the margin and the basal portion of the inner webs the same; outer and most of the inner web of the lateral rectrice buff, and the margins of the next two the same; supercilium buff; lores dusky; ear-coverts and cheeks tipped with brown; beneath fulvous-white, the feathers of the lower part of the throat and chest with broad sepia-brown centres; flanks shaded with rufescent; under wing-coverts shining pale rufous.

Young. In nest-plumage the bill is paler than in the adult, the under mandible being mostly fleshy. The feathers of the head and back rounded at the tips, and the margins rufous on the head and buff on the back; tertials with bright but narrow margins, and not blending into the brown, as in the adult; upper tail-coverts margined with rufous; beneath whiter than in the adult; the chest with numerous dark "drops," and the feathers on the centre of the throat tipped with blackish; thighs rufescent; outer tail-feathers with conspicuous rufous margins, the inner web entirely brown, which colour gradually decreases with age.

Obs. Four examples in my possession from the Madras Presidency measure from 3·1 to 3·3 inches in the wing; they

* The Bush-Larks in the possession of an abnormally long 1st primary seem to have affinities with some of the round-winged *Turdoid* series, and are just as awkward members of this puzzling family to deal with as the nine-primary Crested and Sand-Larks, which appear to grade towards the Pipits.

vary, as is the case in Ceylon, in size of bill; the tints of the under surface correspond with those of our birds, and the striations on the chest are similar; they are somewhat darker on the back; the amount and distribution of the rufous on the primaries and secondaries are the same. The tarsus averages shorter* in these examples, ranging from 0.9 to 1.0 inch. A Travancore specimen has the bill very robust, and is more richly coloured than most Ceylon birds. In the India Museum is a skin from the Deccan, which has the wing 3.0 inches and the tarsus 1.05; it is somewhat slender in the bill, but not more so than females from Ceylon.

M. erythroptera, Jerdon, is closely allied to the present species, differing, as its name denotes, in the redder wing. The primaries and the secondaries, except the first of the former and the innermost of the latter (exclusive of the "tertials"), are rufous right across both webs to near the tips; the primary-coverts are rufous, and the greater secondary-coverts rufous on the outer webs and brown near the shafts. A specimen in the national collection measures—wing 3.0, tail 2.0 inches.

Mr. Hume has described the Burmese Bush-Lark under the name of *M. microptera*. It is smaller than *M. affinis*, measuring 2.6 to 2.8 inches in the wing, and it has no rufous on the outer webs of the primaries.

M. assamica and *M. cantillans* are two other Indian Bush-Larks. The former, the Bengal Bush-Lark, differs from its congeners in the grey plumage and very thick bill; the latter, the Singing Bush-Lark, is distinguished, says Jerdon, from other species by its slender bill and less amount of rufous on the wing; a specimen before me (in the national collection) has the wing 2.9 inches.

Distribution.—This interesting bird is widely distributed throughout the low country of Ceylon, the only part of the low-lying districts in which it is not numerous being the damp south-western coast-region between Kalatura and Matara. In the east and throughout the whole northern half of the island it is very common, both in the interior and on the sea-board. In the North-west Province and in the drier parts of the Western Province it is likewise numerous, being one of the commonest birds to be seen even in the cinnamon-gardens of Colombo and Morotuwa; thence round to Tangalla, beyond which it is again abundant, it is found in less numbers, and is chiefly confined, and that sparingly, to the sea-coast. Throughout the flat jungles between Haputale and the sea it is tolerably common. I am not aware that it is found in the Kandyan districts; but it may perhaps occur, as a rare straggler, in the lower parts of Dumbara. It is found near the base of the hills in the Kurunegala neighbourhood.

On the mainland, this Bush-Lark is chiefly confined to the southern portion of the peninsula. Jerdon remarks that it is "found on the Malabar coast, in the Carnatic, in Mysore, and the southern part of the table-land, extending north to Goomsoor and Midnapore. Col. Tytler states that it occurs at Barrackpore, but it is certainly very rare in Bengal." Mr. Ball asserts it to be tolerably abundant in Singhbhum, and records it from Midnapur, Manbhum, and Gumsur. It seems therefore to stretch from the Carnatic northwards in an easterly direction, avoiding all divergence towards Central India. I notice that the Rev. Dr. Fairbank does not record it from the Deccan, nor do Messrs. Davidson and Wender, although *M. erythroptera* is noticed by these gentlemen as very common there. It is abundant about Madras, and also inhabits Ramisserum Island and the adjacent coast. Dr. Fairbank found it at the base of the Palanis.

Habits.—This Lark loves grassy wastes, studded with trees and bushes, openly timbered plains, scrubby

* Since this article was printed, I have received a letter from Mr. Hume containing a remark on this species, which, according to ornithological custom, I quote here:—"Have I ever pointed out to you that your *Mirafra*, which I call *M. ceylonensis*, is distinct from the Madras bird, *M. affinis*? It is a much larger, richer-coloured, longer-billed bird, with markedly larger legs and feet. I have just compared five examples from Colombo with a large series of Madras specimens." Now this bird varies in Ceylon. The five examples alluded to are all from Colombo; and as regards size see my comparisons above. I do not find that South-Indian specimens are more richly coloured; one from Travancore, which I obtained from Mr. Whitely, Woolwich, differs considerably in brightness of coloration from St. Thomas's Mount examples. Brightness of coloration in the Lark family is often dependent on age. The tarsus in Ceylonese birds is, as a rule, longer, as I have above noticed, but short-legged insular birds equal long-legged continental ones. A male from St. Thomas's Mount (wing 3.21) measures, tarsus 1.05; a good-sized female (wing 3.15) from Trincomalie measures, tarsus 1.05.

If, on the whole, it be hereafter decided by general consent that the Ceylon species should stand distinct, it must be as a very close subspecies indeed; but I would here remark that, above all birds, Larks are the most unsafe to tamper with. If we once begin to divide them up, there will be no end to subspecies.

enclosures, and dry pasture-land surrounded by trees. It is also found in open spots in the heart of the jungle and round the borders of tanks and salt-water estuaries and lagoons. It is to some extent arboreal, especially in the breeding-season, when the male constantly mounts to the topmost branch of some dead or scraggy tree, and pours out his little love-song, launching himself out into the air, and descending rapidly, with increasing fervour of note, to the vicinity of the nest, where his partner is patiently performing the duties of incubation. It is not gregarious, but usually lives in pairs, several of which, however, occupy contentedly the same locality, passing their time in catching insects, and feeding likewise on grass-seeds, varying the monotony of the noonday heat by now and then flying up into the air, or alighting on trees and bushes, from which they give out their long-drawn sibilant whistle, *tsee-tsee-tsee*. These Larks do not mount to any height, nor do they remain any time in the air; their actions are Pipit-like, for after reaching the altitude to which they wish to ascend, they quickly sail down again with upturned wings, continuing the note they commenced with on leaving the ground until they realight, when it is suddenly hushed. They often descend to a low tree or bush, and sometimes continue their notes for a few seconds. Mr. Ball remarks that it is a very early bird, sometimes singing before dawn.

Nidification.—In the Western Province, the Bush-Lark breeds in May and June, and in the north somewhat earlier, commencing about March. It nests in a little depression in the ground, generally beneath the shelter of a tuft of grass or tussock of rushes. It sometimes, however, in sandy soil excavates a hollow itself, and therein it constructs its nest. It is a loosely-made cup of dry grass and fine roots of herbs, measuring about three inches wide by two in depth; the top is flush with the surface of the soil, and over the nest the adjacent blades of grass are bent, or arranged so as to conceal it. The eggs are nearly always two in number, stumpy ovals in shape, and of a greenish-white ground-colour, boldly marked almost equally throughout with light umber-brown and blackish-brown spots, the latter being small in some and large in other eggs.

The young become fledged very rapidly, flying in about a fortnight from the time they are hatched. The old birds are very zealous in their attempts to draw off intruders from their young, running along the ground with trailing wings, or feigning lameness or incapacity to fly!

Genus PYRRHULAUDA.

Bill short, stout, conical, the culmen much curved; gape angulated; margin of under mandible slightly concave. Nostrils basal, round, and concealed by tufts. Wings long, the tertials elongated; 1st quill equal to the primary-coverts, the 2nd and 3rd equal and longest. Tail moderate, emarginate at the tip. Tarsus short, covered in front and behind with broad but smooth scales. Feet small, with the lateral toes equal and the claws straight; the hind claw stout and considerably longer than the anterior ones.

N.B.—The hindermost tarsal scales are very plainly developed in this genus.

