67·27

THE BIRDS OF BORNEO

"Every kingdom, every province,
should have its own monographer"

GILBERT WHITE

"I never thought, when I used to read books,
what work it was to write them"

BETSEY TROTWOOD

"If I'd a knowed what a trouble it was to make a book
I wouldn't a tackled it and ain't a-going to no more"

HUCKLEBERRY FINN

By the same Author:

THE BIRDS OF BURMA

RHINOCEROS HORNBILL

Frontispiece

THE BIRDS OF BORNEO

BY

BERTRAM E. SMYTHIES

B.A., M.B.O.U.

Overseas Forest Service, Sarawak

with special chapters by TOM HARRISSON, D.S.O., O.B.E., Curator of the Sarawak Museum, LORD MEDWAY, formerly Technical Assistant, Sarawak Museum, and J. D. FREEMAN, PH.D., Reader in Social Anthropology at the National University, Canberra, Australia

With 50 plates in colour by

COMMANDER A. M. HUGHES

O.B.E., R.N. (retd.)

and

49 photographic plates (2 in colour) by

LOKE WAN THO, A.R.P.S., HEDDA MORRISON, A.R.P.S.

F. G. H. ALLEN, B. D. MOLESWORTH,

E. F. W. BRUNIG AND HUGH GIBB

BOOK NO.

739

OLIVER AND BOYD

EDINBURGH: TWEEDDALE COURT

LONDON: 39A WELBECK STREET, W.1

FIRST PUBLISHED 1960

© 1960 B. E. SMYTHIES

PRINTED IN GREAT BRITAIN
BY J. AND J. GRAY, EDINBURGH
FOR OLIVER AND BOYD LTD., EDINBURGH

ZOOLOGICAL SURVEY OF INDIA CALCUTTA 10882

ACKNOWLEDGMENTS

In a way, the genesis of this book goes back to the wisdom and foresight of the second Rajah of Sarawak, Sir Charles Brooke, who devoted a portion of the microscopic revenues of his administration to building the Sarawak Museum in the 1880s. The earliest specimens in the reference collection of birds are dated 1890, since when it has grown to become the largest and most complete collection of Sarawak birds in the world.

Sir Anthony Abell, K.C.M.G., Governor of Sarawak 1951–1959, not only carried on faithfully the honoured traditions of the Brooke administration, but always gave the Museum his strong support. It was due to his own encouragement of this book project, and his obtaining the backing of the Governments of the three Borneo territories under British Administration, that its publication became possible ; and the inclusion of a large number of coloured plates, which are fabulously costly these days, without making the book absurdly expensive was due to his enlisting the patronage of Mr. Loke Wan Tho of the Cathay Organization in Singapore. The latter finds relief from the strain of handling temperamental film-stars in bird photography (see his book *A Company of Birds* London, 1957), and in financing bird study in Borneo. He helped the Museum to carry out a four-year Sarawak-wide survey which resulted in the Loke-Harrisson collection (see Checklist), financed the British Museum (1956) expedition to North Borneo, and has rounded off his generosity by bearing the entire cost (artist's fees and cost of reproduction) of the coloured plates of this book.

I first met the present Curator of the Sarawak Museum, Tom Harrisson, in February 1949 when I arrived in Sarawak. He suggested then that I would sooner or later have to write a book on the birds of Borneo, on the lines of *The Birds of Burma*. He is perhaps best known to the world, outside Sarawak anyway, as a digger-up of old bones in caves, and an authority on birds' nest soup and on Kelabits—yet birds were his first love, witness his excellent paper on the " Birds of the Harrow district " (1930), based on four years of bird-watching while at school there. Since then he has found life too interesting to accept the discipline of writing long bird papers, with the result that much valuable first-hand observation on the birds of Borneo, particularly Mt. Dulit (1932), the Kelabit uplands

(1945 onwards) and the coastal waters of S.W. Sarawak, remains unpublished. Some of this bottled up information I succeeded in extracting by the simple expedient of passing over to him for criticism the first draft of this book; he found so much that was either outrageous, or irritating, or plain inadequate, that he was goaded into a fury of constructive comment. Thus the book, however inadequate it may be, is a much fuller and more accurate account of the birds in Borneo than I could have written without his help. It is safe to say that if he himself ever gets around to writing up his own notes and memories he could produce a book as long as this one without repeating anything I have written. "Some day before I die" he says. Meanwhile I am indebted to him for the chapter on "Birds and Men in Borneo" specially written for this book; it is somewhat unusual material to include in a handbook on birds, but my belief is that it will add greatly to the interest of the book for the general reader.

The same applies to the special chapters on Iban omen birds and on Kenyalang in Iban belief and ritual by J. D. Freeman. I first met him at Kapit in 1949 when he and his wife were studying the Ibans of the Baleh. He is now Reader in Anthropology at the Australian National University, Canberra, and has published monographs on *Iban agriculture* (1957) and Iban social structure (in press), with (I hope) others to follow.

Lord Medway, after graduating at Cambridge University in zoology and philosophy, took on an assignment with the Sarawak Museum as a Technical Assistant on roughly £1 a day, August 1956 to July 1958. He made a special study of the cave swiftlets, on which a book (in collaboration with Tom Harrisson) may appear in due course. He has kindly written a chapter for this work.

I owe a special debt to Mr. H. G. Deignan of the Smithsonian Institution in Washington, with whom I have carried on extensive correspondence over the years on taxonomic problems—first Burma and now Borneo (his own speciality is Thailand, in between). He has always answered my numerous, and perhaps often tiresome, queries most promptly.

Mr. E. Banks, Curator of the Sarawak Museum 1925–1945, was kind enough to send me the MSS of a work on the birds of Sarawak which he compiled while working at the British Museum after retiring from Sarawak. This was used mainly as a check against the Check-list. Most of the quotations from Banks are taken from the notes he published in the Sarawak Museum Journal.

The authorities in the Bird Room of the British Museum (Natural

History) in London have always been most helpful. I would mention particularly Mr. J. D. Macdonald, Keeper of Birds, Mr. R. W. Sims, Senior Scientific Officer, Mrs. B. P. Hall, an honorary associate, and Mr. Derek Goodwin. In 1956 the late Sir Norman Kinnear was engaged in writing a biography of British bird collectors of the nineteenth centry for the B.O.U. Centenary; he was kind enough to give me some advice on the Bornean collections in museums in the United Kingdom outside London, and we compared notes on British collectors in Borneo.

The following world-famous authorities have been kind enough to answer one or more letters enquiring on specific points: Prof. Stresemann of Berlin, Dr. Junge of Leiden, Prof. Berlioz of Paris, Dean Amadon of New York, Prof. Voous of Amsterdam.

I was fortunate to secure once again the services of Commander A. M. Hughes, O.B.E., R.N., as artist. He himself has written an account in the *Sarawak Museum Journal* No. 12 of some aspects of the task (which took four years), and of how he became very ill half-way through owing to an allergy to the D.D.T. used on the bird skins.

A special word of thanks is due to the distinguished photographers who supplied prints of some of their best negatives. Loke Wan Tho, A.R.P.S., and Hedda Morrison, A.R.P.S., are both internationally famous, the one for bird and the other for general photography. F. G. H. Allen (of Henry Waugh & Co.) and Dr. David Molesworth (formerly in charge of the leper settlement at Sungai Buloh near Kuala Lumpur) are two of the leading bird photographers in Malaya. Dr. E. F. W. Brunig is in the Forest Service in Sarawak.

The map at the end of the book was compiled by me from 1/1 million War Office sheets of Borneo, and was a most laborious task, involving reducing and re-drawing several times to bring it down to its present scale. I am indebted to Mr. G. S. Wilford, of the Geological Department, for supervising the fair drawing of the final map in his drawing office.

Mrs. Lloyd-Dolbey of the Gadong Estate, Brunei, was kind enough to translate a number of passages into English from the original Italian of Salvadori's book.

Mr. A. R. G. Morrison, an Administrative Officer in the Sarawak Government service, kindly lent me his unpublished notes, extracts from which will be found in the text with his name in brackets after them.

Mr. J. A. Tubb, formerly Director of Fisheries with the British North Borneo Government, now F.A.O. Regional Fisheries Officer

for Asia and the Far East, kindly sent me some notes made while he was in North Borneo.

Casual informants, in order of appearance are :—

p. 116. Thompson is Mr. K. V. Thompson, chartered accountant, a director of Messrs. Turquand Youngs & Co.

p. 119. Nicholl is Mr. Robert Nicholl, Education Department, Sarawak Government.

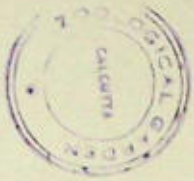
p. 137. Spurway is Mr. B. J. C. Spurway, M.B.E., formerly Conservator of Forests, Forest Department, Sarawak Government.

p. 182. Mr. P. F. Burgess is a Senior Assistant Conservator of Forests, Forest Department, British North Borneo Government.

p. 487. Mr. E. J. H. Berwick is Director of Agriculture, British North Borneo Government, and an authority on the birds of Malaya. Mr. E. F. Allen came over on a short visit from Malaya to climb Kinabalu with Mr. Berwick.

p. 488. Mr. K. E. H. Kay is an officer in the Agriculture Department, Sarawak Government.

Finally a word of thanks to Tom Harrisson for reading the page proofs and pointing out some errors, and for generously contributing the blocks for the colour plate reproducing his two hornbill heads.



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CHAPTER 1

INTRODUCTION

My Checklist (1957) was an attempt to fix the nomenclature and distribution of Bornean birds. In the present text I have only included under these headings as much as the general reader is likely to require. The scholar who needs full details and references should therefore consult the Checklist (copies available from the Curator, Sarawak Museum, Kuching). The few corrections to names or distributions that have become necessary since the Checklist was published are clearly indicated, with references, in the present text.

Names. The essay on each species starts with a serial number, which is its Checklist number, followed by an English name. In the next line is given the scientific name, followed by a local name if known.

(*a*) *English names.* There is no standard list of names for Asiatic birds. For many species, English writers have used one (or more) names and American writers have used one (or more) different names. I have tried to select the name that seemed most appropriate.

(*b*) *Scientific names.* In any biological science a species has two names in Latin form, followed by the name of the scientist who bestowed that name on the species. The first name represents the genus, which is a collection of species resembling each other more closely than they resemble other species. For example, the Great Tit is *Parus major* Linnaeus : *Parus* being the genus of tits, in which several species are grouped together, one of them being called *major* by Linnaeus. If an author publishes a name under one genus, and that species is later transferred to a different genus, then the author's name is placed in brackets. For example, the House Swift was called *Cypselus affinis* by Gray, but is now placed in the genus *Apus*, so the name appears as *Apus affinis* (J. E. Gray)—the author's initials are included only when two or more scientists of the same name have described birds and there is a possibility of confusion.

These scientific names are valid throughout the world, and can only be altered in accordance with certain rules, which are internationally recognized and need not be detailed here. Anyone wishing to know more about the form, pronunciation, origin, etc. of scientific bird names should consult *Key to the names of British Birds* (Macleod,

1954, Pitman, London); for example, it is helpful to know that *Phylloscopus* is derived from two Greek words meaning leaf-explorer with reference to the bird's habit of exploring leaves for insects.

(c) *Local names.* It is always a problem to know what to include in the way of local names. Some are well established, others less so, and the rest are invented on the spot by enterprising collectors anxious to satisfy the inquisitive European. Since Malay is the *lingua franca* of Borneo, I have included nearly all the Malay names so far recorded and checked by veteran collector Sliman of the Sarawak Museum; these names are often not the same as the name used in Malaya for the same species, as given in Wilkinson's Dictionary or in Madoc's *Introduction to Malayan Birds*. I have also included Iban names, because the Ibans are numerically the largest cultural group in Sarawak. I shall no doubt be accused of parochialism for not including Land Dayak, Kenyah, Kelabit, Murut, Penan, Dusun, Chinese, and other names but the fact is that few names have been listed in any of these languages.

DISTRIBUTION. This is divided into two paragraphs, the first giving a brief idea of the world distribution of the species, the second giving its distribution in the Bornean province. Anyone requiring fuller information on the world distribution should consult Peters's *Checklist of the birds of the World*, which is still in course of publication.* Fuller details and authorities for records in our area are given in my Checklist. Harrisson is responsible for all Kelabit uplands records.

DESCRIPTION. The first entry is normally a figure in inches, which is the total length of the bird. Then follows a brief description, which is intended to supplement the coloured plate of the bird. To assist those who may have to identify specimens I have included a number of keys and measurements for certain confusing groups in which I experienced difficulty when sorting and identifying large collections in the Sarawak Museum. For most birds I have also given details of the colours of the iris, bill, and feet. Unless otherwise indicated these details are all taken from the labels of skins in the Sarawak Museum collection, and nearly all of these were written by Banks. I considered it preferable to use this material, not hitherto published, rather than copy Whitehead's descriptions, given in Sharpe's papers (1889–1890), which are excellent and should be consulted by anyone particularly interested in this subject.

VOICE. No two persons seem to hear bird sounds quite alike. On the other hand in thick tropical forest one is dependent more on the

* Also Vaurie's *The Birds of the Palearctic Fauna*, London 1959.

ears than the eyes for information about the birds in the forest, so recording of calls is of great importance.

HABITS. This heading covers two quite distinct subjects, the bird's ecology and *habitats*, and its *behaviour*.

FOOD. Unless otherwise indicated, this paragraph is based on labels of skins in the Sarawak Museum. Harrisson has made a special study of this subject, dating back to his Dulit collection of 1932. Examining the entrails of birds in the uncertain light of a longhouse or collecting camp is not one of the more pleasant aspects of bird study; therefore all the more credit to those who undertake it. His principal food studies have been on Kinabalu and in the Kelabit uplands. The bulk of the 1932 Dulit collection is in the British Museum, but I have not had time to abstract the food data from the labels, so the information here presented is not quite complete.

NEST AND EGGS. Our knowledge of this subject in Borneo is still very meagre. For many species even the nest and eggs are still unknown, or have not been found and described in Borneo though they have elsewhere. We know still less about normal clutch sizes, incubation periods, fledging periods, number of broods raised in a season, and so on.

The breeding seasons of land birds have been conveniently summarised by Voous (1950) for Indonesia, by Banks (1950) for Sarawak and North Borneo, and by Gibson-Hill (1952) for North Borneo.

Voous, basing his comment on Coomans de Ruiter's data for the Kubu District of western Borneo near Pontianak, writes " It appears that a distinct breeding season starts in November, *i.e.* after the wettest period of the year, and reaches its culmination in the period January–March . . . (2) that in the period June–November inclusive, which covers first the driest and then the wettest months of the year, hardly any species seem to start nesting."

Banks, using Sarawak Museum records and the data from Ryves's egg collections in North Borneo as published by Gibson-Hill (1950), concludes: " The foregoing data suggests that the main nesting seasons in Sarawak and North Borneo occur at the end of the months of heaviest rainfall, in March and April in Sarawak and a little earlier, February and March in the western part of North Borneo."

Gibson-Hill, on a fuller analysis of Ryves's data, writes " There can be little doubt that there is a limited breeding season in North Borneo, and that its peak occurs in the first six months of the year. At the same time it seems to me that Banks is incorrect in cutting its peak down precipitately at the end of March, and in tying its run too

precisely to the end of the local rainy season. . . . There can be no doubt that at least the majority of the birds have peak or restricted breeding periods, and that in at least the majority again these occur sufficiently synchronously to give us a breeding peak, a general breeding season for the area ; but before we can attribute the control of the birds' activities to changes in rainfall we must have a sufficient number of egg dates, and a precise record of the weather in the localities from which they were obtained." He concludes that the rhythm of the breeding season is associated with the rhythm of the solar year rather than the pluvial one.

It must be remembered that in an island the size of Borneo the weather and the rainy season vary considerably from one part to another ; thus the east and west coasts of North Borneo have quite different rainy seasons.*

RACES. A species is often split up into two or more geographical races or subspecies, which differ from one another in colour or measurements or both. In the zone where the two races meet they usually intergrade and the population is intermediate in characters, but such zones are usually narrow. Dr. Mayr's book *Systematics and the Origin of Species* (1942, New York) is an excellent modern account of the whole subject of geographical variation and the development of species and races. He shows why there is a tendency for a population of a species that is isolated by geographical barriers to develop into a distinct race ; in Borneo this applies especially to island populations, cut off by stretches of sea, and to montane populations, cut off by stretches of lowlands which montane birds will not enter.

Many island races have been described in the Bornean province. Chasen (1935 : xii) gives the following summary :

> The islands off the north-west coast of Borneo call for little comment beyond mention of an indigenous race of a small owl on Mantanani.
>
> Mallewalle, Banguey, and Balambangan, situated off the northern extremity of Borneo, outside the ten-fathom line, but on a bank of less than twenty fathoms, have an avifauna almost entirely Bornean but with slight indications of internal differentiation, and there is also a small non-Bornean element, derived from the adjacent Palawan group of islands.
>
> Maratua Island, off the east coast, in the Celebes Sea, has also produced a few subspecies : on it there is, too, a Philippine influence unknown on the mainland of Borneo or in the Banguey group.
>
> In some respects the avifauna of the Karimata Islands, off the west coast, is closer to that of Sumatra than of Borneo : some of the species merely tend to large size as on other islands in the South China Sea, but within the group

* SEAL, J., 1958. "Rainfall and sunshine in Sarawak." *S.M.J.* VIII (11) : 500–544.

two birds seem to be represented by well-marked races, one of which, it is most interesting to note, is found on Panebangan Island which lies within the five fathom line and presumably within sight of the Bornean coast.

Many subspecies of birds have been described from the Natuna Islands. The special affinities of the birds of the southern group are Sarawacian, but in the northern islands the Bornean influence is less marked. Only on Great Natuna Island is there anything but an impoverished avifauna.

(*b*) *Montane races.* In some montane species no variation has so far been detected throughout their range. Other species however break up into distinct races; some have one race on Kinabalu, another on Mt. Poi, and a third in between; or the race in the middle may agree with the race on Kinabalu or with the race on Mt. Poi. In one instance a distinct race (*Cettia montana banksi*) has been described from Mt. Mulu. It is not possible to present a complete picture of the montane races until we have collections from such unknown areas as the Hose Mountains, Mt. Raja, Mt. Besar, etc.

(*c*) *Lowland races.* In some lowland species, likewise, no variation has been detected throughout the island of Borneo; others however break up into two, sometimes three, distinct races. For some reason that is not easily explained, there is an important racial boundary between the Baram and Padas rivers on the N.W. coast of Borneo; many species are represented by one race north of this zone and a distinct race to the south of it. There is often a third distinct race in S.E. Borneo.

Geographical races are recognized by a third scientific name. The differences between them are not normally visible in the field, and they are very much the province of the Museum worker. Since this work attempts to cater for all classes of bird watchers, including professionals, I have listed all races that have been recognized, and where two or more occur on the main island of Borneo I have indicated the differences; but I have not considered it necessary to say how the island races differ. Some species are represented by one (or more) montane races and one (or more) lowland races; the general rule is that the montane race is larger and darker than the lowland race, in conformity with Bergmann's rule which states that the larger-sized races of a species are found in the cooler parts of its range. Another illustration of this rule is shown by those species that are represented by one resident race and one or more migrant races from further north; the migrant races are nearly always larger and longer-winged than the resident race.

An Introduction to Malayan Birds by G. C. Madoc, published by the Malayan Nature Society, is a most useful book for beginners.

CHAPTER 2

THE BORNEAN PROVINCE

The area covered by this book is the Bornean Province, defined by Chasen (1935 : xi) as :

" *Borneo and its coastal islands, the most important of which are Labuan, and Mantanani off the north-west coast ; Maratua, off the east coast ; and Pulau Laut off the south-east corner ; the North Bornean Islands of Banguey, Balambangan, and Mallewalle ; the North and South Natuna Islands ; the Karimata Islands.*

The outstanding feature of the avifauna of Borneo is that although it has the general Malaysian facies it is more specialized than that of the Malayan and Sumatran, and if consideration is limited to the high-level fauna, even the Javan Province.

The avifauna is by no means even, either in the mountains, or in the lowlands, and there are several obvious faunal boundaries in the island. The most striking, if not the most efficacious of these is formed by the high mountain ranges of the interior, the general strike of which is in a north-east and north-west direction.* In some species, a race found east and south of these mountains is separable from that found, broadly speaking, in Sarawak. In many other cases races are distributed, broadly, as above but meet on the northern (" north-western ") coast in the neighbourhood of Baram where there is a most important faunal boundary. Occasionally, a northern race thus cut off extends only a short distance down the east coast.

Within the major divisions given above there are also tendencies for areas of faunal distinction to separate in the lowlands of south, and of west Borneo. Certain rivers running west and east act as boundaries in the case of some mammals.

A slight Javan influence is apparent in the south of Borneo.

Turning to the mountains we find that, within the island, the great massif of Mt. Kinabalu in the north has far fewer peculiar forms than was formerly thought, for recent collecting has shewn that it shares most of its birds with other high peaks in North

* See a map and paper by E. Banks in Proc. Zool. Soc. 1933, p. 273 ; and the same author's detailed study of the distribution of *Sciurus prevosti* in Borneo, *op. cit.* 1931, p. 1336, which also has a useful map.

Sarawak. On the neighbouring Mt. Dulit there are signs of independent specialization although these are not so numerous as some recent authors would have us believe. It is interesting to note that a few montane species also occur on the isolated peaks of Poi and Penrissen in the north-west corner of the island : the form is usually that found on the northern mountains, but in one or two cases, distinctive subspecies have been developed."

The Tambelan Islands between Singapore and Borneo are nearer to the latter but were placed by Chasen in the Malayan Province. He remarks that they have an impoverished avifauna of no special interest, the few resident landbirds apparently belonging to the Anamba subspecies.

The islands of Balabac, Palawan, Calamianes, and Cagayan Sulu were included by Delacour in his *Birds of Malaysia* on the grounds that they are dominantly Bornean in their faunal affinities. As these islands are politically Philippine and fully covered by other publications, they were excluded by Chasen and I follow him.

The Island of Borneo

Borneo is the third largest island in the world, after Greenland and New Guinea, and five times the area of England and Wales. It is one enormous forest. Estimates prepared by the Forest Departments from aerial photographs show that 75 per cent. of the island is under primary forest, and a further 10 to 15 per cent. under secondary forest.

Lack of mineral deposits and the poor soil have discouraged development in the past, with the result that the population is absurdly small in comparison with the other major islands (Java, Sumatra, Celebes) of Malaysia. The following figures rounded off to the nearest thousand and based on the latest published census figures plus the estimated increase since, are of interest :

Territory	*Area in sq. miles*	*Population Total*	*Per sq. mile*
Sarawak	47,000	631,000	14
Brunei	2,000	55,000	27
British North Borneo	29,000	345,000	12
Indonesian Borneo	215,000	2,400,000 *	11
All Borneo.	293,000	3,431,000	12
Rest of Indonesia	520,000	73,000,000	140
Malaya	51,000	4,905,000	96
England and Wales	58,000	43,745,000	753

* 2,168,661 in 1930 census.

Politically, Borneo is divided into four parts, each with its own separate government. Indonesian Borneo or Kalimantan, formerly known as Dutch Borneo but now part of the Indonesian Republic, covers three-quarters of the island. The remainder is divided between the two British colonies of Sarawak and British North Borneo and the British protected state of Brunei (where the population figure is inflated by the presence of a large oilfield in a small territory). The Natuna and Karimata Islands are administered by Indonesia.

The Mountains of Borneo

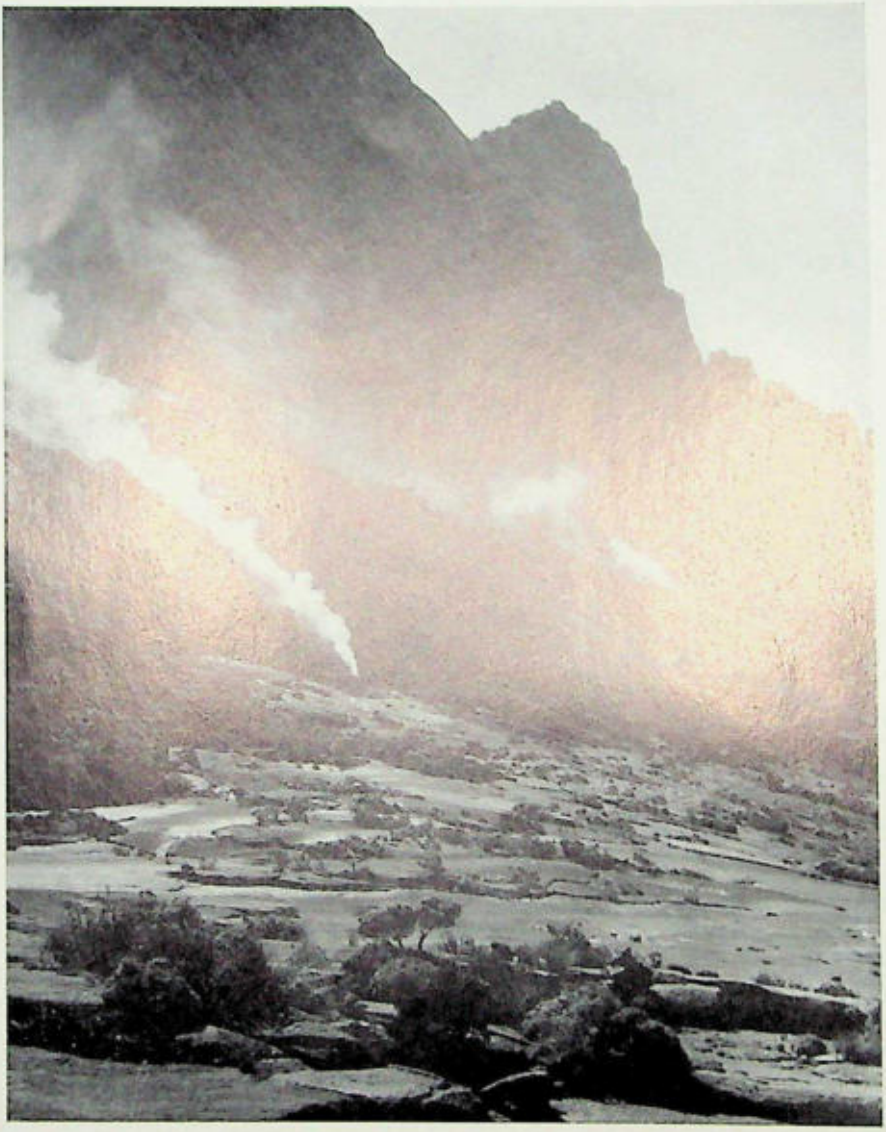
Over much of S.E. Asia there is a marked change in the avifauna at the 3000 foot contour (a generalization that is amplified and modified later in this introduction). This is obvious if you walk from Ranau to Bundu Tuhan along the pleasant jeep road crossing the shoulder of Kinabalu. You start among the lowland birds, which are much the same as you see round Jesselton or Kuching; but by the time you have reached the forest above Kundasan the bird population will have changed almost completely and there are many species that you will never see down on the coast (Laughing-Thrushes, Minlas, Cuckoo-Doves, Treepies, to name some of the commonest).

It is therefore important to know which parts of Borneo lie above 3000 feet, and the map at the end of the book has been compiled especially to show this. The general picture of Borneo is of a central mountain chain, or spinal range, running down the middle of the island (axis N.E.–S.W.), and throwing off several long spurs like the arms of a starfish. Towards the coast there are often extensive lowlands, and also flat swampy areas associated with the estuaries of the larger rivers. An attempt follows to describe the principal mountain peaks and ranges, and to summarize the work that has been done on them up to date—a sort of geographical grouping of the information given in the historical and bibliographical sections elsewhere in this book.

1. *Kinabalu*

The magnificent jagged mass of Kinabalu is the dominant mountain in the island, almost twice as high as any other peak. It is the highest mountain in Malaysia, and is not surpassed in height until one reaches the Snow Range in New Guinea on the one side and the Himalayan fringe of N. Burma and the Tibetan marches on the other side. It has acted as a magnet to attract naturalists for the past hundred years, ever since Low climbed almost to the summit

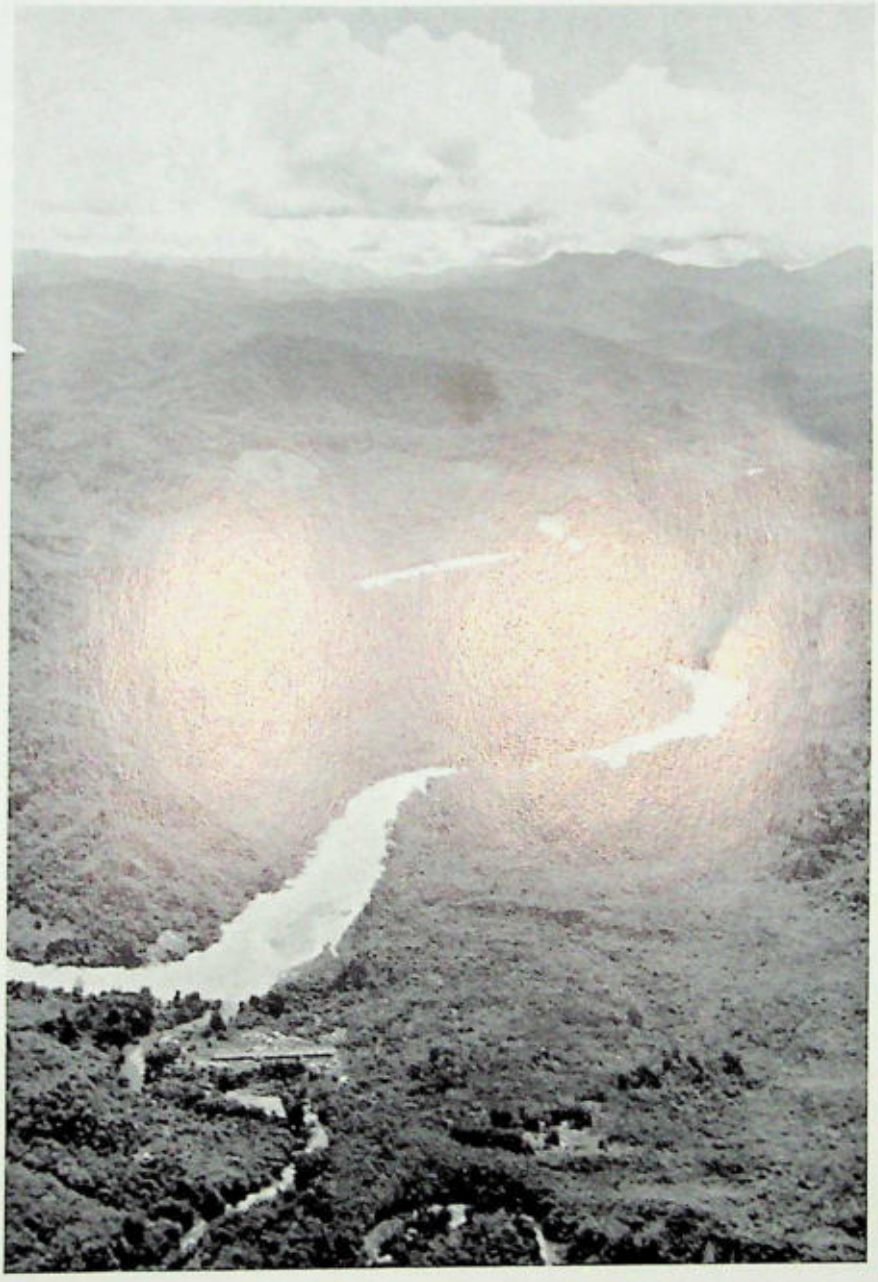
Distant view of Kinabalu from the west



Above the tree-line on Kinabalu, haunt of the Mountain Blackeye

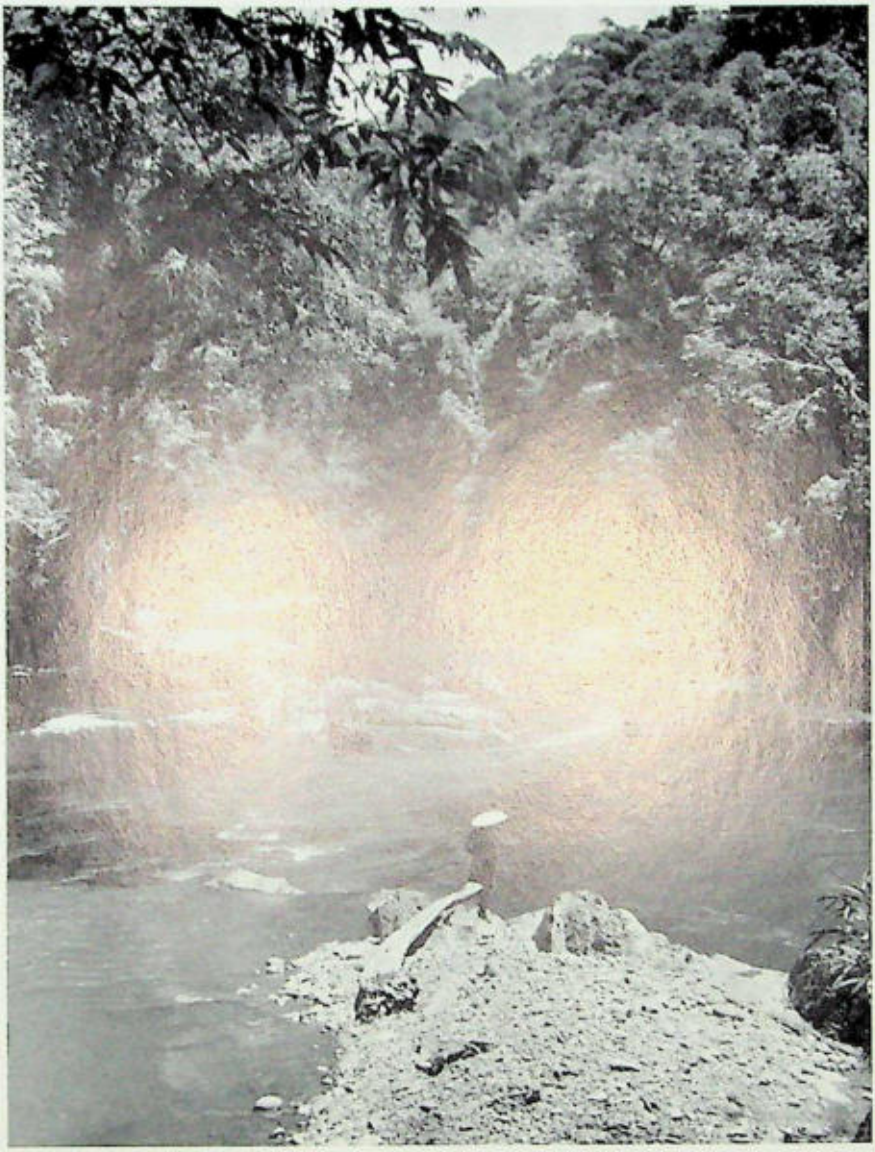
Bare summit rocks of Kinabalu

Three-quarters of Borneo looks like this. Primary forest of the Usun Apau Plateau

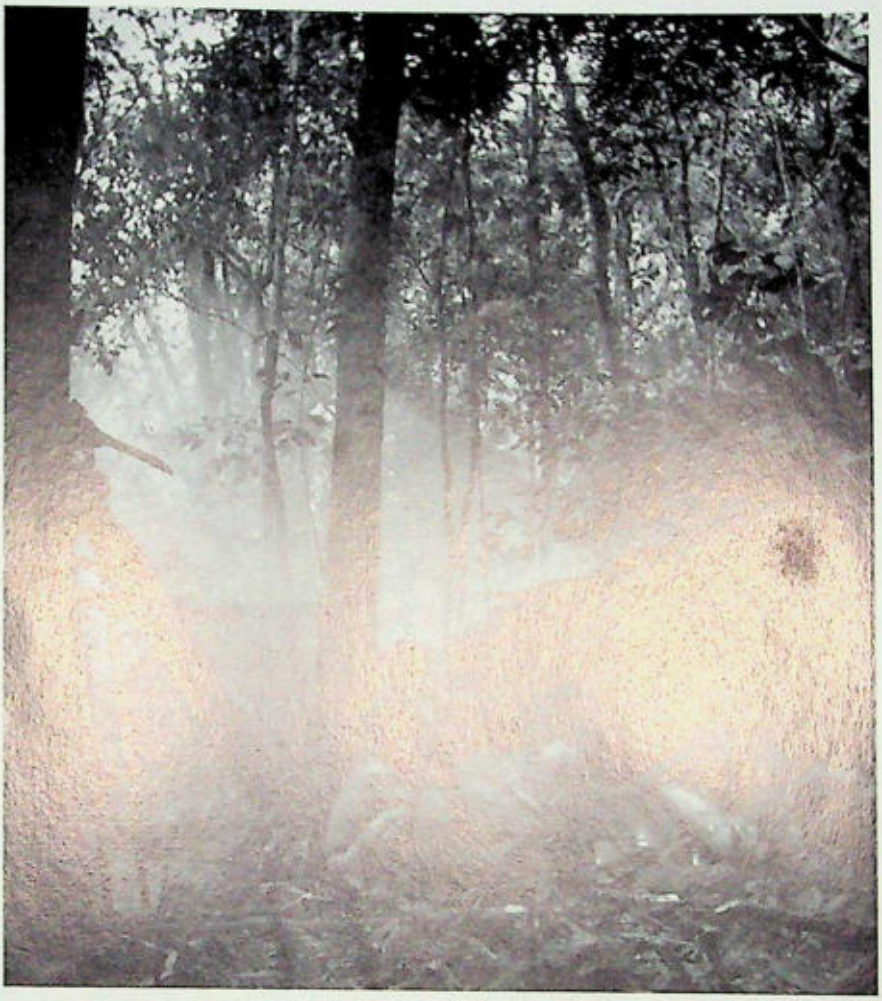


Longhouse in foreground surrounded by typical pattern of secondary forest on bush fallow areas of dry rice shifting cultivation, with some primary forest on the hills. Upper Baram River

Rock peaks like this are rare in Sarawak.
Mountains of the upper Baram River



Typical Borneo river scenery. Upper Belaga River



A typical forest camp. On Mt. Sepali, Kanowit district, Sarawak

A Kayan longhouse at Long Sela'an, Baram River

PLATE 9

A Kayan longhouse at Long Sela'an, Baram River

Longhouse at Pa Main, Kelabit uplands

Irrigated rice-fields at Bario, Kelabit uplands

Pepper garden and surrounding grassland is a haunt of the Yellow-bellied Wren-Warbler

in 1851, and its natural history is probably better known than that of any other mountain in the island. Moulton (1915 a) gives a summary of all the expeditions up to the first World War. Even so, all work to date has been done on the S., W., and N.W. sides of the mountain, and the vast remainder is virtually unexplored.

Collections. It would be tedious to list everyone who has collected birds on Kinabalu. The more important are :

Whitehead (1893, see also Sharpe 1889–1890)
Everett (see Sharpe 1893, 1894)
Haviland (no paper)
Moulton (1913 b)
Chasen & Pendlebury (1932)
Harvard East Asiatic Primate Expedition (Peters, 1940)
Harrisson (1956).

2. *Spinal chain, Kinabalu to Mt. Batu Tibang*

Mt. Batu Tibang is the heart of the starfish, and close to the mathematical centre of gravity of Borneo. Much of this chain is over 5,000 feet, and the only major breaks where it drops below 3,000 feet are :

a) the Rayoh gorge of the Padas River ;
b) passes across the range north and south of Mt. Murud ;
c) a pass of about 2,500 feet between upper Plieran and Iwan ;
d) a pass of about 2,500 feet between the upper Balui and the upper Kayan (connecting Long Itam and Long Nawang).

In the north this chain is known as the Crocker Range (highest peak believed to be Mt. Siniatan Besar), which is *not** the main watershed between east and west coasts ; the spinal chain does not become the watershed until the source of the Padas River is reached. The Trusan-Padas watershed at the source of the Lopeng River (Long. 115° 50′ E, Lat. 4° 20′ N) has been termed by Banks the Maga Mountains. Just south of this the Trusan-Baram watershed is reached, and a short spur runs up to the summit of Mt. Murud (7,950 feet), a long massive whale-back of a mountain, the highest in Sarawak. From here to Mt. Batu Tibang the spinal chain is inaccessible and little known, and has been reached or crossed by Europeans at a limited number of points only ; its exact position on the map is not known to within 20 miles, no points on it having been fixed by triangulation or star observations. The area south-east of Mt. Murud, in the headwaters of the Baram River system,

* Except from Kinabalu south to Mt. Alab.

is known as the Kelabit uplands, bounded on the west by the Tama Abo range.

Collections

Maga Mountains, Banks (1952)
Mt. Murud and Kelabit uplands Mjöberg (1923)
Banks (1937 b)
Harrisson (with Amadon, in press)
Mt. Batu Tibang, Mjöberg (1929).

Harrisson's collections, extending over ten years 1945–55, constitute a unique contribution to our knowledge of the inaccessible heart of Borneo (a minimum of ten days travel on foot).

3. *Other mountains in North Borneo*

The following rather isolated peaks should be mentioned :

Mt. Meliau (appearing on some maps as Mt. Mentapok) c. 4,750 feet.

Mt. Melta. Appears on some maps as a 6,000 feet peak close to Mt. Meliau. This peak is either imaginary or several thousand feet over-estimated.

Mt. Magdalena, 4,400 feet, near Tawau. Conspicuous from the sea. Connected by a long chain of moderate elevation to the spinal chain.

Mt. Trus Madi, c. 8,400 feet, the second highest mountain in Borneo, but height not accurately known.

Mt. Lumaku, c. 6,500 feet, on the Mengalong-Padas watershed due east of Lawas.

Collections

Mt. Meliau } British Museum North Borneo Expedition
Mt. Magdalena } of 1956.
Mt. Trus Madi. Cambridge University Expedition (1956).

4. *Other mountains in Sarawak*

Mt. Mulu (7,798 feet) is the second highest mountain in Sarawak, a big isolated mass of sandstone between the Tutoh and Limbang rivers.

Mt. Batu Apad Runan is a little known peak on the Indonesian border of the Kelabit country, and believed to be well over 7,000 feet.

Mt. Batu Lawi (6,650 feet), with its twin sandstone pinnacles, is

the outstanding airmark of northern Sarawak. Near it are the small mountains of Mt. Derian (Batu Iran) and Mt. Murud Kechil.

Mt. Pagon Priok (6,070 feet), the highest mountain in Brunei, is a little known sandstone range at the source of the Temburong and Medamit rivers, on the Limbang-Trusan divide. It has been explored by Shell geologists and by Forest Botanist Peter Ashton, but no birds have been collected there.

Mt. Kalulong (5,400 feet) and Mt. Batu Song (3,600 feet) are two rather isolated peaks in the Baram drainage.

Further south a long spur takes off from the spinal chain at the source of the Plieran River and runs through the Usun Apau Plateau (highest point Mt. Selidang 4,500 feet) to the Dulit range (4,490 feet).

The Hose Mountains (highest point Mt. Batu c. 6,600 feet) are an isolated volcanic chain between the Balui and Baleh rivers, cut off from the spinal chain by lowlands.

Collections

Mt. Mulu — Hose (see Sharpe 1894); Banks (1935 b)

Mt. Batu Lawi, Mt. Derian, Mt. Murud Kechil — Moulton (1911, 1912)

Mt. Kalulong, Mt. Batu Song — Hose's collectors (Sharpe 1893, 1894)

Usun Apau plateau — Harrisson; Oxford University Expedition of 1955

Mt. Dulit — Hose (1893); Mjöberg (1923); Oxford University Expedition of 1932 (see Harrisson & Hartley 1934 and Banks 1949 a); Raffles Museum collectors (no paper).

5. *Western chain, Mt. Batu Tibang to Mt. Poi*

This starts as a high ridge along the Baleh-Kapuas watershed, passing through Mt. Lawit (5,797 feet), but peters out in the vicinity of Lubok Antu where there is a long stretch of lowlands. The ridge rises again in S.W. Sarawak to Mt. Penrissen (4,350 feet) and culminates in the isolated Poi range (highest point Mt. Kanyi 5,150 feet). South of Mt. Poi is another outlier Mt. Niut (5,581 feet). Mt. Kenepai (3,500 feet) lies on the southern flank of this range.

Collections. Mts. Penrissen and Poi, being comparatively

accessible from Kuching, have been a happy hunting ground for a succession of Curators.

Mt. Penrissen	Everett (see Sharpe 1893)
Mt. Poi	Shelford (1900, Penrissen only)
	Moulton (1913 a, Poi only)
	Mjöberg (no paper)
	Banks (1937 b)

6. *South-western chain*

This starts as the Kapuas-Mahakam divide, and continues through the Muller mountains (a volcanic region with a long extinct volcano Mt. Terata 4,700 feet) to the Madi sandstone plateau. A low pass of about 1,500 feet (Long 113° E, Lat. 0°) between the upper Melawi and the upper Katingan leads to the Schwaner mountains (highest point Mt. Raja 7,474 feet) dividing the Kapuas basin from the rivers of S. Borneo.

Collections

Mt. Liang Kubung (4,400 feet) Büttikofer (1900).

A collection from the higher slopes of Mt. Raja would probably be of great interest.

7. *South-eastern chain*

This starts from an unnamed point where the drainages of the three great rivers of S. Borneo (Kapuas, Barito, Mahakam) meet, and forms the northern and eastern watershed of the Barito River. It reaches its greatest elevation in the S.E. corner of Borneo (Mt. Besar c. 6,000 feet).

Collections. Nieuwenhuis (1904–1907, see also Finsch 1905) climbed to one or two points on the main ridge south of Long Blu'u, but his specimens thence were not listed separately.

8. *Eastern chain, Mt Batu Tibang to Cape Kaniungan*

There are no outstanding peaks; the only systematic collecting was done by Siebers (1927) in the mountains round the source of the Telen River.

Resident Montane Birds

Although there are still major gaps to be filled in, notably in the S.E. and S.W. corners of Borneo, the mountain birds are now fairly well known, and a good deal has been written on their zonation

according to altitude (c.f. Banks 1937 a, Harrisson 1950 b, 1956). According to Chasen (1935, vi) :

> Excluding migratory species . . . we find that the avifauna is more or less sharply divided at an altitude of about 3,000 feet although such broad division excludes a small but not unimportant group of submontane forms. The montane forms may or may not be represented in the lowlands by allied subspecies ; usually they are not.

In this book, *montane birds* are those that are found only on mountains exceeding 3,000 feet in height (but on such mountains they may be found well below the 3,000 foot contour).

A few species, herein described as *higher montane* birds, are found only on mountains exceeding 5,000 feet in height (but on such mountains they may be seen well below the 5,000 foot contour).

Endemics

For the above reasons there are few species peculiar to Borneo. They are listed below (M=montane) :

85. Arborophila hyperythra (M)
89. Haematortyx sanguiniceps (M)
92. Lophura bulweri
228. Batrachostomus harterti (M)
251. Harpactes whiteheadi (M)
286. Megalaema pulcherrima (M)
287. Megalaema monticola (M)
288. Megalaema eximia (M)
309. Calyptomena whiteheadi (M)
310. Calyptomena hosei
317. Pitta arcuata
319. Pitta baudi
343. Chlamydochaera jeffreyi (M)
397. Zoothera everetti
414. Ptilocichla leucogrammica
416. Napothera atrigularis
417. Napothera crassa (M)
432. Alcippe brunneicauda
436. Cettia whiteheadi (M)
438. Bradypterus accentor (M)
468. Muscicapa venusta
484. Pachycephala hypoxantha (M)
488. Prionochilus xanthopygius
514. Arachnothera juliae (M)
520. Oculocincta squamifrons (M)
521. Chlorocharis emiliae (M)
526. Pityriasis gymnocephala
530. Lonchura fuscans
541. Oriolus hosei (M)

Not only are the majority of the endemics found among the montane birds, but the percentage of endemics is far higher, being 32 per cent. montane as compared with 4 per cent. lowland.

Lowland Birds of restricted distribution

Stresemann (1938) listed about forty-six species of restricted distribution, but more recent collecting has shown many of these to be more widespread than was thought at that time. However, the following are of interest :

Pycnonotus nieuwenhuisi. Known from one specimen only, collected in the upper Kayan.

Trichastoma perspicillatum. Also known from one specimen only, collected in S. Borneo.

Parus major. Known only from the Bau and Kuching areas in S.W. Sarawak.

Caprimulgus affinis. Known only from the environs of Bandjarmasin ; perhaps restricted to this area because the grassy savannah it frequents is not known elsewhere in Borneo.

Malacopteron albogulare. Apparently restricted to W. Borneo.

Arborophila charltoni. N. Borneo only.

Oriolus xanthornus. E. Borneo only.

Chrysocolaptes lucidus. East coast of N. Borneo only.

Resident Lowland Birds

The lowland birds live in the plains and foothills, some species ascending into the montane zone up to 4,000 or even 5,000 feet.

Submontane birds are a less clearly defined group, linking the lowland and montane zones. They avoid the flat coastal plains, but in mountainous country they come down almost to sea-level. The number of species in these groups is :

Montane and higher montane	53	
Lowland and submontane	343	
	—	396

Most of the lowland species are found also in Malaya, Sumatra, and Java, and the explanation lies in the recent geological history of the area. The Sunda shelf is a shallow sea, generally less than 300 feet deep, comprising the Gulf of Thailand, Malacca Strait, the S.W. part of the South China Sea, the Java Sea, and the adjoining southwestern portion of the Macassar Strait. Zeuner (" *Dating the Past*," 1950, figs. 47 and 51) has shown that during the last Pleistocene glaciation, extending roughly from 113,000 B.C. down to 20,000 B.C., the sea level was lower (at times as much as 300 feet lower) than it is today. During this period, therefore, much of the Sunda shelf was dry land, and the birds, animals and plants were able to distribute themselves over Malaya, Sumatra, Java, and Borneo. Weber has demonstrated that there is a closer relationship between the freshwater fishes of the Kapuas and the rivers of S.E. Sumatra, than between the fishes of the Kapuas and the Mahakam ; this proves that the rivers of S.E. Sumatra and West Borneo were formerly tributaries of a large river in the South China Sea.

Ecology

(*a*) *Forests.* As stated earlier, Borneo is nearly all forest; mostly primary or " virgin " forest, but with extensive areas of secondary forest or bush fallow on hill padi fields.

The lowland forest is dominated by the family Dipterocarpaceae (yielding nearly all the better known timbers of Borneo other than *belian* and *ramin*). In the montane zone the forest changes to oaks and chestnuts, with a sprinkling of conifers of the genera *Agathis*, *Podocarpus*, and *Dacrydium*. At an altitude depending on local climatic conditions, distance from the coast, and other factors, but usually around 4,000 feet, " moss forest " appears, characterized by rather stunted vegetation covered in dense wrappings of dripping moss; it is normally found on ridges.

The botanical composition of the forest seems to have little effect on the bird population, and will not therefore be discussed in greater detail here. A distinct montane avifauna has developed for historical rather than botanical or climatic reasons.

On the subject of possible zonation from the forest floor to the tree-tops, Harrisson and Hartley (*Geog. Journal* 1933, LXXXII: 403) wrote: " The rain forest is the primary ecological unit, and the population in other habitats is simply a section of that in the rain forest. Tree-top stations were established in the forest canopy. Observations from these proved that there was no particular canopy bird fauna and that there was little or no activity in the canopy between 8 a.m. and 4 p.m., all birds moving down into the sub-canopy during the heat of the day. There was no sort of distinct stratification of bird life in the forest, a conclusion also reached by the botanists; the statements to this effect in most popular and scientific journals stand in need of revision." The hornbills, which are almost exclusively canopy birds, might be considered an exception.

(*b*) *Lakes.* All the major lakes of Borneo are in the south of the island. In the nineteenth century travellers reported persistent rumours of a large lake south-east of Kinabalu, roughly in the position of the Ranau plain (probably a lake in recent geological times), but no such lake exists today. There are major collections of lakes in the upper Kapuas, in the lower Barito, and in the lower Mahakam. Beccari visited the Kapuas lakes and wrote notes on the vegetation. Grabowsky collected a few birds on the Bangkau Lake. No ornithologist has really studied the bird-life of any of these lakes, one of the great gaps in our knowledge of the birds of Borneo.

In Brunei I visited the Merimbun Lake one day in December, but found absolutely nothing of interest there. Along the lower reaches of the Baram River there are so-called lakes (e.g. the Teraja Lakes) which are in fact " ox-bows " or bends of the river that have been cut off by the river opening a new channel. Lake Bunut lies off the Tinjar River, but nothing of interest has been reported from there.

(*c*) *Rivers.* The rivers of Borneo are important because in the absence of roads and railways they are the main highways. The Kapuas, with a length of 714 miles (slightly less than the Rhine) is the longest river in Indonesia. Others, in order of size, are the Barito, Mahakam, Rajang, Kahayan (or Great Dayak), Baram, Kinabatangan, Kayan, Kapuas Murung (or Little Dayak). Some of these are navigable by launches for long distances (the Kapuas to Putus Sibau, the Barito to Muara Tewe or further, the Rajang to Kapit) whereas the others are blocked by rapids in their lower reaches. Beyond the terminus for launches, dugout canoes powered by outboard motors take over. The Brem Brem gorge of the Kayan River is one of the few stretches on the major rivers that is impassable even for dugouts.

(*d*) *Sea coast.* Those accustomed to the rich maritime bird life of northern latitudes will be disappointed in the tropics. As Harrisson wrote in 1952 : " Having to go much to sea and spend sometimes weeks on small islands, I am constantly struck by the poverty of sea-bird life along the west coast of Borneo. One may travel the whole day by launch and see not one sea-bird." Nevertheless, quite a large number of the birds on the Borneo list, including the oceanic birds and many of the waders, will be seen only along the coast or off-shore.

CHAPTER 3

BIRD MIGRATION IN BORNEO

The *Palaearctic Region* is one of the main zoo-geographical regions of the world; it comprises Europe, Africa, and Asia, north of Lat. 30° N. The *Holarctic Region* is the Palaearctic Region plus N. America. A Holarctic bird is distributed all round the globe in northern latitudes. A Palaearctic bird is found in summer over the greater part of the Palaearctic Region, and many of them migrate southwards in winter to the tropics or even to the southern hemisphere.

Moreau in a paper on "The place of Africa in the Palaearctic Migration system" (*Journ. Animal Ecology* 1952: 250–271) has shown that about 40 per cent. of all Palaearctic breeding species leave the Palaearctic Region wholly or mainly in winter. Some go to Africa, some to S. Asia, and some to the S.W. Pacific.

He defines the Far Eastern Palaearctic as the area east of Long. 90° E (roughly the longitude of the Yenisei River and of Calcutta) to the Bering Straits. It seems probable (though no proof exists in the form of recoveries of ringed birds, etc.) that our winter visitors come almost entirely from this far eastern area, the birds of which fan out over a vast area in winter extending from Africa to Australasia and the W. Pacific.

Little work has so far been done on the routes by which these Far Eastern Palaearctic species reach their winter quarters. There is no ringing organization such as exists in W. Europe and in America to throw light on the problem. Some species evidently travel too far east to touch Malaysia; thus the Japanese Snipe (*Capella hardwicki*) breeds in Japan and is common in E. Australia in winter but apart from a New Guinea specimen there is no evidence to show how it gets there. The Sharp-tailed Sandpiper (*Calidris acuminata*) breeds in N.E. Siberia and is widespread in Australia in winter, but in our area has only been taken as a stray in Java.

Some species barely reach the tropics; others concentrate in the tropical belt; others again pass through the tropics to winter in the southern temperate regions. The migratory ducks that visit N. India, Burma, and Siam in such numbers in winter either do not reach Borneo at all, or only as rare visitors that have strayed beyond

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their usual limits. The same applies to some of the small passerines, such as Tree Pipits (*Anthus hodgsoni*) and Stonechats (*Saxicola torquata*). On the other hand, some of the waders such as Common Sandpipers (*Tringa hypoleucos*) and Sand Plovers (*Charadrius mongolus*) are as common in Borneo as in Burma. Most of the migrants that reach Borneo probably make use of the convenient land bridge of the Philippines ; some may fly straight across the South China Sea ; others may follow the Malayan Airways route from Singapore. In this context, Gibson-Hill's paper on snipes (1949) is most illuminating.

A very few species reach Borneo on migration from their breeding haunts in Australia ; an example is the Long-legged Pratincole (*Glareola isabella*).

The appearance in Borneo of the Wheatear and Skylark can only be explained on the theory of interspecific flocking, which Meinertzhagen (*Birds of Arabia* p. 63) describes thus :

> It has already been mentioned that migrational drift may account for cases of vagrancy, especially in western Europe and over the Atlantic. But I believe the phenomenon of a single bird of one species becoming caught up in the flock of another species is a more potent cause of vagrancy than migrational drift, for the flock instinct is so strong that in many cases the stranger cannot extricate itself from the adopted flock. Lorenz in *King Solomon's Ring* gives a vivid picture of his tame jackdaws becoming caught up in a flock of migrant jackdaws, but that is a slightly different phenomenon to what I refer here ; and what I refer to here had nothing to do with flocks of mixed species such as plover and starlings or chaffinches and bramble finches which congregate together for protection, for companionship or for similar food preferences. The phenomenon I wish to stress is that of a single individual of one species, or perhaps two or three individuals, becoming caught up in a larger flock of another species and, finding themselves unable to abandon their host flock, travel long distances with them over long periods.

A winter visitor is a bird that comes to Borneo for the northern winter and does not go any further ; whereas a passage migrant is a bird that passes through Borneo to or from its winter quarters further south. With our very limited knowledge of migration in Borneo we often cannot say whether a bird is one or the other ; moreover, some members of a species may decide to winter in Borneo whereas others may decide to travel on ; and a bird may be a passage migrant in northern Borneo but a winter visitor in central or southern Borneo. Large numbers of Red-necked Phalaropes have been observed in early October on passage, both in the Kelabit uplands and on the sea off the Sarawak coast, to their winter quarters somewhere in the seas further south ; but no return passage has been observed to date,

which indicates that they return north by a different route. On the other hand, flocks of Yellow Wagtails pour down through Borneo in September–October, but return the same way in March–April. As a typical winter visitor I would cite the Brown Shrike (*Lanius cristatus*); one of these lived in my garden in Brunei from October to March.

The Borneo list therefore comprises :

Migrants—strays	54	
regulars	104	
		158
Residents—montane	53	
lowland	343	
		396
		554

CHAPTER 4

BIRDS AND MEN IN BORNEO

BY

TOM HARRISSON

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I. BACKGROUND

1. *Man v. Bird v. Man*

There is probably no other part of the world where birds and men are more intimately intermixed than in Borneo. This is so not only in the more " obvious " ways such as the use of feathers in head-dresses and dancing-cloaks, Imperial Pigeon as food, Rhinoceros Hornbills as woodcarving and body tatoo themes, eagles as children's pointed symbols of strength. Here birds are interwoven into the whole texture of thought and belief. For some three-quarters of the population they are major determinants of conduct. For nine-tenths they play a large part in mythology and in perpetuating virile ideas surviving out of the past. In that past, also, they played (as we shall see) a great, in some ways perhaps a greater, part, through the cults of birdmen and shamans, which probably pre-dated animism and the more detailed use of birds as omens in practice.

Side by side—or rather all in among with—such ornitho-ideas in Borneo, runs (or meanders) a very practical attitude to ornithology, as well as an ideological one. The basis of life of nearly all Borneo men, women and children is rice. The greater part of the population spend the major part of their time doing work directly or indirectly connected with growing, harvesting, storing and cooking rice. In doing so, most fell, each year, jungle, to get the needed rice-farm clearings. In doing this, with a rapidly expanding population they are gradually cutting out the rain forest on which well over half of Borneo's birds depend ; while the minority who grow wet padi in irrigated fields, thereby perpetuate the only open *wet* places (inland) for birds that we should otherwise not know in Borneo. One of the wet-growing areas is above 3,700 feet around Bario in the Kelabit uplands, where I have myself spent some three years watching men and birds. Among these birds are many of interest which will be referred to in the main text of this book. But if a few hundred upland farmers switched from wet to dry farming, as they easily would (and once did) there would be nowhere else so nice inside Borneo for the Phalaropes, Grey Herons, Little Egrets, Hen Harriers, Chinese Banded Crakes, and Great Reed Warblers to go.

The multiple and complex dependence of Bornean birds on Bornean man—in this negative way—is not merely one-sided. For after making new sorts of bird-worthy or bird-odious environment

in his ceaseless struggle for rice—which is *never* easy in Borneo, as it can be in Burma or Siam—man is constantly interfered with by birds. These can, if he is careless or fate is unkind (fate being mainly blamed if he be a Mohammedan, only less directly so, through other birds as omens, if a Dusun) negate a large part of his work : eat up the ripening rice.

Borneo men, then, can upset the whole avifauna of Borneo. But the birds can and do powerfully influence man's daily conduct, too, both at the intellectual level (through birds as omens, guides, indicators, culture heroes and symbols) and at the practical and economic (all the way from omen effects or from the lovely Long-tailed Munia as a major Kelabit rice menace through to the tiny swiftlets building saliva nests which the Kayans collect and sell for up to £10 a pound to the Chinese for soup).

2. *Man-Bird double-thinking*

This duality—by western definition, that is ; for to be simple, " black and white ", is not at all to be Bornean—is expressed in innumerable ways ; but we must keep this discussion down to birds, not fly off into far psychological fancy. Perhaps I can put it most simply by a single and rather simplified example. The Dusun people round Mt. Kinabalu in North Borneo*[10] have a system of bird-scaring second only to the Kelabits round Bario in interior Sarawak. A speciality in both areas is the use of windmills[15] designed to utter fearsome noises, and of suspended " scarecrows " of plaited palm leaf which swing and shudder in the hill-bred breeze. In 1952,

* The number [10] denotes part 10 of this chapter, below. This enumeration is used to cross-refer the reader to other parts directly relating, also, to the point under discussion.

This account is based on the author's direct experience in Borneo in 1932–3 as ornithologist on the Oxford University Expedition ; since 1945 mainly as Curator, Sarawak Museum. Journeys have been made over wide areas of Sarawak, North Borneo and Brunei ; and over what was at first Dutch and is now Indonesian Borneo (Kalimantan), especially in the area from Long Nawang and the Kayan River northward. Unless otherwise stated all observations are first-hand and previously unpublished. Published sources are mainly papers in the *Sarawak Museum Journal* (post-war issues, Nos. 1–12), edited by the writer throughout. Such references are given in italics and brackets to distinguish from cross-references to chapter parts. Thus (7) means the source is in *S.M.J.* No. 7. In each case, it is easy from the context, to identify the relevant paper in the relevant number of the *S.M.J.*, copies of which are available in most main reference libraries and learned societies ; or direct from the Museum, Kuching, Sarawak. Other sources are specified as they arise. Thanks are due to Sliman bin Salleh (Malay), Benedict Sandin (Iban), R. Nyandoh (Land Dayak), Lord Medway (English), Lian Labang (Kelabit), and Barbara Harrisson (German) on the Museum Staff for checking sundry points. The last named also translated the Ngadju story.(*)

among these Dusuns around Ranau and Tambunan in the North Borneo uplands, there was a spate of new house building following an excellent harvest and a trade boom generally. Both in the now harvested and dreary rice fields and on the skeletal, newly carpentered and still incomplete houses stood these windmills and " scarecrows ". But whereas the former had done their bit in beating off the spring horde of munias and doves, the latter were busily engaged in repelling —it was universally hoped—a yet greater danger : the Brahminy Kite.

This handsome eagle plays a large part in Bornean pagan belief. It " is ", in a sense, Singalang Burong, the greatest of Sea Dayak (Iban) culture heroes, one of Borneo's many bird-omens. The Kite ranks with the Rhinoceros Hornbill in over-all folklore through the island. In the north it is largely thought of as a general symbol of power, beauty and strength, but with strong ancestral connotations —reflected in its Dusun name, *Kondiu ragang*, which emphasises the special (and in this case, as often, mentally exaggerated) " redness ", by *ragang*, the attribute of the original Dusun homeland of mythology, Nunuk Ragang ; or the Kelabit *Kornio balang*, Tiger Eagle, a title not at all deserved from the bird's scavenger and sly habits, but because of his " tigerish " undertoned colour, quality and myth-attribute—in a land with no known tigers.

The bird-scarers were placed at the gable ends or on the centre of the top beam of the new (1952) houses ; to keep away the Kites at all costs. For should a Kite, the Dusuns explained, settle on the house while it is abuilding, that house is doomed to destruction, then or later, from the fiery (" red-hot ", really) quality inherent in and conducted by the bird. As far as I know, no one has ever seen a Brahminy Kite settle on a Bornean house ; they are fairly shy birds, of open spaces over swamp or water, here. Certainly this did not occur this trip ; or I might have seen the major ceremony which I was told was required to purify the premises, with red cloth, sacrifices and the protracted services of a senior " priestess ", the only effective exorcising influence over predator evil in this instance.

Of course, the extreme improbability of a Brahminy Kite ever settling on a Dusun house is irrelevant. As irrelevant, that is, as the improbability of the house catching fire in consequence. Nor do the Kayans use as omen birds—more dominant and exacting over them than any other Borneo animists—any that have anything actually " to do " in fact with the operations (house building, marriage, canoe journeys, rice planting, etc.) which these birds powerfully influence and not infrequently decide.

A western ornithologist can dismantle the cause—and effect—of Bornean birding by a stroke of the pen, without leaving South Kensington. Nevertheless, the ordinary Bornean thinks, knows and cares more about more birds than any westerner who is not a fine ornithologist. Theirs is a genuine, Bornean ornithology, where instead of ephemeral or anthropomorphic gods and ghosts, saints and angels of western belief, fly the living birds and their spirit projections, out of the adjacent jungles, through men's souls.

3. *Birds that attract*

It is only a mild falsification to imply that the basic relationship between man and his universe over nine-and-a-half tenths of Borneo is set in a loose framework of a fairly elaborate *applied* ornithology. For to suggest this is to ignore the deeply complicated evolution of these attitudes, now so much centred in birds partly because they do form, to some extent, a handy set of reference points for a kind of belief and way of life. There is, indeed, evidence for suspecting that many centuries ago arthropods (notably the centipede and scorpion), played a larger part in belief, custom and art. Certainly this was so in the area of the great limestone caves around Niah in Sarawak; and there are lovely relics of the same theme in Kalimantan Kenyah tattooing, Iban weaving and so on. The crocodile, turtle, king cobra and other reptiles may represent later developments, partly under Hindu influence?

Be this as it may, today birds come out as about the most frequent expressions of living and lively interest in non-human living things, inside Borneo. Only the minority who are Mohammedan treat birds secondarily.[14] And even the self-sufficient, highly successful Chinese find, in their most profitable farming, the Glossy Starling becoming a local plague upon the ripening pepper pods.

The birds that *distract* the Bornean mind are not many, but often voracious and costly. The birds that *attract* the Bornean mind cover, at some time or place, nearly all the rarer sorts—and including many still hardly known to outside observers. These range from the largest to the smallest. The great black Helmeted Hornbill (over four feet wingspan), larger and noisier in flight than a swan, is a symbol as well as the source of Borneo's most valuable export, *ho-ting*, the hornbill ivory priced above jade until recent times. The tiny, yellowish (four inch wing span) noisy, fussy little aberrant Rufous Piculet (*Ketupong*) is a widespread omen bird in the island; in some places, its calling—whether to right or left—can determine the actions of a whole longhouse.

The birds of most universal interest are probably Brahminy Kites (already mentioned) and the Rhinoceros Hornbill with its splendid upswept orange and scarlet casque upon the beak, now so embedded in the asymmetric spirals of Borneo design that it is no longer possible to say which come first, the spiral or the hornbill, the scorpion's tail or monster's fang or casque.

There are, of course, very many other birds in this thinking: kingfishers, spiderhunters, woodpeckers, drongos, frogmouths, owls, the vivid Orange-tailed Shama, the curious Drongo-Cuckoo and the garrulous Jay Shrike are widespread "omen birds"; the Argus Pheasant with its magnificently spectacled feathers as spirit guide and ornament[4]; the spectacular and now rare Bulwer's Pheasant as number one flesh[13]; the Talking Myna, and the so intelligent little Black Hornbill as children's pets[16]; pittas or jewel thrushes, dead, as little boy's toys[17]; bee-eater's beaks as stone-age pendants[5]; Adjutant Storks caught young and reared for the table[14]; the Spotted-necked Dove as a near-totem of the Leppu Tau (its vernacular name) Kenyahs in Kalimantan.[8] Owls as things that go frighteningly thump in the night; coucals as bad and wren-warblers good luck if they nest in your ricefield; Yellow Wagtails as guides to the start of the Kelabit rice year,[9] Reef Egrets as ghosts for Malays; munias as unmitigated pests and so on.

4. *Avian Augury*

Freeman is separately going into Sea Dayak bird omens thoroughly as they operate today. I am leaving that to him. But it is needful to emphasise that while a close account of one local system gives invaluable insight in that place at that time, it must never—in Borneo—be thought that there is anything static about such a set-up. Tomorrow, literally, the whole thing might be overthrown, changing overnight. Indeed this has happened in the past decade, to several large groups of Iban, Kayan and other peoples, who have become mass-converted to Christianity; and *en masse* dumped the whole elaborate paraphanalia of bird omens and ceremonies in favour of a whole-hog acceptance of the Holy Scripture in which the principal bird symbol is a white dove, a colouration not found among our mainland *Columbidae*, and only present in part in the handsome Pied Imperial Pigeon of the offshore small islands.

II. PREHISTORIC: BORNEO'S WILD MEN AND THEIR BIRD VALUES

5. *Stone Age and Bird Bone*

Most of what we know both of birds and men before historical times in Borneo depends on excavations in the Caves at Niah, near the West Coast, (*12*). These show that as early as 50,000 B.C. man was certainly frequenting the caves; and mixed up with his bones and stone tools are bird bones.

But in these earlier phases of stone age, the amount of bone indicating that birds were taken as food is very small. Indeed, right through into the Neolithic (the late Stone Age), which continued (inland) into the Christian era, bird-bone is surprisingly scanty. There are quantities of many kinds of shell and the bones of all kinds of mammals, including large forms no longer present anywhere in the area, such as rhinoceros, elephant, buffalo, big orang utang and an extinct giant pig. There are fish, snakes, tortoise, lizard and bat. But of all this massive detritus of thousands of years of stone age man, *under one per cent. is bird*.

In the earlier stone age phases this is easier to understand. All Borneo's extant birds can fly. Most of them are arboreal, many keeping well up in the tropical forest. To this day the only way many Borneans can get at such birds is with the blowpipe. And you need iron to make this, the finest of Borneo's craftworks. The bow and arrow does not seem to have reached most of Borneo. Early man was therefore confined to the lower levels for hunting.

All the same, as man developed more advanced techniques, including traps and snares, he could catch rich prizes; pheasants, partridges and other ground birds. To a remarkable extent he does *not* appear to have done so. One is left with the thought, therefore, that in those distant days there may have been already powerful beliefs about and prohibitions upon some birds, just as there is now on the Argus Pheasant in places. Just as, too, today many pagan peoples will not eat various kinds of deer, the commonest source of protein in much of the island; while the principal source, wild pig, is totally prohibited to Borneo's nearly a million Malays.

A good deal of the bird bone found in Borneo caves is associated with the burials. Some of this is hornbill bone. It has not always been broken and dismembered in the ordinary way. At once, the hornbill claims the place which it still holds, in a different way.

The stone age function seems to have been as offering or sacrifice ? Here the hornbill suffers from a (for it) disadvantage over all other Borneo birds ; but a disadvantage which, I believe, underlies the special qualities attributed to it by Borneo humans and places it on a special pinnacle. The way in which the male walls the female into the nest hole makes it easy for any competent hunter to capture at least the hen ; if he is a little clever, he waits for the young to grow large, then catches the male bringing food ; four feasts at one swoop.

There are two things about this entirely hornbill technique which lie close to the deep roots of much Dayak *ethos* :

i) treating the female more toughly than any man can ;

ii) the idea of breeding in a dark, enclosed chamber, which relates profoundly to much of Bornean belief in the two worlds, over and under, linked by a dark, hidden tunnel in the journey between life and death, wake and dream, self and spirit, Dayak and " half-Dayak " ;—bird and man—and soul.

The hornbill, anyway, was the one *big* bird a cave-man could always hope to catch. It was a speciality, at the least.

The other use of bird bone in the stone-age develops strongly in the Neolithic, carries on into the advent of metal with bronze. Among the prehistoric human ornaments, two kinds are avian. The beaks of birds are found, used probably as pendants—hung through their nostrils. These are rare, and mostly the beaks of the Bearded Bee-Eater. As this exquisitely coloured bird actually nests in the caves, boring holes in the prehistoric human deposit to this day, these could be taken to be casual if other bee-eater bones were around. But these do not occur. Their hole-habit, like the hornbill's, played into primitive hands—and on the spot ? In one cave grave, also, there is a piece of the casque of a Helmeted Hornbill.

More certain and frequent are small, polished, finely cut-off tubes made out of the hollow limb bones of large birds ; again perhaps hornbill. Only two sizes are found—internal diameters 3 mm. and 7 mm. ; the smaller average about 10 mm. *long*, the larger rather longer. There is no question of " any old bird " being used, although many could serve this primitive purpose.

6. *Metal and the great Bird Trades*

From excavations of the past decade, widely along the west coast, we now know that there was a very extensive trade between the Asian mainland and Borneo. We have proved large scale trading centres, from Cape Datu at the southwest tip of Borneo up the west coast past Niah, at least to as far as Brunei Bay (*2–12*). The

earliest of these stations so far proved, dates back to about 700 A.D. Nowhere else in South-east Asia has such an extensive trade been proved over this period.

It is not too difficult to discover what this trade brought to Borneo. Wherever we find it, we find also iron and great quantities of other things including earthenware and stoneware and presently porcelain pots, plate, jars and bowls ; and—of special interest here—glass beads.

Among the earliest of these glass beads are an opaque tubular kind, always monochrome, which occur commonly also in the upper, early (pre A.D. 1000 ?) metal levels in the Niah Caves. These resemble in shape and size the smaller sort of bone-bead from the later stone age. We think they are direct *imitations* of these, made for trade purposes, to cater for a native market where such beads were valued. This view may seem less odd when I add that the first time we excavated one of these peculiar beads—quite unlike the common run of transparent and usually globular glass types—I recognised it as a sort worn in the skullcap hats of Kelabit aristocrats in the interior. These beads the Kelabits regard among the most valuable and ancient of all ; and they have made a study, almost a cult, of old beads up there in the far interior of Borneo. Not only that : the Kelabit name for this one type (only) which had previously and constantly puzzled us, is *manik tolang* : that is, " bone bead ".

Thus, one of the special things the Chinese traders of a thousand and more years ago brought to Borneo, stemmed, it seems, out of bird-loving. But what justified crossing such dangerous, uncharted and monsoonal seas—the compass was not yet invented—continuing over at least thirteen centuries (it is less than five since the first westerner " discovered " Borneo in 1521) ? Once more, quite a large part of the answer is ornithological !

Owing to obscurities of early Chinese texts and scripts, much is uncertain in regard to this early trade. There is no doubt, however, that with timber, spices and other vegetable products, gold and diamonds, along with the highly valued horn of the local two-horned rhinoceros, at least three major items of ornithological interest were important—two of them at times of paramount importance. These were, in their approximate order of (past) value :

(i) " Hornbill Ivory "
(ii) Edible Birds' Nests
(iii) Feathers for jewellery.

Let us examine each of these curious avian exports in turn.

PLATE 13

Scale in inches 0 1 2 3 4

From the collection of Tom Harrisson

One of a pair of casques of the Helmeted Hornbill, carved and decorated with peacock and other feathers in China from early times until the eighteenth century.

"Hornbill" Ivory (*ho-ting*) was once more valuable than jade in China, and a major export from Borneo far back into pre-history (see p. 29).

(i) " *Hornbill Ivory* "

This is about the weirdest piece of trade goods, surely ? It is also distinctive, durable and strictly localised as regards supply, hence that much easier to follow up over the centuries.

A leading American orientalist, Dr. Schuyler Cammann has well written (*6*):

> Among all the strange and unusual substances that have been worked by the artists and craftsmen of Eastern Asia and the Indies, perhaps the oddest and least known is hornbill ivory. This is a dense carveable substance which is found in the solid casque that grows above the beak of the Helmeted Hornbill.

Although the hornbills are named for their impressive beaks, and that of the Rhinoceros Hornbill is most dramatic in its great upsweep, the Helmeted as well as being the largest is the only one with a solid casque, suitable for carving. It is only found in southern Malaya, Sumatra and Borneo ; so that all hornbill ivory must come from these places. In practice, probably most of it has come from Borneo, where the areas of suitable virgin forest are greatest and the people are the most jungle-wise hunters of South-east Asia. The first certain reference to *ho-ting*, which became the Chinese trade term for hornbill ivory, states that the " first " Sultan of Brunei, sent some among tribute gifts to the first Ming Emperor. But it is hard to believe it was not an item of trade much earlier than that ; especially since, in 1958, we found a piece of the stuff in a burial associated with T'ang ceramics in the Great Cave at Niah. One difficulty is that, by the nature of the substance—small size, extreme hardness—dateable inscriptions have not been found on any piece of *ho-ting*. Indeed, there are very few pieces known in collections—partly because it always was rare, partly because until recently scholars and collectors have not recognised the material. Thus it happens that I have myself collected considerably more pieces than are known in any other hands, including three of the six known whole casques carved with ornamental scenes (Photo Plate 13)* ; two exquisite mandarin belt buckles ; and five of the fine magic horses of China—so often found in ivory or porcelain (Photo Plate 14). Also found are plaques for the belts of high Ming officials, plume holders, and latterly snuff bottles.

The value of *ho-ting* in China was beyond doubt. According to the Ming " Tribute Regulations ", a single piece was worth 1000 cash, as compared with elephant ivory at 500 cash per *pound*.

* The others are in the University Museum of Philadelphia, the Freer Gallery of Art in Washington, and the British Museum.

It is likely that the casques were mainly exported raw, and worked with a heat treatment and pressing—of which no detailed description survives—in China, to preserve and heighten the lovely deep golden and surface red patina of the fresh ivory. The Chinese probably got the idea of using *ho-ting* from the Dayaks, then improved the technique at their end. The uses of hornbill casques in Borneo are various and frequently effective ; we will discuss these presently.[18] While the Borneo usages persist to this day, all trace of the art of the Chinese carver seems to have vanished. Very little has survived of a remarkable craft which undoubtedly paid for many of the old jars, plates, and beads still decorating the longhouses or wives of better-off Bornean pagans many generations later.

(ii) *Edible Birds' Nests*

After the uncertainties of avian ivory, we come out to safer ground, into the dangerous terrain of the birds' nester. There is abundant evidence in the caves at Niah and elsewhere, of large-scale Chinese contact over a thousand years ago. As the most prized food in the Orient the source of birds' nest soup is bound to have been a focus for trade into the earliest times of seaborne business.

As with the Hornbills so with the tiny swiftlets of the genus *Collocalia* : not all make edible nests wholly or largely composed of their own salivary gland excretions. Some make mossy nests, including the incompetently named (in science) *C. esculenta*. Others, including the more happily named *C. inexpectata*, make succulent nests, but usually only in small colonies—in Borneo very seldom sufficiently numerous to be worth collecting. The best bet for the nest gatherers and their middlemen—who soon appear in such circumstances—is a big cave or group of caves. For these, West Borneo is the best of all. There are four famous aggregations of limestone honey-combed with caves in the island ; at Gomanton, near Sandakan, in North Borneo ; 75 miles up the Baram river in northern Sarawak ; at Niah, 40 miles southwest of the Baram ; and around Bau in the headwaters of the Sarawak River. Several million swifts nest in the caves, about a million pairs in the Great Cave at Niah alone (Photo Plate 15).

There is no reason to think that these swiftlets were any less numerous—their nests any less delicious to the Chinese taste, a thousand years ago. On the contrary, at Niah, there are strong local traditions that the birds were once upon a time far more numerous, nesting right down the walls to be pulled off by hand.

There is also the evidence of excavation there that swiftlets were present at least as early as 50,000 years ago.

Nowadays, there is no question of easy-come in this trade. Techniques for collecting vary from place to place, but there is everywhere a common element of risk. This reaches its dizzying, terrifying heights at Niah, where single poles, connected by wooden pegs, ascend as much as 150 feet to the cave roof (Photo Plate 17). The collectors, mostly Malays of Punan and Melanan origin, climb these threads of life apparently with ease and without concern to enter the labyrinth of chimneys, corridors, funnels and tunnels high in the mountain side; or to balance at the top and scrape for a twelve-foot radius with the bladed *julok* (Photo Plate 18), while down below the collector's mate gathers up the nests from the teeming guano and insect life of the cave floor. In a day, in this way, a good many may earn $10,00 (£1 3s.).

Every now and then someone falls. To such a fall there is only one answer short of a miracle. . . .

Cave rights are, clearly, valuable and jealously guarded. Every foot of nestable rock is owned, named and registered in the name of a native owner. At Bau, where all the caves belong to Land Dayaks, the longhouse is the normal unit of control. The population is rapidly increasing, leading to the budding off of new longhouses as sub-communities on further land. Here is a fertile source of feuding and legislation: who exactly has the right to collect where, when?

In white-nest areas, like the Baram, where a pocketful of nests may be worth a month's ordinary wages, theft is the source of endless trouble and sometimes of bloodshed.

Where the owners are or were predominantly Malay, as at Niah, the problem is rather one of fragmentation. The inheritance rules of Islam involve subdivision of such property. Within the less than fifty years of written records, the splitting of nest patches into uneconomically small units has led to late-coming Chinese settlers, with capital, acquiring most of the cave rights at Niah. No doubt this is history on the repeat. We are round where we were twelve centuries ago? In between, during the Ming, it seems that the China trade faded right out all down the west coast; the nests were no longer collected. This fits the archaeological data, *and* local folklore. There is, in fact, a pleasant Punan story of the cave being "rediscovered", and it can be nearly dated.

In those days (about 1840), the Niah Punans were still nomadic. A famous hunter, Melibong, one day noticed birds streaming out

from behind a line of trees. He investigated. It was the long-hidden mouth of the Great Cave, which runs for more than a mile through Subis Mountain.

All over the cave walls he found masses of what he thought were mushrooms. He gathered some of these, low down, and took them to show to some knowledgeable persons. A Malay trader from Brunei took samples to the Sultan of Brunei. Thus the Malays got in on the cave floor of this rediscovered treasure.

There is no need to despise Melibong. Anything *less* like good food, on first sight, is hard to imagine. These small, hard, usually fouled crescentic cups would seem more suitable for making furniture or crockery than soup. Between the daring climber and the Hongkong millionaire picking at the soft gelatinous delicacy with chopsticks, the nests must be auctioned, washed, soaked, all dirt hand picked out (by girls), sun dried and compressed into thin, little pancakes, easy to pack and ship. The end-product will keep for years. To eat, soak overnight, boil, serve in one of many ways—with sliced chicken in soup ; as stuffing to a Chinese capon done in the " boneless wonder " style ; sweetened with *lichees* and other fruit.

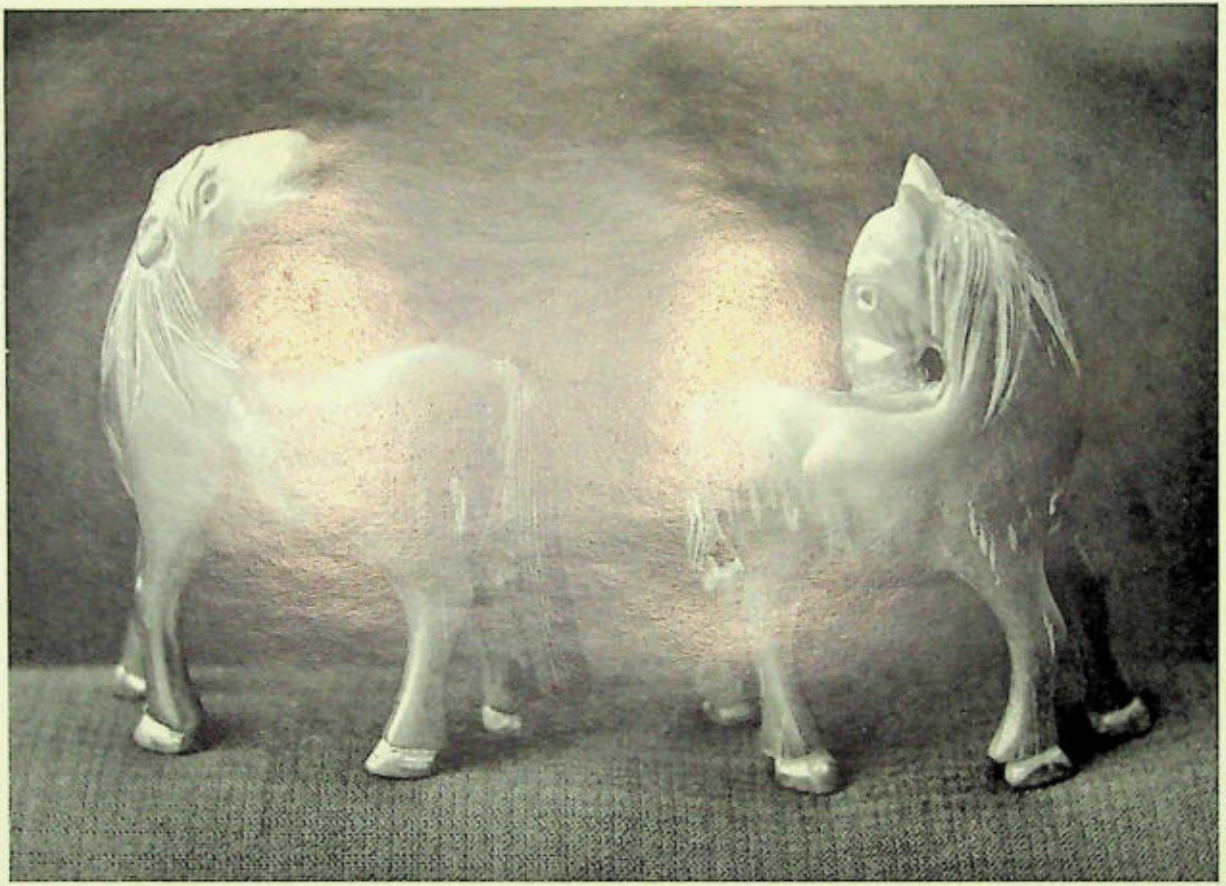
Lest Melibong be thought alone in his inadequate grasp of ornithology here is the way the best Chinese restaurant in Borneo recently described Bird's Nest Soup on its menu :

BIRD'S NEST

Bird's Nest with Pigeon Eggs in Soup ...	$10.00
Bird's Nest with Crab fat	$ 8.00
Bird's Nest with Crab Meat	$ 8.00
Bird's Nest with Shredded Chicken	$ 8.00
Potage Bird's Nest	$ 8.00

Bird's Nest is a gelatinous substance found in and around the nests of swallows in the rocky, coastal regions of the South Sea Islands. It is derived from some kind of sea food which the birds carry to their nests as provision for future use in the period of feather-shedding. It is either in small bits or in filaments, being semi-transparent, colourless and virtually tasteless. Flavoured with chicken soup, it is sometimes served without any accompaniment, and sometimes with poultry or meat. Famous for its nutritious value, it ranks as a principal dish at an elaborate dinner. It is also prepared sweet and served as a dessert.

The idea that the edible birds' nests are the result of " Swallows " (no relation to swiftlets at all) skimming the surface of the sea adds that magic touch of improbability which so attracts the educated Chinese mind—as also with rhinoceros horn as aphrodisiac, hornbill ivory as charm, sharksfins as stimulant, and the rest.



Magic Horses of China carved from Hornbill Ivory

Sarawak Museum

PLATE 14

In reality, these birds feed exclusively on tiny insects taken on the wing. This fact is, of course, the necessary preliminary to salivation that makes the nest. Its other by-product is the evacuated hard, chitinous wings and other parts of the insects, which fall to the cave floor in the *faeces* and make guano. Governments in Borneo admit the native right of nest owning ; but, by some complicated zoo-geology, claim the guano as a mineral and allow extraction (for fertiliser) under licence. Thus what comes out of the swiftlets' mouth as spit is succintly dissociated from what comes out of the other end !*

As the result of studies made by Mr. F. N. Chasen in North Borneo and Mr. E. Banks in Sarawak during the thirties, rules to control the collecting and general welfare both of the edible nests and their owners were introduced as legislation. In Sarawak the Curator of the Museum has to determine, from time to time, when such collections may take place. Normally it is twice a year, for between 10 (Baram) and 60 (Niah) days. Some swiftlets nest all the year round, but they have a very long incubation and fledging period. It is therefore necessary to limit and arrange collections roughly so that nests are taken as soon as possible after they have been made in large numbers. If this is correctly timed—and observed by the human " owners "—the swiftlets will then make new nests and rear young. There are now no signs of any further decrease in nests. What is visibly decreasing, especially in the caves of black nests with their smaller per capita reward, is a body of ultra-able-bodied men prepared to run the deadly risks incurred in this singular and literally precarious method of earning a living.

(iii) *Feather Jewellery*

Traditionally there was at one time some trade in the feathers of Argus Pheasants, which if displayed in wing and tail spreads are in their way as magnificent as those of the Peacock—which does not occur nearer than Java. Such feathers were used in the grand costumes of courtiers and actors in China and elsewhere, but little is known of them, in the past, in detail.

Better attested in the annals of trade is the high premium upon the brilliant blue plumes of certain Kingfishers : Chinese " Kingfisher jewellery ". This is now rare ; and very little represented in collections, though it continued to be made until the last century. The seven pieces I have all appear to come from the mantle of the

* Guano extraction from caves is a recent development. As the supply is limited, the process is self-destructive and has already gone far in that direction.(*12*)

White-collared Kingfisher (*Halcyon chloris*). This bird is very widely distributed in Asia and Oceania. It is reasonable, however, to believe that Borneo was a supply source, because here alone in South-East Asia have we positive proof of a large-scale two-way trade from T'ang on. Moreover, the pinpointing of part of this China-Borneo barter at the Niah caves, makes a metal-ceramic-glass tie-up with bird products unmistakable ; and again this is entirely unproven, on the spot, anywhere else as yet.

This feather trade must have been large, in aggregate. Compared with hornbill ivory, it is still fairly easy to find fine pieces of feather jewellery in the antique shops of Singapore or London. But the requisite and exquisite feathers were probably always easier to come by too. Helmeted Hornbills—like the highest trees and remotest jungles—make considerable demand on the hunter ; edible nests on the climber ; kingfishers need less skill, provided they are not too intensively collected.

The trade would, therefore, probably have been on a small scale, insufficient to merit much attention in the records at the mainland end. At the Borneo end, it is too much to expect any archaeological evidence for such perishables. *There is no native use* of Kingfisher feathers known, and no traditions of an ancient trade. But the same equally applies to edible birds' nests.

The commonest surviving forms are on the vast headdresses of traditional Chinese stage plays, and on the faces of pendants, clips and hair ornaments. Virile figures of birds, monsters and miniature scenes are picked out with the feathers delicately set in frames and twists of silver wire or thread.

7. *Into Modern Times : and " Superstitions "*

The great metal and ceramic, bead and bird trade seems to have flourished only on the west side of Borneo ; naturally enough, as this is the more accessible to the Chinese and Indo-Chinese mainland. But the effects of the trade were felt through the huge island. One effect was to accelerate some of the culture values and aesthetic interests of the pagan peoples, and bring them " ahead " of other so-called primitive peoples at an early stage in the metal-age.

One expression of this has to do with birds. In the Niah caves, and intermixed with the valuables brought there to trade for birds' nests and the rest, are testimonials for the local population of about those times (A.D. 1,000 and before). These include some remarkable paintings, in red ochre (haematite) upon the white limestone walls of the caves. Among the many designs shown, principal of which are

" ships of the dead ", occur fairly crude and wild representations of birds, the identifiable of which, as ever, the Rhinoceros Hornbill, and for the first time signs of poultry: Fighting Cock (*12*). The cult of the fighting cock, modern substitute for head-hunting among the Sea Dayaks, probably dates to about this time, and especially perhaps during the period of much Hindu influence, between A.D. 1100 and 1300; and thereafter this plays a prominent part in the folklore of the coastal Melanaus and Kedayans and in the strange story of the founding of the Sultanate of Brunei.[11]

These rock-drawings and their associations somewhat suggest a shamanistic system and cult of the dead (humans), probably different from and predating the use of bird augury as the prime arbiter of uncertainty and future anxiety. We are still five centuries before Singalang Burong's great bird rites and Surong Gunting's leading the Sea Dayaks over the mountains. By the same token, there are no signs that in those days head-hunting was as important as it subsequently became. Of rice there is no trace.

The strangest leads from then until now, though, are those connected with the beautifully made canoes with lids, which lie below the rock paintings on Niah cave floors, a hundred feet and more above the valley and far from the nearest boatable water. These belong to the very ancient civilised ideology of the spirit journey into the underworld which has survived, in an astonishing way, right up to the present among one people in the south-east of Borneo, the Ngadjus who inhabit the middle reaches of the Barito, Kapuas and adjacent rivers. There are remarkable parallels between 12th century and earlier Niah and 20th century Ngadju. With Ngadju, we are really in the thick of birds dominating men.

III. MODERN MAN: BIRDS AS GUIDES

8. *Indonesian Borneo: Perched on the Tree of Life*

There are many and varied humans in Borneo; almost as much so as there are birds. We cannot, here, see them all at their birding. I propose simply to take a particular and special aspect of present ornitho-outlook for each one of the four territories which currently divide the country.

Unfortunately, I have not been in the south-east corner of Indonesian Borneo (Kalimantan) where the Ngadjus, with their well-known " ship of the dead cult ", survive. I know it only from

anthropological literature which necessarily often touches upon ornithology. But I do know, at first hand, the great tract which lies north of Ngadju country: let me start this bird-watching journey there, and come back to Ngadju that way round.

In 1945, shortly after two atom bombs ended the war with Japan, I was dropped by parachute over in the Bahau branch of the Batang Kayan in Kalimantan. One of our wartime problems had been to find Dropping Zones in the interior, owing to the shortage of permanent and man-made open spaces. That is why I first dropped into Bario, the plain, at 3700 feet, home of so many otherwise lost migratory birds.[9] The Bahau, though irrelevant then, provided the perfect Dropping Zone, miles and miles of open grassland, above 2000 feet, the only place of its kind in the interior. The supposed presence of renegade Japanese prevented me from examining the birds of this unique habitat; and no other ornithologist has had the opportunity. But from the Bahau I did travel overland into the upper Kayan River and there, clear of Jap troubles, came at last to Long Nawang, probably the largest one-race community in Borneo and certainly much the largest inland.

This great village—not one longhouse but an intertwined mass of them—is the centre of the traditions, myths and feelings of the Kenyah peoples, who probably number some quarter million in Indonesian Borneo and have overflowed westward along the great rivers of Sarawak to become widely dominant there on a smaller scale. All Kenyahs everywhere look to Long Nawang, rather like Mohammedans to Mecca.

The centre piece at Long Nawang is the house of the Paramount Chief. On the Kayan River, it is usual for each big chief to have a separate house, of great height and with a tremendous verandah, used as communal meeting ground and dance hall. The Long Nawang house was of cathedral proportions—quite superior in dimensions, execution and finish to the palace of the oil-rich Sultan of Tanjong Selor and Tarakan, Malay suzerain over all this area, who lives twelve days journey away downriver.

The centre piece of this splendid Kenyah mansion was the wall dividing the chief's quarters from the public part. Finely finished planks reached to the beams fifty feet overhead. The whole expanse was decorated with the finest work of art I have seen in Borneo; a terrific tree, painted upon the wall, and ornamented with a profusion of flowers and fruits, birds, snake, fine parangs, symbol eyes, and other animations in elaborate but not chaotic or vulgar profusion. For this—the greatest of the Penghulus, then a very old

man, informed me—was the story not just of men but of *everything*. Everything he could wish for grew on and out of this one tremendous tree. And perched up upon the pyramid crown of the tree was an immense and dynamic hornbill, the Rhinoceros. This dominated everything, in splendour, size, colour and energy.

This was the true—to Borneo—tree of life. I have not seen anything like it since. I fear it has gone by now: it could have been a masterpiece and centrepiece in any Museum—though the Sarawak Museum would be too small to house it. But its supremacy over all other bird-art motifs was only an expression of the cultural intensity and focus at Long Nawang. In lesser degree—and decreasingly with new impacts—this conception of life and bird life underlies much of thinking and doing ; and among the riverine Kenyahs and Kayans, with their huge longhouses, aristocrat class-structure and gentle manners, more so than among any other Borneo peoples. Widely though, this way of *expressing* thought has been in decline for half a century or more, along with the suppression of head-hunting.

Happily there survives—from the first outsider ever to penetrate the Kenyah-Kayan country—a written account which illuminates our theme. Robert Burns, a grandson of the poet, made a long journey into the interior in 1847 ; and among other things he later wrote of the Kayans (*3*):

> The birds that are held as ominous by them are about ten in number. From the flight of the rhinoceros-hornbill they draw omens of success or reverse in war, and any of the ominous kind flying from the right to the left bank of the river, is considered inauspicious ; but the reverse is favourable and a prognostic of success. Journeying on the rivers, should one of the ominous sort cross from the right, they immediately halt, kindle a fire on shore, smoke their leafy cigarettes and generally wait till a bird, less vindictively inclined, crosses from the opposite direction. If this does not happen, they very often return to the place from which they started.

A century later, the hornbill is no longer serviceable in this way, is only a symbol—shadow of its earlier and overwhelming significance, shared and sometimes usurped by the Brahminy Kite.[2]

The hornbill-headed tree of life has survived, however, with a curious and special intensity among the people living to the south of the Kayan and the Kenyah of Long Nawang : the Ngadjus. A good description of their modern spiritual outlook has been given by Dr. H. Schärer (*Die Gottesidee der Ngadju Dayak in Süd Borneo*, Leiden, 1946). These Ngadjus also show relics of a pre-animist kind of culture traceable back into the bronze age ; and affinities with the prehistoric cave drawings of Niah.[6]

The original overworld and underworld deities of Ngadju belief created, from the great male god's golden headdress, the tree of life (which would later bring forth rice).

The mother goddess has a pet female Rhinoceros Hornbill. This bird gets hungry, because she does not get enough betel-nut; so she flies to the tree of life itself and begins to eat its blossoms and fruit. Seeing this, the great god *Mahatala* lifts his golden dagger set with jewels; it becomes a splendid male Rhinoceros Hornbill (*Tambarirang*), who flies to the tree-of-life and eats its moss. Presently he notices the female, eating off the blossoms and fruit:

"Hen, you . . . : don't you know it is wicked and wasteful to eat of unripe fruit on the tree-of-life, and to pluck the blossoms of this high tree . . . (but) a secret wish came to him, to try and eat the fruit and blossoms himself."

In this inner tension, the male turns on the female; they fight. In their fight, splinters fly from the tree and roots split away: creating thereby new things—" the golden boat ", a virgin who takes the boat, the river and sea of the overworld. From fallen blossoms ancestral ghosts and witches grow; and from the bark the sacred " jewel boat ", another part of the ship-of-the-dead-cult. But the birds go on fiercely fighting; and hurting the tree thereby.

The male hornbill snarled with its golden teeth and trembled with rage. He violently pecked at her throat, he the noble one with the great horn. From the hornbill's throat falls white shimmering moss; and takes human shape.

Thus the first young man. But the birds fight irreconcilably on, only pausing to find an island for the lad and his virgin to plant with fruit and other needs. They fight on until both perish: he to become a great river; while the bones of both birds float down the river and " come to rest at the bay near the sea ", where they put forth a new tree-of-life in the village-of-the-dead; thus giving the dead perpetual life afresh.

The echoes of this infinite journey can be heard in the gentle Kalimantan part-songs of today, such as this one recorded from out of a smoky Kenyah longhouse evening:

Where now have I lost
My favourite bird
The bulbul which sings so sweet?

Where has it gone to
The favourite pigeon
The pigeon which shortens
The day by its sweet voice?

Bep and Belip
Oyau Along wears a head-dress
Made of hornbill feathers.

The mouse with its trimmed claws
Tears the shoot of the
Tapang tree

How shall we conceive
Any good idea—
A thought deep inside us? (5)

9. *Sarawak : A Calendar of Migratory Birds*

The far uplands of interior Sarawak, above 3,000 feet, cannot be reached by river. There live hill peoples such as the Kelabits ; here the Kenyahs, Kayans and Sea Dayaks have not penetrated. Nor have many lowland resident birds, either. The Rhinoceros Hornbill never nests there ; the only hornbill that does is the Bushy-crested. The spectacular Argus Pheasant stops a thousand feet below ; Bulwer's Pheasant is nowhere near. To make up for this, many migrants from the Arctic and Far North on passage or to winter favour this, the coolest place in South-East Asia near the equator. One of these is the lovely Phalarope, which they call *lud rauk*, " little boat ". This tiny blob swarms in about October to beautify the clear cold mountain water on the rice fields—easy target for the Kelabit boys to practise first essays in blow-pipe shooting ; with small but succulent rewards for the successful.

The Brahminy Kite nests only occasionally on the upland fringes, but regularly quarters these plains. It is there the supreme omen and symbol, Tiger Eagle.[2] But Hornbills survive in stories; the head of one, vastly magnified, upon a boulder is mythically a man-eating monster-bird (Garuda-like) of long ago and gone.[12]

In their remote mountain world, without boats, the Kelabit journeys of symbol and spirit, after-life and dream, are on " the wing " instead of upon the water. Folklore and belief bulge with flying spirits and " bird-men " (never " bird-women "). Up here omenism did not develop into the elaborate and complicated code of the Kayans or Sea Dayaks. The Kelabits, who still practise a megalithic, stone monument cult and other special observances of a more exact past (*11*), have at their remote and seldom visited altitudes produced, instead, an attitude to birds very much of their own—within the general, overall Borneo mood, of course. They esteem the birds who *visit* them across the vast tangle of jungled mountains, within which Kelabit life is inextricably set and which only birds—and aeroplanes, their newest symbols—can ignore.

For the great parts of Borneo where there is no written calendar, people determine their rice planting and other annual activities by reference to recurrent phenomena readily observed. The commonest of these are the position of the sun and its shadow or of the Pleiades in the night sky. But the upland Kelabits uniquely rely on the arrival dates of their migratory bird visitors.

The Kelabit year " starts " with the arrival of the Yellow Wagtail. Examples of several forms nesting in North China and Siberia have been taken in the uplands, where it arrives in September to "winter"; closely related forms of the same species nest in Europe and winter in Africa. The first appearance of the *sensulit* comes as first warning that the cycle of rice should be at a stage where the fields are pretty well *ready* to plant. The Kelabits have the idea that the wagtails come gradually up the rivers, at first singly, keeping near the water. Then, in the following moon, they really *arrive*; and come out on to the grassland and plains. The bird does not dictate the cycle, exactly. It confirms the overall pattern and feel of the season : now rice farming should get under weigh.

The Kelabits may also put it in another way. They say that if the initial clearing of the field has begun with the Yellow Wagtail's coming, that argues well for the rice harvest. The logical westerner easily asks :

" Well, why not *do* it that way every year." There are two regular answers to this. *Annual* variation in this climate is so wide that, whatever theory demands, in practice the processes of felling, clearing, burning off, planting the seed, weeding and so on *vary* and have to be worked out each year. And, second, there are so many *other* things to be done between the end of one rice cycle and the beginning of the next, that a longhouse may easily be " late " because many of its men were engaged away trading salt, building a new house, marrying off the chief's daughter, and so on.

It is no bitter thing if rice work has not yet begun in *sensulit* the second. There are three more months to follow, each of one complete lunar cycle. With each one, in Kelabit tradition, the urgency to " get on " increases. But only if nothing is done until the *last* bird month is the situation really serious, potentially " hopeless " ! These months (at Bario) are :

Bird	*Kelabit name for month (= Bulan)*	*Approximate Western Month (Upland Arrival)*	*Migrant From*
Yellow Wagtail	" Sensulit *mad'ting* " (arrives)	August–September	Formosa etc.

Bird	*Kelabit name for month (=Bulan)*	*Approximate Western Month (Upland Arrival)*	*Migrant From*
Yellow Wagtail	" Sensulit *pererang* " (stays)	September–October	Formosa etc.
Brown Shrike	" Neropa' "	October–November	Central Asia
Japanese Sparrow Hawk	" Kornio piting "	November–December	Japan and North China
Dusky Thrush	" Padawan "	December–January	Manchuria

The first three of these birds arrive and are conspicuous on the open plains ; the fourth, down from Manchuria, goes into the surrounding scrub and jungle only, arriving in great flocks, to be heard from afar. " After the *padawan*, no-one more comes ", they say, except rice-eating munias.[15] Other conspicuous visitors include three sorts of harrier ; warblers, rails and herons, snipe (*akek*) of three species ; the Wood Sandpiper (" *benkawit* "), the noisy Chestnut Kingfisher, and the White-winged Black Tern called *ut bario*, " the windbird that never settles ". But the Kelabits say that they long since selected the four most regular. Experience has not suggested any need to doubt this decision.

After the month of the Dusky Thrush from Manchuria, there is no more *special* naming of moons—tho' each moon phase is itself named on a regular cycle. But once the rice is harvested, a watch is kept to see when the last Yellow Wagtails leave. When none are left, there should be still two complete moon cycles " free " before anyone need bother about *preparing* the rice fields afresh. Then, they say :

> " When the third moon comes out, the
> time has come to start rice work again."

In " perfect theory " (which rarely operates), the necessary clearing, ditching, etc. should now be started ; and by the time it is finished the month of *sensulit mad'ting* should be upon the uplands again, alerting the first seed to be planted for the best (the ideal) rice results !

This local specialisation can hardly have been developed except on the spot. In particular, nowhere else in inhabited Borneo is the Dusky Thrush known to arrive commonly and regularly.

All this bird-month concern in the uplands is aimed at avoiding

the harvest ripening too late. Too late for what ? Too late to be too early for another set of arrivals, the immigrant munias, and especially the dread *touke*, the Long-tailed Munia, which arrives in hordes in March to devour the padi if " too late ".[15]

10. *North Borneo : Man from the Egg down*

The principal long-established people of North Borneo are there divided into two main categories, Dusun and Murut. These two North Borneo groups differ in much ; share much also. As regards birds, they are all animist omenists, though more weakly than further south. And up north the hornbill is largely superseded by the Brahminy Kite in flight[2] and by the Argus Pheasant as ornament.[17] Birds eggs are—as rarely elsewhere—important.

Dusun women adore riddles (*3, 4*) ; one runs :

" Onggom-onggom di arak, kumakar om gumarak."
" Grasped by a leaf-monkey, when it opens it cries aloud."

The answer : an egg !

Many Muruts and some Dusuns in the north consider they originally emanated from a giant bird's egg ; this belief reaches down as far as the Potok-Murut people of Indonesian Borneo (*1*). Thus, " the first man " Rang Dongo, emerged out of clay ; but he lived as man only—and after a while, living among animals alone proved to him frustrating :

He longed to live and play with a mate of his own kind. Day after day he became sadder and sadder. So one day, he left the others to roam all over the place, seeking for something—although he did not particularly know what to look for. . . ." (*7*).

And God took pity on him, and told him to go up into the one mountain of that time. After many days journey Rang Dongo reached the bare rock summit. He saw on it a white and shining egg. He got a pole and tried to poke it down. But the pole was burned before it touched the egg, by its " heat ". Eventually, he got it down with a banana trunk, which held enough moisture to keep from frizzling up. In due season, a beautiful young girl emerged from the captured egg. By her Rang Dongo presently had many children, whence originated not only the Muruts, Dusuns and Sea Dayaks but also the Chinese and whitemen. . . . And all lived unhappily ever after !

Owen Rutter (*The Pagans of North Borneo*, 1929) also records Murut egg beliefs ; and the late I. H. N. Evans (*The Religion of the Tempasuk Dusuns*, 1953) has an amusing one, where the egg

produces both man and woman, who have three children—the first Dusun, the first Bajau and the first whiteman.

Linked with these ideas of egg-and-I kind, there is something approaching a food prohibition (very rare with birds) on eggs in general, up north. There is a widespread idea that the white of an egg is really the undiluted sperm of the cock, unclean to consume This extends, more vaguely, far south among the pagan peoples. It partly explains the well-known—and to westerners exasperating—difficulty of obtaining eggs in Borneo, at any price. And if you do get them, they are just as likely to be addled or hatchable. The use of fowls eggs in propitiation and animist ceremonies throughout the island is probably also a carry-over of vanished procedures with the eggs of hornbill, pheasant and stork. In this connection, it is notable that the new cult of Bungan Malan, which has grown up in the past five years (as a reaction to the new spread of Christianity) puts the major stress on egg offering in a simplified version of previous and now (in much of Sea Dayak, Kenyah and Murut-Kelabit country) discarded animism (*9*).

The northern people tend to have, in my observation, a milder, more diffuse, less tense relation with birds than those of Sarawak and Kalimantan to the south. Evans has recorded several stories which incidentally illustrate this attitude ; I best like this one (his ' Religion ', p. 451) about a boy seeking his father swallowed by a great python. A bird (unidentified) advises him on a tree ; it ends in the boy's triumph—cutting off the snake's head, opening its body and recovering father alive. Presently the lad is to marry ; it is seven days after the betrothal ceremony :

> Now when the seven days were up, the boy went to be married, and took nobody with him, but seven birds followed him. When they came to the bathing-place at the girl's village, they all bathed and the birds became seven young men. Then, when they got to the house, they drank there for seven days, and when the seven days were up, the headman of the birds said, " Let us all go home and take the girl with us ". And the girl went with them, and when they came to the bathing-place again, the seven young men bathed and became birds, and the birds followed the boy and his wife, flying. Now when the boy got to his own house, there was drinking there for seven days, but the birds flew back into the jungle. After this the boy took his wife to her home again and the birds followed, as before, but they did not become human beings again.
>
> Now the boy promised that his wife should be *monolimbagu* (' fetched back ') in a month, and when the month was up the boy went to fetch her himself, and the seven birds followed him, and he brought her home with him. When he got to his village, the birds said to him, " Now your troubles are over, your father is alive, and you have a wife, so we will go home to our place."

" Very well," replied the boy, " but you must keep on coming to my house ; otherwise I don't want you to go." But the birds answered: " Your troubles are over and we will go home, but if you are in trouble again, we will come."

In southern stories, birds very seldom get away with it as easily as that.[16]

11. *Brunei : Winged Messenger of Love*

Haji Abdul Gafar, Imam of the mosque at Lawas in Brunei Bay, has told me many stories. In 1947 I spent days listening to this aged, dignified and learned senior Brunei Malay recounting his people's birdlore and folklore generally. For the Brunei Malays, of course, are Mohammedans, who have put aside animism for the Koran. Yet they remain, deeply, Borneans. There was no great influx of Malays here. Rather, when the powerful Sultanate of Brunei was converted by Arab missionaries in the 15th century (the eighth of Islam), the local Murut, Bisaya and other pagan peoples were, at one stroke, changed from being those people to " being Malay ". If not, not unlikely the stroke was of the sword, beheading, or of the knife, circumcising.

Thus, while the Malays do not, in practice, " observe " birds as guides and omens any more, yet ideas about birds still matter a lot. No doubt it is out of this ancestry that the old Malays of Brunei Bay still start their story (my 1947 recording) in Malay, this way :

In the very beginning of Brunei is an egg. This is the egg of the stork (*Banggau*) which you can still see along this coast, and especially round Awat Awat.

The egg was laid at a place called Danau, which is at the foot of the great Mountain Mulu, and it came out from above. The egg was blue and of a size too great to measure. If you take a *Kajang* mat and cross the river and walk on until I can just see your *Kajang* and you can only just see my *Kajang*, then that would be the size of the egg.

But the egg was broken on the ground. And out of it came a man. His name was Jemudal Alam. He was immense : 35 fathoms high.

Jemudal Alam embarked upon wonderful journeys in search of a golden-horned bull, roaming the whole interior. The story names every great river he reached, far into Kalimantan, North Borneo and Sarawak. At each place he left as memorial one son ; until he had twenty-two. These presently flew up to the skyworld, met the spirit of their father there and were returned to earth as sanctioned chiefs of blood royal everlasting. Out of the senior of these lines, Wang Alek Bertata and others, directly came the sultans and princes of Brunei and all Borneo; whose mighty deeds—both prior to Islam and after—are among the great saga stuffs of the east.

These stories reach their Malay maturity and Mohammedan respectability when the lads, led by elder brother, visit Malaya proper and kidnap the Sultan of Johore's daughter. She is forcibly married to the eldest brother in Brunei. But she pines for home and family ; and she presently sends off her beautiful white pet bird, *Pingai*, to carry news of her fate to her bereaved parents. The bird leads search party to Brunei. The Bornean bridegroom is converted and becomes Malay ; and all ends as happily as sultanates allow.

Even the story-tellers puzzle over what sort of a bird this Pingai (also called Agai), was. Modern thought favours the Nutmeg Pigeon or an egret. For myself, I prefer to believe it was a Black-naped Tern, the most exquisite of our sea-going birds, and one which Sarawak Malays keep as free-flying pets to this day.[16] Whatever it was, that bird did for Brunei roughly what the dove did for Noah and the Rhinoceros Hornbill for the Ngadju. All deserve to be honoured in the way that, today, only Bornean pagans ordinarily do honour birds at all.

12. *Borneo Birds, as classified by Man*

Coming from story, belief and observance now towards a more western-style ornithology. How do Borneans look at birds in a tangible, a classificatory sense ?

The short answer—and fortunately there is no space for a long (Bornean) one—is that there is a very extensive and largely accurate knowledge of birds as fellow inhabitants (or immigrants). Any ordinary Bornean (outside the towns and the Chinese) can identify probably 100 sorts of bird by name ; often very many more. Anyi, a brilliant Kelabit hunter and craftsman (*2*), could name, properly, over 300, with relevant information about each. Such knowledge commonly includes an ability not only to distinguish the plumage but to imitate the calls of all sorts of birds—and to bring some (notably hornbills, flycatchers and spiderhunters), close up by this mimicry.

This is not to say that native bird-lore is necessarily accurate, in a book sense. Sometimes, differently coloured sexes are treated as separate species. Much depends on whether dimorphic birds commonly move about together or separately. Juvenile Chestnut Munias are widely given a separate name from adults. On the other hand, the same name, often with a descriptive adjective, may be given to birds which to a museum taxonomist are unrelated. Thus the term *tiong* is basic and general for the Talking Myna, perhaps deriving from its sweet, double, bell-like call. But it is applied

widely inside Borneo to other birds, either because they have similar calls or (mostly) because they appear to resemble the myna in habits, shape or some other character. Thus several of the pittas or jewel thrushes are treated as *Tiong*. So is the Bald-headed Wood Shrike (*Tiong Batu*).

It must always be realised that to most Borneans *names* do not mean categories, as in western thought. Names are not fixed things, only tokens of convenience, readily changeable—just as many Bornean men change their own names, for a wide range of reasons, as they grow up, prosper, wither and prepare to die.[11] It is even possible and sometimes proper to confuse sexes; and in a sense, some of the cleverest Borneans regard asexuality (sexlessness), as an attribute of many animals and of their own ancestral culture-heroes too. In this they follow closely some of early Chinese [18] symbolism, the bisexual Phoenix of the Han dynasty and the much debated identity of the "Red Bird of the South" which plays a major part in Chinese folklore. As William Willetts has well put it (*Chinese Art*, 1958, p. 279):

> . . . The Red Bird of the South (appears) as a sort of biological mosaic of parts taken from several sorts of birds. The *feng huang*, which appeared out of nowhere as a herald of auspicious events, may also have been the fabulous offspring of a summer migrant from the South whose fleeting visits led to all sorts of rumours as to its actual habits.

It is not sense, therefore, to ridicule what to outsiders may appear inconsistencies or even absurdities in Bornean ornithology. The bare fact is that probably no other people in the world—save perhaps some of the New Guinea tribes—are better practical all-round ornithologists, despite the complexity and the difficulties of equatorial jungle observation. Moreover, many Borneans *like* to watch birds and keep birds, as well as to hunt and eat—or to hear and fear (or be encouraged by)—them.

One of the major difficulties facing the non-Bornean who wishes to distinguish the island's hundreds of birds is to relate them to the great variation in local naming. Frequently, you *hear* a bird and cannot see it in the forest canopy. Your companion can name it for you and knows it. But to correlate his name, its note and yours is seldom possible, so locally variable is the nomenclature. Only where names are based on the birds' own sounds are they likely to be readily helpful. For example, the Eared Nightjar is known all over Borneo by some variant of its sweetly mournful treble call: *Pitadou*. Even so, every dialect hears the first syllable differently—all the way from *Tok* to *Tet*, *Rot* and *Sit*.

Birds which can utter calls also easily made by humans are readily given human attributes. In a Land Dayak story from the south, a woman called Kulang (which also means Bee-Eater) marries a man who, she discovers to her horror, erupts worms all over his body once every moon. He learns that she has found out his hidden secret, and is so ashamed he flies away. She beseeches him to return ; for she loves him, all the same. She cries "*julok julok*" (the name of the long pole for scraping down edible birds' nests), with which she vainly tries to get him back. So she goes on into eternity, through the night, lamenting "*julok julok*", the nightjar watch-bird (*3*).

Five hundred miles to the north, Dusuns believe that a beastly ringworm disease of the skin, everywhere called *Kurap*, started from a bird which flew long ago, out of Mt. Kinabalu and over North Borneo, calling "*gurap gurap*":

> . . . and all the people caught *kurap*. After this it went to Dutch (Kalimantan) Territory and was silent; so the people there did not get that disease.
>
> (Evans, *op. cit.*, p. 476.)

Alas, they have it now ; and on this note we may suitably examine some of the more specific, material parts birds play in the life of Bornean man, and vice versa. Remembering always, that in Borneo such distinctions are not inherent in life.

IV. BIRDS AND THE HUMAN STOMACH

13. *Cooking and eating Birds*

Nowhere in Borneo are wild birds caught and reared for market on the scale common in most other Asian countries. This is not without significance. In very few places do they provide more than a very minor, subsidiary item of diet. The hunter or trapper here is nearly always after mammal food, down to squirrels, civets and rats in size—just as he was thousands of years ago, when he frequented the Great Cave of Niah.[5]

Although wild birds are not now used for ritual or feast purposes in the flesh, hornbills (and to a lesser extent ground game birds) may be specially sought on occasion. Pheasants and partridges are taken in snare lines, usually long "hedges" made of cut branches, just high enough to make the bird—or mousedeer—go through the

inviting hole, which holds a noose set over the fall-trap platform of light bamboo. Again, the reward may be double : food (or pets if still alive) and ornamentation. The same applies to the sweet Malay Lorikeet. This miniature parrot is gregarious, spends a lot of time hanging upside down from favourite branches well-known to the Land Dayaks, Melanaus and others. A noisy, sexy female is placed as decoy on a branch well smeared with gum. Sometimes scores are caught at one place in this way. The children love them, and there is also a local sale as cage birds to downriver Malays and Chinese.

A few other groups of birds attract the attention of the few, because of their conspicuous nesting habits and curious behaviour ; making both good pets and/or meals. The young of the Adjutant Stork are often taken from the nest by Malays and Bisayas, and reared as pets. They like to follow their owners about, dusting, bowing and clattering the mandibles, bald-head and scrawny beak giving a ludicrous yet jolly effect. As they grow older they can become disagreeable ; but long before then—their common ancestry with Brunei man forgotten[11]—they have been sold as a gourmet's dish for Chinese New Year. The Darter or Snake Bird is almost equally conspicuous, also easy to take at the nest, and to keep (on fish). Both these birds are correspondingly uncommon over most of Borneo now, and full protection is urgently needed *throughout* the island. For much the same reason—specialised nesting sites ; easily recognised—two of the three kinds of terns, Brown-Winged and Black-naped, known to nest in Borneo waters, are regularly robbed of their eggs. This is done in a casual way, though, off the islands by passing Malay and Melanau fishermen, who have too much respect for their comrades of the sea to do them any excess. These are perhaps the only eggs deliberately and regularly collected. In general, eggs of any kind, including fowls, are held in low food esteem inside Borneo.[10] Terns' eggs are certainly delicious—like the European " plover ". Here again, young terns are also reared as pets.[16]

Almost any other bird may be blowpiped or shot, more or less casually. A few are so nasty on the palate that they are immune—including the coucals ; some hawks ; most nocturnal birds. But a new hand stalks the land now : the schoolboy with airgun or catapult, hunting not for pot but fun. This growth (or ulcer) of recent years has become quite a menace to bird life in and about Borneo's towns. The boys will shoot at anything. They seldom hit ; but it adds up to a gross damage, not only in actual casualties but in

constant disturbance. This is the main explanation for a decline in wild birds about the urban centres, particularly in Brunei and Sarawak.

By the same standard, wild birds are seldom treated with special respect in the kitchen. Where all sorts of things are done to pork and venison, python and carp, birds are eaten plain boiled. Invariably also, the carcase is chopped up into irregular, bone-broken pieces before cooking. The feathers are usually singed off, rarely scalded, never (to my knowledge) plucked. I once came across some men baking whole fruit doves in clay, over on the Indonesian Bahau ; very good they were, too. More often, out hunting I have shot a bird and skinned it as a specimen while my companions barely browned it on a spit over the campfire, to eat almost raw ; not bad, either, as long as it isn't an elderly woodpecker.

Perhaps by part of the same token, there are few taboos about eating birds—whereas for mammals and reptiles, and sometimes fish, there are (locally) many. I have seen people who set great mental store by the Rhinoceros Hornbill and the Argus Pheasant take and eat both—when " off duty ", in the Bornean double-think sense, so to speak.[2] Similarly, I have seen a great chief dandle his little granddaughter on his knee while she plucked out the feathers from the wing of a *living* spiderhunter, one of his " omen " birds. I only know of one bird story, even, that has to do with a taboo approach—so common in so many lands. This is in Sea Dayak *tusut*, where, many generations ago, some Dayak ancestors ate an Argus Pheasant and were thereafter cursed with evil tongues, which persist in their descendants to this day. But the pheasant in question was a special one ; it had been in contact with the gods, and had already warned its captors with " an unhappy low-toned sound ' *ngembau* ' ", not to eat (7).

14. *Catching and hunting birds*

Not a lot more need be said on this score. A wealth of devices are employed, very seldom specifically for catching birds, though birds are often caught therein. There is a good chapter on the whole subject in H. Ling Roth's *The Natives of Sarawak and British North Borneo* (London, 1896, Vol. I, chap. XIV), in which he includes a drawing of how the Kedayans round Brunei Bay lure and trap pigeons ; and a drawing of a Murut bird-call. Sixty years later these descriptions still apply to the specialised bird trapping I know of in Borneo—particularly favoured by the Sabans and Kelabits at the salt springs in the headwaters of the Baram, Kerayan and Bahau

rivers, which the doves love as much as deer and men. There are several variants on the calls and devices used, all made from bamboo on the principle of a single tubed flute giving out a cooing note of variable strength. The Sarawak Museum also has a representative collection of all sorts of trapping and luring devices.

15. *Rice and the Bird Attack*

In some parts of Borneo birds take more from man's stomach than they give. It is quite normal to lose a tenth of the rice harvest to pests in the interior, and in extreme cases nine-tenths may be lost. Much depends, however, on the industry and energy with which the farmer attends to his fields ; and on the locality and year—though we still know little about these factors. As grain is ripening, the threats multiply.

There are three main sorts of plagues upon the growing rice—insects (mainly locustids and microlepidoptera), rodents (rats and mice, in regular cycles, from nil one year up to saturation another) and birds. Of these rats are the worst when they *are* bad ; birds probably are the most regular and persistent. They are also the most maddening, in that their attack is launched almost entirely against the ears of ripening grain ; that hurts the farmer's heart.

The bird pests of padi are, in approximate order of virulence—based on my own travels and observations over the past thirteen years :

Dusky Munia, Chestnut Munia, White-bellied Munia } the almost universal regulars.
Long-tailed Munia (in some areas and conditions worst of all)
Spotted-necked Dove (erratic)
Other doves (minor)

Birds on the other hand which help the rice farmer—mainly by eating the rodent or insect pests—are :

Coucals (2 species)
Yellow-bellied Wren-Warbler (1)
Sedge Warblers (2)
Egrets, bitterns and herons
Harriers, hawks, and kites.
Casual others (mostly migratory)

The four common pests of rice cannot, by definition, have been so for very long. The ethnological evidence is strong that rice is of relatively recent origin in this country, and that previously sago and other non-graminaceous foods were the basic items with meat and fish, in Bornean diet. Today the birds really flourish, although it is only available to them for two or three months a year—few people in Borneo crop twice a year, as many once did. The little, creepy, chipper Dusky Munia is among our most versatile birds, nesting even in houses and well inside the Great Cave at Niah, where no other passerine bird ventures among 2,000,000 swiftlets and their dependent birds of prey by night and day. I fancy that on a count this would be found to be one of the most numerous birds in Borneo, even allowing for 75 per cent. of the island still being virgin jungle, where only the very rare and lovely Bamboo Munia ventures.

The worst pest, however, is the Long-tailed Munia, a bird of small but brilliant beauty, scarlet, yellow and vivid green. The ornithology of this bird is still far from clear, in Borneo. It is said to nest in North Borneo and certainly does in Indo-China. Further south, it is regarded by the Muruts and Kelabits of Sarawak and the Potoks of Indonesian Borneo as a plague which descends upon their upland rice fields out of the caves of the remote, unseen, famed magic mountain of Mt. Kinabalu itself. There it is supposed to nest, in its hordes, in caves—though the only one on volcanic Kinabalu could hardly house more than thirty. The attribution is remarkable though, in view of the Dusky Munia at Niah. And there are *no* caves anywhere in the uplands, by which they could know.

This Long-tailed Munia is the most dreaded among the interior people. The others, Dusky and Chestnut, and the rarer White-bellied are accepted nuisances—always with them, like mothers-in-law. But the Long-tailed, widely called *touke*, only comes about February, presumably after nesting up north. When it does come, though, it comes good : in great droves. It does not seem, normally, to reach much south of latitude 3° N. But above that, it is the major concern for inland farmers in a *touke*' year. The calendar of the Kelabits is designed to insure that the rice shall, if possible, be ripe *before* it arrives.[9] And the intricate devices of the more industrious and intelligent groups from the Dusuns in North Borneo southward, are above all their artillery to offset, upset and on-move this bird, effective though they can be against the others, too.

There are six main sorts of anti-munia device, in rough order of ingenuity:

1. The dolorous windmill
2. The groaning bamboo
3. Explosive clappers
4. Waving fans
5. "Scaremunias" (there are few crows in Borneo; and they never bother man)
6. Bridges with screaming children and clanging shells.

Many variants stem out of these, of course.

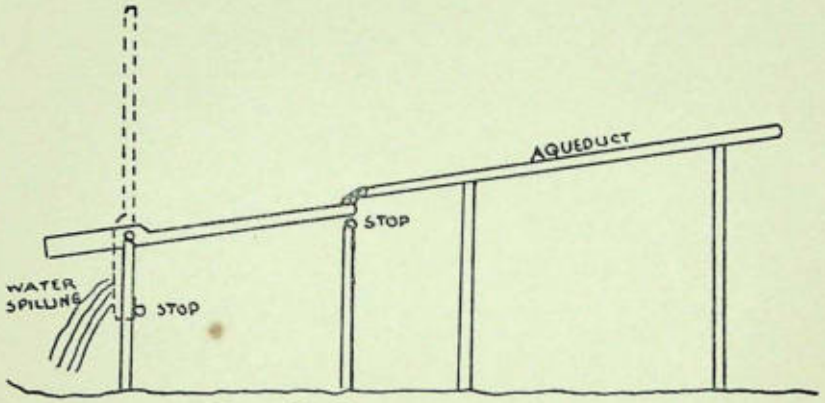
The highest manifestation of this struggle is found above 3000 feet in the uplands and reaches as high as fifty feet above that. Fitted into a tree-trunk or pole is the prefabricated windmill of softwood, worked so closely that as it turns it makes a horrible noise, upsetting to anyone unprepared and—up to a point—anathema to a munia. The numerous and minute breezes of the Borneo hills turn the blades often enough for whole valleys to echo with the high, mournful, grating notes of this suspension. The art of it is to make the sound irregular, and so more oppressive—as unexpected. Munias easily get used to the automatic, apparently. To quote an account I wrote elsewhere (*Bull. Raffles Mus.*, B 4, 1949):

> The Kelabit system of protecting the crops against birds and animals is more elaborate than any other yet seen. The most elaborate of their devices is the windmill called *pri'war*. There are usually several of these about a Kelabit village; they are erected as the padi becomes ripe. They are generally put on top of a tree from which the branches have been felled, and which may have been left especially for that purpose in the rice clearing. The sail is normally about seven feet long with a decorative black band painted in charcoal at each end about nine inches from the tip. It is penetrated by a bamboo through a central hole. This bamboo is connected to a socket fixed to the top of the tree. This is so arranged that the bamboo and sail can turn in any direction according to the wind, assisted by the tail. From the socket a cross-piece is attached to this rather elaborate tail, made of frilled branches connected in an inverted E formation. This balances the sail end, helps to catch the breeze, and itself also acts to scare the birds. A quite fearful moaning and groaning noise is made by the sail turning on the bamboo, which has a small valve-like arrangement making a plug connection which fits rather loosely. The weight of the sail bears down on the lower part of this, as it turns, producing the noise.

Although these windmills reach their largest and loudest in the uplands around the north-west corner of Indonesian Borneo, they extend almost throughout the far interior from Mt. Kinabalu down into the Rajang and beyond. They are rare among the subcoastal

peoples, but reappear with the Kedayans and Malays of the coast. Small kinds, which barely creak but whirr fast, are more widely found, acting as scarers by motion rather than moan.

The groaning bamboo uses water instead of wind to produce a similar and sometimes even more startling effect. This is a speciality of the Dusun up north. The device (as here illustrated) is set in any one of many brooks which cascade down their mountainous terrain ; the waterflow fills the outer end until it is heavy enough to topple backward, groaning ; empty itself and come up for the next fill ; as it goes back it strikes and makes an explosive sound, repeated as it returns to position and strikes at the original connection point. (cf. Owen Rutter, *The Pagans of North Borneo*, London, 1929).



Dusun Bird Scarer worked by water

Explosive clappers are simply lengths of dry bamboo secured to a rope of *rattan* vine, and so arranged that when the rope is pulled the bamboo rises, to fall back on to its own wooden support with a loud report, much like an explosion. Simple though this is, considerable work is required to collect the materials and rope a rice field for this purpose. Once done, the operator (often a child) can sit in a hut or shelter suitably placed, controlling a battery of bamboos, pulling at one—or all—as the movement of the birds demands.

Pieces of matting, old cloth, and arrangement of leaf are also operated to wave just over the grain, either controlled by *rattans* pulled from the centre or set up separately to move on their own in the breeze. This sort of device is very widespread, especially among the Malays and Land Dayaks. It relates closely to the " scare-munia ", made to resemble a man—or sometimes a hawk. These

seem to have singularly little effect on the eager munias, perhaps mainly because static : movement, preferably irregular, is the best deterrent, though nothing is much good if the birds are really among the crops.

An ingenious bird-scarer linking the windmill and the simple fan is of Sea Dayak origin ; there is one in the Sarawak Museum. Suspended from a tree or pole, one full node of a large bamboo as a strip of the adjacent nodes each side is left free, so that it can be bent over and tied round in a bow. A string connecting these two free ends is looped around a stick. This stick is suspended at a point halfway along its length. A " sail " of *kajang* matting is tied to the lower, bottomside, curve of the bow. As this revolves in the breeze, it causes the bamboo to turn, the stick to strike the bamboo. Drawn taut, the stick strikes from side to side, the sound magnified by a slit in the inner face of the central bamboo, thus noisy as a gong.

In any use of devices, community collaboration plays a considerable part. It is important for a district to plant on a plan, together ; and—if the land situation permits—concentrate their farms as closely together as possible. The family away on its own or harvesting long after the others is liable to receive a maximum attack of beaks. It is also essential for the family to be fully in accord in itself. Failure to co-operate fully at harvest is the cause of terrible and even permanent quarrels in Borneo. There is no room for the dreaming daughter or idle younger brother at this season.

The best expression of the *family* effort is, in the last of the categories of device listed above, the bridge. This consists of a long line of logs, supported on crossed stakes, threading through the rice field at such a height that the main plant heads are cleared and anyone walking along has visual command over the ears. A handrail is attached, for this bridge is temporary, rough and precarious even by Borneo standards. The rail, preferably of bamboo, also serves to sound off when beaten with sticks. An industrious farmer may make his bridge to thread all about the field. I have seen Kelabit bridges 500 yards long.

Such a bridge, at the height of the rice ripening, should carry relays of adults and children, parading for the nearly thirteen hours of equatorial daylight, in relays : banging the rail, battering tins, shouting, whistling, screaming, singing, even throwing pebbles at the most determined birds. Toddlers and grandmothers turn out, too. I have seen a blind woman doing her bit.

Fortunate are the districts where bird pests are few. There are such districts. For instance, between Bako Bay and Cape Datu in

the southwest birds have been no trouble at all in the past decade. This erratic distribution is just one of the many remaining puzzles in Borneo's ornithology. Anyway, where bird pests are often numerous, only the deaf can journey in the early months of the year and not become aware of this crucial struggle between birds and man.

16. *Pets in Kampong and Longhouse*

It will already be evident that to many Borneans, a bird in the hand is as likely to be taken alive and kept as killed and eaten. As well as examples already given, mention should be made of some cases of special interest.

When the Malays of Santubong, in the Sarawak River delta, have reared the baby terns—mostly the larger and hardier Brown-winged —they colour the white under-feathers with magenta, violet and other brilliant dyes. They are then let free to fly about the village and the river mouth, half a mile wide at this point. Each bird knows its home. It is the strangest thing to see a vividly dyed bird feeding out in the estuary, then turn and fly into the coconut palms, dive into a palm-thatch house and vanish from bewildered sight.

Under recent legislation it is no longer allowed to take young terns. But the Santubong people have an inexhaustible capacity for pets, including (in the past few years), Reef Egret, Fish Owl, Eagle Owl, Talking Myna, Brown Booby, Emerald Dove, Changeable Hawk-Eagle, Honey Buzzard and Crested Goshawk. This last bird-of-prey has a queer way of sitting on branches low over rivers and creeks, where it is even possible to knock it down with a stone, so placid is the handsome fellow's temperament.

Santubong people let their birds free or tethered. Over most of the island, on the contrary, any sort of pet bird is kept in a tiny cage, home-made of bamboo, reeds or *rattan*. Anything found hurt, or caught by chance or design may be caged thus, including bulbuls, flycatchers, kingfishers. Only the hardiest survive forty-eight hours : those which can be easily fed on fruit, rice or fish, too.

There is genuine fondness of birds as pets in Borneo, especially among children. It is a fairly casual kind of feeling, though ; very seldom amounting to " love ", or even strong affection for a pet. This is a natural result of the broad human relationship with nature in this rich complex. Looked at that way round, the significant fact is that they bother to keep pets at all.

There are, however, many sanctions that count in tradition and legend, for keeping pets. The princess from Johore in Brunei with her *Pingai*[11] is only the noblest of many. Stories dwell most on

birds that have been adopted as pets and then acquired human properties.

Thus the Land Dayak tale of a little girl who was killed by her brothers so they might use her blood to stupefy fish and catch many. Her corpse was left to be eaten by the worms. But a big Argus Pheasant, *Kuwai*,[18] quickly ate them all up. The worms then gathered strength inside the bird, and ate up all his inside, save only the skin. Thus the girl came to life inside, being human within yet able to fly too, to call *kongwai* and to chant repeatedly :

> Waiting here and there am I, brethren,
> You who poison fish in the stream Utong Batang,
> My mother told you only to scratch
> My brother said to cut.

One day, the pheasant girl got caught in the trap of a young man, Kaleng. Kaleng was about to kill the bird when he was moved with pity at seeing the beautiful feathers. So he said :

"I will keep this bird as a pet, for I would like very much to hear it sing every day."

Later on, the pheasant girl gets careless in her double-life. She steals and chews too much betel-nut, is drugged, falls asleep leaving her beautiful bird-skin around. Kaleng sees suddenly a beautiful girl instead and puts her in his own bed. The bird skin he burns, before sleeping with her. After a somewhat embarrassing period of nakedness, she soon settles down and makes a great success of things, in an elaborate way (7).

A wholly symbol bird, Burong Apui, " fire bird ", is a masculine equivalent in the Kelabit story of a glowing bird " red throughout " —red in the kite sense.[2] Upon a rock in the river, it tells troubled Tama Agar, who has bad leprosy, to relax and squat under the rock. Then Burong Apui released himself upon the Kelabit ; who was at once cured. By a further series of faecal acts the bird enriched the man with rare and valuable things ; then accompanied him in a triumphant homecoming. Put in the rafters as prize pet, Burong Apui did his foul work on the leprous wife, too, and cured her. All went well until a visitor from another village got curious about these goings on, and induced Tama Agar's wife (in his absence) both to copulate and to tell all. Then he out, slew and roasted the bird on the verandah. But while he was back at the pleasures of his paramour, the two sons of the family came in. Seeing the bird roasting, the younger ate it. When the visitor came out again, he was wild with rage ; he threatens the lads' lives. They run away. After a

lot of trouble, the younger son is found again. Using his flying skill acquired from eating Burong Apui, he now carries out a very successful if complex seduction. But in due course his mistress demands some gifts in return for her favours. All he has to do is box his own ears. Out pours money, which he gives her. This inflames her more material desires. She gets him drunk and makes him vomit up the bird's heart. She swallows it and gains the power. He gets her drunk, gets it back—and so on. . . . It all ends up with the two brothers, one bird-wise, one not, cornering their mother's seducer, the bird's killer, and killing him. Things and people settle down after that, the lad marrying his girl after a general enriching of fortunes by vomit (*5*).

Which further illustrates the dangers of being a pet bird in Borneo, where the logical end of being cared for is to be consumed, and where bird-man-bird are intertwined with life-death-spirit so intimately that at times ornithology, anthropology and escatology here are one and the same (and different).

V. BIRDS AND THE HUMAN EYE (AND EAR)

17. *Boys with Jewel Thrushes*

Just as Kaleng took pity on the captured Argus Pheasant for its beauty,[16] so do Borneans not infrequently express themselves about birds.

I have said that to care for a pet to the extent of near distraction, of "love", is abnormal among Borneans, including those many who are capable of such feeling for other humans. This should be qualified where certain *dead* birds are concerned.

Every now and again one comes across a small child playing with the skin of a bird, roughly dried by his father; or perhaps just the head. Most often it is one of the beautiful jewel thrushes or pitta, taken in a ground snare. These insect-eaters are too difficult for the people to keep alive, too lovely to be thrown away in death. They may thus become the obsessive toys of children. I once came across a child with a very rare kind of pitta which we badly needed for the Museum. I did *eventually* succeed in getting it. The cost was high materially. Emotionally I shudder to think of it, ten years after!

Within a pattern of group and individual variation and a fairly wide liking for redness in nature, adults generally admire the Argus

Pheasant above all others for its plumage. In Borneo it is nowadays unusual for men or women to decorate themselves *casually* with feathers or flowers as many Asian and Ocean people do. The odd individual may wear the stray Goshawk or Serpent Eagle's feather in his wicker-woven skull cap; there is neither ritual occasion nor social custom for any such self-decoration in the ordinary way of life (or death). Only the feathers—and sometimes whole wing and tail spreads—of Argus Pheasant are at all commonly to be seen displayed as trophies or worn for fun.

The special beauty of the Argus Pheasant is duly explained in Bornean humanistic terms. There are several versions of the amusing tale, in which an Argus Pheasant and another bird agree to tattoo each other. The other bird does the pheasant first and makes the lovely tattooing all can now enjoy. Comes the pheasant's turn and it is so clumsy, silly or vain (or all three) that it makes a mess of the job and produces no sort of design or worthwhile result at all. The receiving end of this misfortune is some bird locally regarded as clever but plain; variously the Slender-billed Crow or one of the coucals—there are not many very plain large birds resident in Borneo, really.

18. *Hornbill: on Head, Ear, Back, Belt, Skin and Feminine Fingers*

The first White Rajah of Sarawak, Sir James Brooke, more than a century ago described the dress of a coastal Melanau:

> His skull-cap of many hues had long feathers standing upright from it; a maias (orang utang) skin jacket hung over his shoulders. He was further adorned with feathers before and behind, and sundry strings of beads hung dangling about. A breast-plate of tin, with the edges slightly carved. . . .

The long feathers were certainly the fine central tail rectrices of the Helmeted Hornbill, the others almost certainly the shorter ones of the Rhinoceros. In these " civilised " days the Melanau men wear shorts and trousers, short hair, and never a feather. Even among the inland peoples, you will not see anyone nowadays going out and about wearing such feathers. Usually, they are kept carefully packed between long wooden slats, hung in the rafters of the long-house verandah, to be taken out and put onto prongs on the leopard-skin and bead skull-cap for dances only. One longhouse may only own one pair of these rarely perfect long feathers, and with it one dancing cloak of goat or leopard skin with the whole back part hung with rows of Rhinoceros Hornbill's black and white plumes. The dancer puts his head through a hole, and the handsome zebra effect

lies flat over his back from shoulder to knee. As he leaps, sways, twists and maybe somersaults in the flickering light of night, the feathers billow and shiver brilliant and wild. For this, the most usual dance for men all through Borneo, is done with feathered cloak and hat; and with shield and sword decorated instead with tufts of human hair. This is, in a broad sense, a dance of war and heads. The dancer is, once again, a man moving to music out beyond mere humanity into the world of fight and flight; Singalang Burong or Burong Apui, 1959.

Of the Rhinoceros Hornbill, only the black and white feathers are ordinarily used for ornament. But I once saw a Kalimantan Potok with a hat made of cowrie shells surmounted with a casque (*6*; now in Sarawak Museum); and the casques are often kept, idly, around the house as trophies, along with pig's tusks and deer's antlers. The casque of the Helmeted Hornbill, ancient invaluable *ho-ting*,[6] is still carved—decreasingly—into ear pendants, belt toggles and buckles on sword toggles for dancing use. Though this work seldom compares with the earlier Chinese craft, individual Kenyahs and Kelabits can still make fine designs, cut deep, with special hard metal points, into the very hard hornbill ivory.

Last—but for the bearer, not least!—the hornbill theme occurs fairly often in tattooing, although it is not one of the commonest named themes and is not present at all in some areas. A few other bird themes occur, too, including spiderhunters (curved beak motif similar to hornbill casque) and the Argus Pheasant—no wonder since its own brilliance is said to result from another bird's tattoo.[17]

But tattoo in Borneo is largely mammal, insect, plant and "abstract". Indeed it is difficult ever to be definite about tattoo designs, once you take them outside a particular place and period. Like the native nomenclature and ideology of the birds themselves; art motifs and patterns merge, fade, overlap, vary. What is a scorpion or dog tattoo here, may be a hornbill a hundred miles away.

Probably there was a special association, now being lost, between hornbill tattoo and head-hunting prowess, especially among the peoples of the Batang Kayan. Certainly, it is almost restricted to men. So is the use of hornbill ivory. Not so the feathers. These the Kenyah and other women wear in outdoor hats, including the glorious, yard-wide, flat leaf-hats with bead centres which aristocrat Kenyah mothers may traditionally wear after the birth of a son.

And the loveliest, I think, of Borneo's many dances is that one where the Kenyah women slowly turn, feet stomping to the mandolin music, hands swaying, fingers extended and mobile, a whirling fan

of black and white hornbill feathers held flat inside their strong, pale golden hands.

Lest anything so special be thought to be simple, or even simply feminine, though, this is also the dance which certain special *men* do on harvest and other occasion, when the men pretend—sometimes beautifully—to be women; and the women—always lustily—to be men.

Though the black and white feathers of the hornbill are the part of it most often to be seen in human hands or on their heads, it is really around the bird's own head with strange and splendid beak that *feeling* on this and all sorts of birds in a deeper sense centres. The curving casque of the Rhinoceros Hornbill links in symbolism and inner meaning to the mammal for which it is named, Borneo's most prized. And it is the quintessential curving, spiralled virility on much of what is liveliest and loveliest in Bornean art. Directly as carved and painted representation, indirectly in the subtler symbolism, this theme dominates Bornean sculpture and painting, canoe heads, door handles, post rails, plank patterns,[8] gable ends, house poles, ladder heads, coffin tops. The Kenyahs and Kelabits have even discovered that by "milking" the uropygial (preen) gland, oil is obtained which perpetuates the otherwise fadeable deep red on the hornbill's bill. This red is the core of a colour-sense, incorporated in fire bird, Burong Apui; the redness Dusuns, Muruts, Kayans and all kinds see in places which to other, less equatorial eyes may well look brown or even "dull" (in our understanding). In this, Borneo is following in a much wider and older tradition wherein its art and soul can be traced back into the bowels of Asia, the mythology of oldest Caucasian China and India, Phoenix and Garuda and *feng huang*. And it is quite easy to compare, side by side, ancient Asian mainland art forms in bronze, silk and lacquer, ivory and hornbill ivory itself,[6] which vanished centuries ago there but survive in the closest parallels carved into a Kayan man's canoe paddle or tattooed upon the buttocks of a Kalimantan lady in Borneo today.

19. *Borneo's No. 1 Bird Song*

Borneo's birds are not, as a lot, strong on song. Per capita, we possibly have the lowest standard of bird music anywhere. The jungle breeds loud, single or repetitive sounds for identification or contact between birds of one kind among many others. Rather Borneo is strong on loud calls, from the rolling roars of the Rhinoceros Hornbill, through the incessant *tok* of a barbet by day or

nightjar after, to the high haunting whistle of forktail and the shrill little shriek of some spiderhunters. Around some of the more striking of these calls the people build the omenist attributes of their animist bird augury, just as they name birds by sound at least as much as by sight.[12] Plenty of the omen indications are, therefore, by ear alone; the bird need not—sometimes must not—be seen before it is heard (if at all). This rarely applies, however, to the *great* bird guides—for example, over much of the northern interior the Brahminy Kite is key omen by *sight* alone, all depending on how it circles, whence, whither vanishes, and so on.

Far the best of the widely found songsters is the Yellow-crowned Bulbul. The Malays call it *Empuru Buaya*, " the Crocodile Bulbul ". For it frequents river banks, and is widely held to sing so sweetly to soothe the crocodile to whom it owes a debt and can only offer, in music, the feathers of its back. Neither crocodiles nor boats can penetrate the great gorges and rapids that separate the bird and other life of the lowlands and the far uplands. The croc story will not do up there. They have it, therefore, that the Yellow-crowned Bulbul—in Kelabit *Bruik Aro'*, " bird of the brooks "—borrowed from the Chestnut-collared Kingfisher its loud cry, so that he could go downriver and deceive his debtor there, who would not recognise the new note. Later on, the Kingfisher asked for his call back. But the bulbul, like any Kelabit, prevaricated; debts are things to drag on with, where possible, there. Then the Kingfisher swore an oath that in that case *Burik Aro'* should never again go to the hills and jungles where all other bulbuls belonged. In return, the bulbul swore an oath:

"If you do that to me, then I do swear that you never return again to the rivers with other kingfishers, else you die."

So the Yellow-crowned Bulbul lives only by the river, the Chestnut-collared Kingfisher only in the jungle; or, as the old man who first told me this story observed:

"It seems so. Perhaps the story is true, perhaps not. Its what the old men said, anyway."

CHAPTER 5

CAVE SWIFTLETS

BY

LORD MEDWAY

The swiftlets are true swifts, and many characteristics of their appearance and behaviour are common to the family as a whole. Thus, their legs are so short that they are useless for walking and the birds can travel only on the wing; on the other hand the claws of their feet (three toes directed forwards and one backwards) are sharp and recurved, excellently adapted to hold on to even an overhanging face of the cave walls where they roost. They feed on airborne insects caught on the wing. They drink in flight, dipping down on rigid upswept wings and, at the nadir of their dive, opening their bills with perfect precision to flick up a mouthful of water. There is even evidence that they copulate on the wing, as well as on their nests and at roost on the cave wall.

The caves inhabited by swiftlets (usually in limestone) are often very large, and the birds may build their nests in places that are completely dark, to which no glimmer of light ever penetrates. To enable them to find their way in this total darkness, they have developed a mechanism found only in one other genus of bird, *Steatornis*, the Oil Bird of South America (Griffin, 1953). When flying in the dark, both these birds utter a peculiar rattling call made up of a rapid succession of sharp clicks, and by the echo of these from the cave wall they are able to navigate without the aid of their eyesight. Recordings of this noise have been made in Sarawak caves and preliminary analyses made by the staff of Radio Sarawak and at Cambridge University. The maximum rate of emission in steady flight was found to be six clicks per second, and the frequency spectrum extends from 1·5 to 5·5 kilocycles, subject to variation between individuals (J. R. Sandison, Sarawak, and K. E. Machins, Cambridge, *in litt.* 1958).

This ability to fly in the dark is of central importance in the life of those members of the genus that possess it (one species in Borneo, *C. esculenta*, lacks the ability). Night is no barrier to

these birds, and they fly freely within the cave or outside it at all hours of the day. Still, a long series of watches at cave mouths (principally at Niah, in Sarawak) has shown that, despite this freedom, there is a regular diurnal pattern of movement. Activity reaches a first maximum at dawn in a huge outpouring of birds from the cave mouth—at Niah by thousands a minute. To start with, very few birds return against the onslaught, but within half an hour the exodus begins to dwindle and the influx to swell until the two are roughly balanced. If the weather stays fine, in and outward traffic are soon reduced and remain low—one or two hundred a minute each way at Niah—and more or less equal throughout the heat of the day. At all times of day, birds leaving the cave fly in a loose stream one or two hundred feet above the canopy, on over the forest until they disperse and begin to feed; those returning mostly drop down from the heights and enter above the outgoers.

In the late afternoon the outflow again rises appreciably but never achieves the intensity of the morning flight; the last bird may leave the cave only a quarter of an hour before nightfall. At the same time others gather outside, and drift and circle high in the sky, often in loose flocks, calling incessantly. As the light fades they begin to drop on downspread wings and swoop through the sunset into the black gape of the cave mouth. Inside, the great chambers of Niah become thick with calling birds, milling in the hot twilight in their thousands. As night finally falls the inrush is fiercest and the crescendo of noise at the cave mouth changes character as the birds are enveloped in darkness and "switch on" their rattling echo-location call.

Birds continue to enter the cave long after dark. Night traffic is difficult to gauge in the vast caverns at Niah, but in caves with smaller mouths it can be assessed accurately. Such a cave is Meraja at Bau, colonised by *C. maxima*, where two small arched mouths eight and nine feet high are the only access to a large cave which runs the length of the limestone mountain. Here watch was kept through all of one night in July 1957, in one of the two archways. Official sunset was 6.15 p.m. local time. At the low latitudes of Borneo seasonal variation in sunrise and sunset times are very slight; the day is always about twelve hours long, with three-quarters of an hour of twilight before dawn and after sunset. The evening of the vigil was dull at first after rain, but later cleared and the full moon shone brightly until 10 p.m.

By 5 p.m. the valley below was already full of homing birds; about twenty-five entered each minute, and five left on the evening

sortie. It was dark soon after 7 p.m., by when outgoing traffic had ceased and there were only a few incomers each minute, but birds continued to enter the cave. At 8.30 p.m. the average rate had risen again to ten in each minute, at 10 p.m. four birds entered per minute, and by midnight the rate had dropped to one a minute. Still they came in sporadically, but at about 2 a.m. other birds began to come up from the galleries below and gather in the entrance hall behind the mouth. Here, by 3 a.m. the crowd of circling birds was very dense, and the total din of their echo-locating call was deafening. At 3.21 the first bird out was recorded and at 3.33 the last in. By 4.30 about four were leaving each minute, and out-traffic remained constant at this rate until dawn when it accelerated with characteristic abruptness.

This account of the movement pattern in one cave mouth on one night is an example of the normal behaviour of colonies of the three inland species, *maxima*, *vestita*, and *fuciphaga*. Night movement is restricted at first to late returning birds and then, with an overlap perhaps dependent on the intensity of moonlight, to early outgoers. The great outrush at dawn, and the second which coincides with the evening flight of winged ants, the principal food of swiftlets (Chasen 1931), indicate that the birds feed largely by day, and therefore hunt by sight. In poor light their rattle call may be of assistance in locating larger prey. The fruit bat, *Rousettus*, uses a similar call, also audible to man but with a mean frequency about four times that of *Collocalia* (the higher the frequency of the sound, the greater is the potential sensitivity of the mechanism). This bat can pass in total darkness through a screen of parallel vertical wires 1 mm. in diameter with a high degree of success (68 per cent.) and shows a performance above the possibilities of chance with even thinner wires (Griffin, Novick and Kornfield, 1958). The performance of *Collocalia* has not yet been tested in this way, but its call could theoretically locate larger flying ants. The chief advantage to the swiftlet, however, lies probably in its freedom to fly by night, and consequently the long hours it is able to spend hunting and the wide feeding area that can be covered by the colony as a whole, allowing these birds to gather in such extraordinarily dense populations—there are estimated to be two million adults of the three species *maxima*, *fuciphaga* and *esculenta* in the one cave system at Niah (25 acres in floor plan), and such an enormous colony is not unique. The same advantage belongs to *francica*, which can also rattle, although the sea caves in which it nests are normally small and not entirely dark.

The daily pattern outlined above is typical of fine weather. The

whole rhythm is altered in the event of rain, to which the swiftlets show a very sensitive response. Tropical rain is frequent and always heavy, but storms are usually of short duration. It is clear that the birds do not feed while rain is falling, probably because their insect prey is forced down into the shelter of the jungle canopy: they have been seen flying steadily homeward far away over the forest during rain, and in bad weather at any time of the day they congregate at the cave mouth, wheeling aimlessly and calling incessantly (the song call, not the rattle) as on fine evenings. They are, however, not unable to fly in the rain, for in rain the morning and evening sorties are still seen, but both are reduced, and while the former is prolonged the evening flight may end unusually early. Swiftlets apparently do not rely on rain for drink, for they may be seen drinking from the rivers in crowds immediately after a heavy storm.

The effect of rain, then, is seen at the cave mouth at the time of its falling by the great crowd that congregates and drifts slowly inwards. It is also reflected in subsequent behaviour. The most striking effect occurs on a fine evening after a rainy morning, or after a previous day of continuous rain. After a fine day the birds, well fed, are already pouring into the cave with direct purposeful flight half an hour before nightfall while the evening outstream is still strong. But if the weather has been bad they come home later, and there may be a stillness, a hiatus in the active life of the cave mouth, after the last bird of the evening flight has left. In the unusual hush the light of sunset fades from the dark trees on the cliff opposite and the blue of the sky deepens. Then dusk falls, and explosively the birds arrive, dropping from the heights at first singly. then in an unbroken rush that continues long into the night.

Like all swifts these birds fly superbly. Brief field experiments indicate that in level flight the largest Bornean species (*maxima*) can travel at about 27 m.p.h., but away from the cave rapid flight in a straight line is rarely seen. By day they often gather into loose flocks, sometimes wheeling on open wings within a thermal upcurrent, or feeding around a flowering tree, or circling a mountain top, or drinking from rivers in the sunlight. All species may mix in these parties and another common swift (*Chaetura leucopygialis*) and swallows also join them. Only the tiny *Collocalia esculenta* feeds below the canopy, and solitary birds of this species often fly to and fro over a chosen beat, like a pipistrelle bat.

This species, *esculenta*, alone of the Bornean swiftlets, lacks the rattle call and the corresponding ability to fly in darkness. Its habits

are vastly different. It nests in relatively small colonies of a few hundreds at most, in the twilit zones only of inland or sea caves, or under rock shelters or overhangs. All members of a colony are on the nest by nightfall, and do not leave until daybreak. If disturbed during the night they are utterly confused, and those of them frightened from the cave remain out all night, as do the occasional birds which have not come home to roost by nightfall. At Niah, a breeding colony of this species lost a high percentage of young by starvation, and evidently, among such a huge population, *esculenta* is ill-fitted to compete with the night fliers. Its advantage over them in general lies in the wider range of nest sites available to it, and its slower flying speed that allows it to feed among the forest trees. This species is in fact the most widely distributed swiftlet in Borneo.

The breeding season of each species is different, and among those whose nests are commercially valuable (*maxima*, *vestita* and *francica*) may be disrupted by the activity of man. The native nest "farmers" are surprisingly ignorant of the breeding seasons and behaviour of these birds, and accounts derived from local information are unreliable.

Collocalia maxima has been studied in detail at Niah in Sarawak, and corresponding observations on other species suggest that much of its breeding behaviour may be taken as typical of the genus as a whole. All species make use of the characteristic nest cement, a protein related to mucin which is secreted from the submaxillary salivary glands (Green, 1885; Wang, 1921; Marshall and Foley, 1956); this is the edible part of their nests, the chief constituent of the Chinese birds' nest soup. All species but *fuciphaga* rely on hardened nest cement, thickly applied to the cave wall, to support the entire weight of the nest, which is bracket-shaped, a suspended half cup. The nest cement secreted by *fuciphaga* is sparse and remains soft and moist. This nest is loosely built from moss and other vegetable material and can only be sited on an irregularity in the cave wall which will take all or part of its weight. The so-called "white" nests of *vestita* and the Bornean race of *francica* are pure nest cement, sometimes with a few downy feathers incorporated, and are commercially the most valuable (average 1957 price, £5 a pound at source). In the nest of *maxima* very many feathers of the birds' own plumage are mixed with the edible cement, giving it a "black" appearance; it requires much cleansing to separate the feathers before becoming saleable, and is far less expensive (in 1957, 3*s*. 6*d*. a pound for uncleaned nests).

Collocalia maxima breeds once a year only. Its natural season in Sarawak is from October to May, but on the east coast of North Borneo it breeds later, probably January to August. In Sarawak the nest collectors take the first nest of the season soon after it is complete, when it may contain eggs or young. The second is gathered six months later, allowing many of the birds to breed successfully, but is consequently fouled. If nests are taken after the young have flown a full-sized replacement is not built until the beginning of the next season ; at most the birds make small " cock nests " to which they cling at roost. If undisturbed the nest cement steadily deteriorates, becoming brown and friable, until it can no longer support the weight of the nest, which falls. Replacement nests and those of succeeding seasons are built on the sites of their predecessors.

Both sexes participate in nest building, as they do in the duties of incubation and care of the young. The process is very slow, and even after the nest is apparently complete laying may be delayed. Observations show that the shortest possible interval between the removal of one nest and the laying of an egg in its successor is 40 days, but in the colonies studied only 50 per cent. of the second nests had been reoccupied 85 days after the collection of the first. In the finished nest one white matt-surfaced egg is laid, and the incubation period is a further 28 days. The nestling hatches naked and blind and develops very slowly ; the mean fledging period of observed nestlings was 60 days. Thus, with collections at six monthly intervals, only half the breeding pairs can expect to rear their young to maturity—a potential yield of 25 fledglings per 100 breeding adults per annum.

In fact, the number of young successfully raised is always well below this potential, for even in the sheltered darkness of equatorial caves the infant swiftlet is not safe from disaster. In 1957, 40 per cent. of the eggs laid were lost or failed to hatch, and 20 per cent. of the hatched nestlings failed to fly. Doubtless an unnatural degree of disturbance was entailed by our observations, but if these results are representative only 12 young per 100 breeding adults can be expected finally to survive to maturity each season in regularly farmed nests at Niah. For the population to be maintained at this rate of reproduction the expectation of life of a swiftlet would have to be very long. That the population *is* maintained is shown by the annual returns of nest yields. Another estimation of the life span of this species can be made from the number of nests used one season that are not rebuilt or reoccupied the following year ; one seventh of the

nest sites marked in 1957 were not used in 1958, indicating a minimum life span of seven years.

At Niah, however, and in " black " nest caves in general a large reserve population exists undisturbed by man. But in the Baram caves of Sarawak colonised by *vestita* very few of the valuable " white " nests remain uncollected, and, since Government regulations allow up to four collections per annum at three month intervals, there must be many years in which hardly any young are successfully reared. Yet here again nest yields show that the population has not declined seriously in the last thirty years. Conversely, if the influence of man is removed, the population does not necessarily increase ; a cave in Suai, Sarawak, was not visited between 1939 and 1957 yet the nest yields of these two years were exactly the same. Other data suggest that, even in regularly harvested caves, the available food supply is a more important factor limiting the population of a cave system than is the activity of man.

The breeding of other species may be summarised briefly. All lay two white matt-surfaced eggs at several days interval. Their seasons vary: *esculenta* colonies breed in close co-ordination, at Niah from March to May, but *fuciphaga* seems to lay almost all the year round and the pattern of its season is obscure ; it also rears more than one clutch annually. In North Borneo *vestita* and *francica* both nest in the first half of the year. The incubation period of *fuciphaga* is 23 days from the laying of the second egg, of *esculenta* 22, of *francica* in Vietnam reported to be 25, and of *vestita* unknown. Mean fledging periods are *fuciphaga* 49 days, *esculenta* 42 days, and *francica* 75 days (data for *francica* from Thai Van Kiem, 1955).

The high rate of failure of eggs and young has several causes, In unfarmed colonies the natural deterioration of the nest cement is not necessarily complete at the end of one season and a nest often does not fall until the middle of the next. By then it has been touched up and is in use again, and the egg or nestling within it are killed. Regular harvesting of nests at the end of each breeding season forces the birds to build afresh at the beginning of the next, and by eradicating losses from this cause may be beneficial. Premature nest fall, even of new nests, is often accelerated by the burrowing of the larvae of the moth *Pyralis pictalis*, which attacks the nests of both *maxima* and *esculenta*.

A few eggs are thrown from the nest by parental clumsiness, and at a later stage hungry nestlings, too long abandoned by their parents (who may stay away from the nest more than twenty-four

hours consecutively), become very restless and fall out or try to fly prematurely. Finally, at Niah, many eggs and some newly hatched young were lost to a curious predator. This was a large, dark brown rhapidophore (Gryllidae), a wingless grasshopper-like creature with immensely long antennae, which clambers freely up the cave wall. This insect has liberal tastes in food, ranging from carrion and guano to the eggs and young of swiftlets. It attacks in the absence of the adult birds. To get at the contents of an egg it gnaws a wide hole in the upper side of the shell as it lies in the nest ; newly hatched young are bitten to death.

There are other insect parasites that infest the nests. Most abundant are blood sucking bugs (*Paracimex avium* and *P. setosus*) which are a great irritant to the birds, and whose eggs encrust and foul the edible nests. Ticks (*Ornithodorus*) and a parasitic fly (*Myophthiria reduvioides*) have also been found, and, especially in the loose vegetable nests of *fuciphaga*, many harmless inquilines abound, particularly spiders, pseudo-scorpions and cockroaches.

No vertebrate attacks the swift at its nest, but the black and white marbled cave snake, *Elaphe taeniura*, and rats, civets and wildcats roam freely through the dark passages feeding on fallen young. At the cave mouth wait the raptorial birds : the Brahminy Kite, the Serpent Eagle, Jerdon's Baza, the Peregrine Falcon, the Crested Goshawk, and many others may be seen by day, and the owls and the strange crepuscular Bat Hawk attack by night. But their predations are infinitesimal in proportion to the vast size of the swiftlet colonies and the encouragement of their destruction in the past is regrettable.

Many bats live with the birds in the caves and in places they may oust them from nesting sites by crowding. However, they do not compete directly with the swiftlets for food, nor do they interfere with the nests. In a way the presence of bats is an advantage to the swiftlets, because in places the former are more easily caught and attract the attention of the raptorial birds.

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SWIFTLET CAVES
(by the author)

To round off Lord Medway's contribution I give below a brief summary of the known distribution of swiftlet caves in Borneo.

Sarawak. Banks (1949) devoted a chapter of his book to birds nest caves in Sarawak. " The white nests of *vestita* are confined to certain caves near Long Lama in the upper Baram. They have been in use for many generations ; Burns mentions them in 1849, and Chinese records go much farther back. . . . One's idea of a cave is a hill or cliff with an opening at its foot, but three of these caves are nothing more than openings flush with the level ground, so little demarcated that pigs and deer have been killed by falling in, and it is quite impossible to descend in safety without the necessary ladders. Once down the narrow fallen-in shaft the caves widen out where the underground streams have dissolved the limestone, until the insignificant entrance leads to lofty and extensive galleries."

In an unpublished report (1957) on " The Edible Birds' Nest Industry of the Baram " Lord Medway writes :

" There are over one hundred known, named, caves in the limestone hills of the Baram, large and small, accessible and inaccessible. They are found from Kuala Temala, 114° 28′ E, 3° 48′ N, up river to Bukit Salai, 114° 25′ E 3° 39′ N. Some are inhabited by bats alone, some by mixed colonies of bats and swiftlets, and a few by swiftlets only. There are three species of cave dwelling swiftlets (*vestita, esculenta, fuciphaga*) found in these caves, but only *vestita* makes the marketable nests. Figures from the recorded sales of nests (at 80 nests to the kati) indicate that colonies vary in size from under half-a-dozen pairs up to 3,500 breeding pairs. There are, however, only two caves housing colonies of this sort of size, and

only five major caves in all—Lobang Tuking, Bruang, Anau, Salai, and Pedan Tanyit. These regularly produce about 75 per cent. of the total yield. From recent auction figures, again, it is apparent that there is a minimal population of 16,000 breeding adults in the district. The highest post-war figures, in 1950, show a population of 34,000. The collection and initial sale of these nests is entirely in the hands of Kayans from one village only—Long Laput." Further details of these caves and of the Government-controlled auctions of nests will be found in Banks's chapter.

The white nests of *francica* are found thirty or forty at a time n the crevices of the sandstone cliffs in several suitable places round the coast, *e.g.* Satang and Laki Islands, but not in sufficient numbers to produce more than five or six pounds of nests a year. " Like all sandstone caves the nesting colony has to be small, for the soft and friable nature of the rock makes big caves impossible, such as the hard, tensile limestone rock permits " (Banks).

The black nests of *maxima* comprise the bulk of the trade, the total weight collected annually being 20 to 30 tons, or 50 to 100 times the weight of white nests. Banks (1935 : 309) gives details of weights collected and value in dollars, from 1882 to 1934. Nearly all these come from the famous Niah caves in the limestone hill of Mt. Subis, about two hours by launch and half-an-hour's walk inland, up-river from Niah. Accounts of this cave and of the methods used to collect the nests have been given by Banks (1949), Medway (1958), and in the documentary film *Birds' Nest Soup* by Hugh Gibb and Tom Harrisson, widely shown on television, and it is unnecessary to add anything here. There are many other black nest caves in Sarawak, but they do not yield more than 300 to 400 pounds of nests a year.

(i) *Bau district.* Caves are numerous in the limestone (for list see Banks 1935 : 318) but the yields very small. The very large entrance hall of the Bidi caves was once used by swiftlets ; at present the most remarkable cave is probably Gua Jawang, off the Bau-Dahan road.

(ii) *Samarahan and Sadong Rivers.* Many of the caves can be entered at ground level, where the underground streams emerge, but others can only be entered from far up the hillsides. Of all these caves owned by the Land Dayaks, none is a commercial proposition.

(iii) *Lingga River, Simanggang district.* There are a few caves in the Klingkang mountains.

(iv) *Belaga River, Kapit district.* There are some caves in this area but certain Kayans kept the locality such a secret that their accidental demise has led to the loss of the caves.

(v) *Tatau River, Bintulu district.* Some large caves.

(vi) *Pandan River, Bintulu district.* Small caves.

(vii) *Akah River, Baram district.* Small caves.

(viii) *Mt. Melarat, Baram district.* The limestone cliffs of this hill at the foot of Mt. Mulu are disappointing; huge caves with large underground rivers produce nothing but swarms of bats and a few mossy nests.

(ix) *Merapok hills, Lawas district.* Nine small sandstone caves, remote and inaccessible, but yielding about 200 pounds of excellent nests.

(x) *Lundu district.* Medway (*in litt.*) reports colonies in sandstone caves at Cape Datu and in the Poi range.

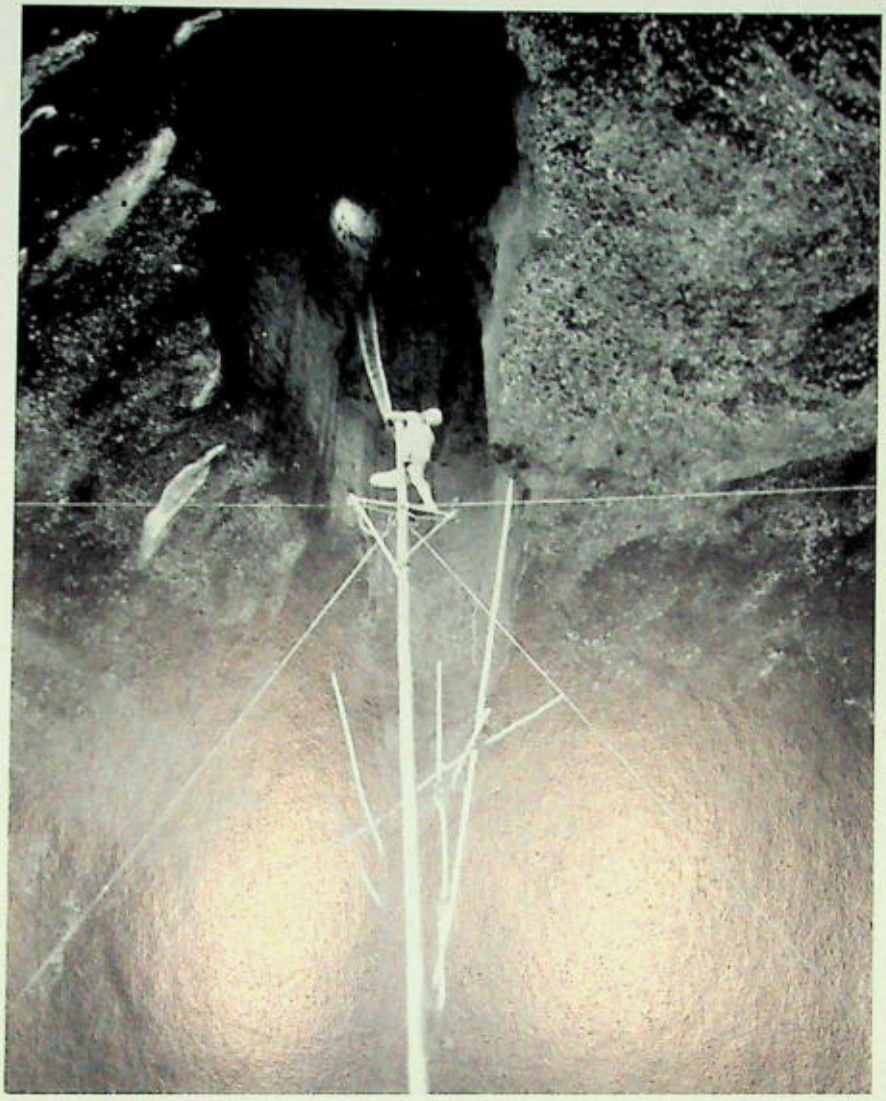
Brunei. No caves are known in Brunei State.

North Borneo. The Gomanton caves, which can be reached in two days from Sandakan, are probably the most important source of white nests in the whole of Borneo. The average yield for the four years 1952–1955 was just over one ton of white nests and just over eight tons of black nests (J. Agama, North Borneo Forest Department, *in litt.*). Chasen visited the caves at the request of the North Borneo Government and published a report (1931); he also listed fourteen other swiftlet caves in North Borneo, but with the comment that the list is uncritical and almost certainly incomplete. The harvest of nests from all other caves is very small compared with Gomanton. There is a small colony of *francica* on Berhala Island at the entrance to Sandakan Harbour, but the average annual yield (1952–1955) was only $3\frac{1}{2}$ pounds, worth about $68 per pound (J. Agama, *in litt.*). There are other colonies on the Mantanani Islands and on Madai in Darvel Bay.

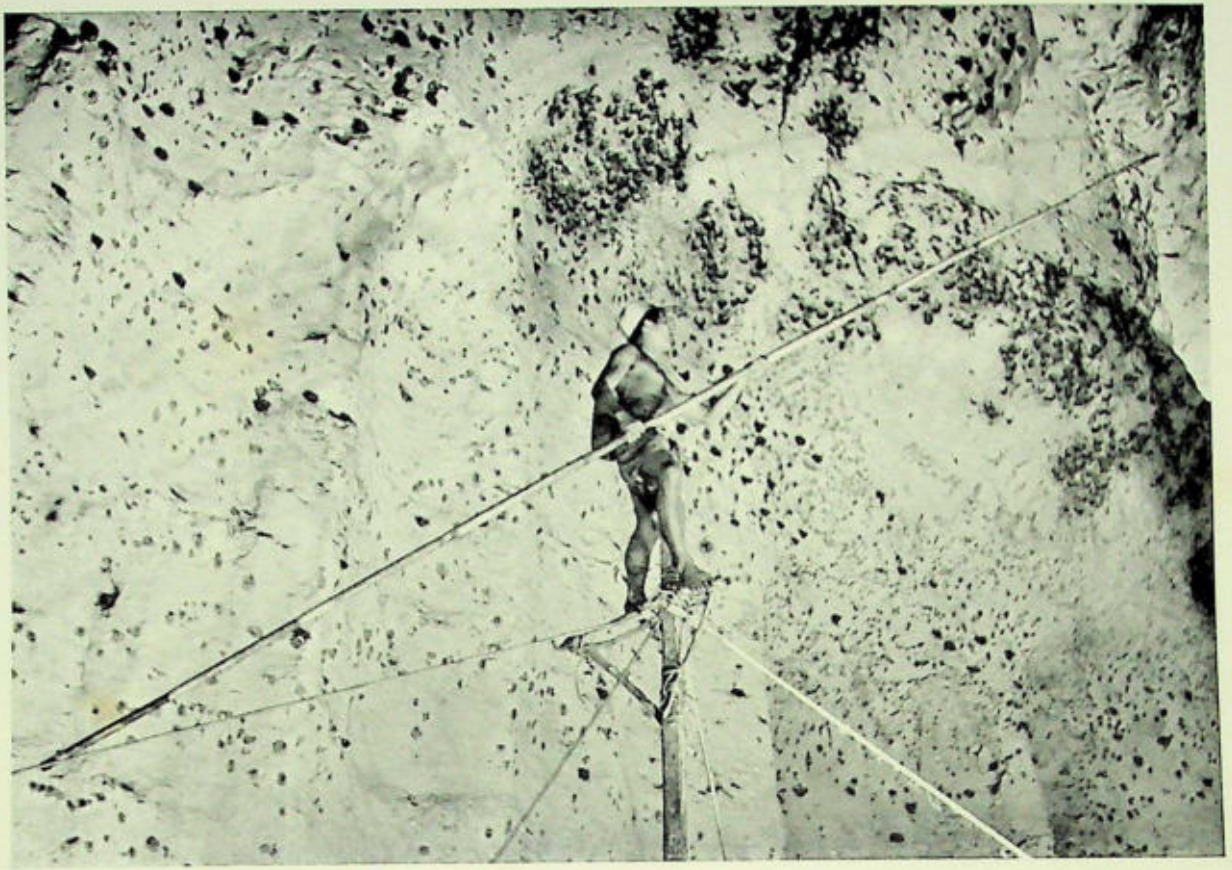
Indonesian Borneo. Little seems to have been published on caves in Indonesian Borneo. Krohn (*In Borneo Jungles*, p. 316, London 1927) mentions enormous flocks of swiftlets nesting in caves along the Mahakam River, where there is much limestone. Tichelman (1925) describes a visit to the Tamaluang caves; these are stated to be the most important in S.E. Borneo, and are situated inland from Klumpang Bay, up the Bangkalaan River; they yield about two tons of black nests (*C. maxima tichelmani*) three times a year and a few white nests (vide Stresemann 1926).

Entrance of Great Cave at Niah
Note man in centre and bamboo poles reaching roof

Malay collector climbing to roof of Niah Cave



Perched 150 feet above cave floor, collector uses torch at end of scraping pole to locate nests in dark recesses of cave roof.



Scraping edible swiftlets nests off cave roof at Niah

CHAPTER 6

IBAN AUGURY

by

J. D. FREEMAN, Ph.D.(Cantab.)

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AN INTRODUCTORY COMPARISON

In the second book of the Odyssey we are told of how Telemachus faced with the obduracy of the suitors who thronged his father's house called on Zeus to intervene, and how the all-seeing god, in answer to this prayer, sent forth two eagles from his mountain top:

> Swift as the storm-blast they flew, wing-tip to wing in lordly sweep of pinions, until they were over the midmost of the many-tongued assembly. There they wheeled in full flight, with quivering, outstretched, strong wings, and gazed down with fatal eyes upon the upturned faces. Next they ripped with tearing claws, each at the other's head and neck, swooping quickly to the right over the houses of the citizens. So long as eye could follow them everyone stood wondering at the birds and musing what future history this sign from heaven could mean.[1]

Halitherses, "an elder of great standing who surpassed all his generation in the science of bird-reading", saw in this event a portending of the return of Odysseus "carrying with him the seeds of bloody doom for every suitor". But the idle suitors would not listen and stayed on to meet their fate.

This incident from the Odyssey illustrates the main doctrine of augury as it existed among the ancient Greeks. The gods, so it was believed, were accustomed to communicate with men by using birds as their messengers, making known in the behaviour of these birds whether they condoned or condemned a future course of human action. It was then for men to read aright these signs from heaven, and so benefit from the counselling of divine omniscience.

I have begun with this example because the system of augury of the ancient Greeks[2] closely resembles in its central doctrine that of the Iban of Borneo.[3] The comparison enables me, from the outset,

[1] Homer (Trans. Shaw, 1955, pp. 27–29).

[2] A system of augury closely resembling that of the ancient Greeks also existed in ancient Rome. Hose, McDougall, James and others have noted similarities between the Roman system and those of various of the indigenous peoples of Borneo. Cf. James (1950): "Among the Dayaks of Borneo there is a system extraordinarily like that of Etruscanized Rome, down to minute details."

[3] The Iban (or Sea Dayaks) are a proto-Malay people of southwest Borneo. They are brachycephalic, of short stature (average height of males, 5 ft. 2½ ins.), with dark eyes, broad noses, full lips, black lank hair and cinnamon-coloured skin. The Iban of Sarawak (1947 census, 190,326 Iban, c. 35 per cent. of the mixed population) are mainly scattered through the undeveloped, interior zone of the country, major areas of settlement being the Second and Third Divisions. Other Iban tribes live in the

to make plain that in Iban augury we are dealing with a system of divination: the interpretation of divine revelation as it is believed to be manifested in the behaviour of certain sacred birds.[4]

MYTHICAL ORIGINS AND CHARTER

Amongst the Iban divination takes many forms,[5] but of all these forms it is augury which holds for them the highest significance, divinely sanctioned, and (under their traditional culture) pervading almost every aspect of their lives. Nothing, an Iban will aver, matters more than an understanding of augury (*nadai lebis ari berandau burong*); and when speaking of the diverse cultures of Borneo, Iban will often describe themselves (in contrast to such groups as the Chinese and Malays) as a people who practice augury. Their system of augury, they assert, is something wholly theirs, something purely of Iban origin, which has been handed down to

region of the western headwaters of the Kapuas river in Kalimantan, or Indonesian Borneo. The Iban are essentially agricultural; their subsistence economy is based on shifting cultivation, dry rice being grown on hillside clearings in the tropical rain forest. They live in longhouses which are built on the banks of rivers navigable by dug-out canoes. Settlement is scattered, the average density of population being about ten per square mile. Iban society is cognatic, or bilateral. A longhouse consists of a number (about fifteen on an average) of privately owned family apartments, and each family (containing, on an average, six persons) is an independent unit, owning land and property in its own right. The Iban are an egalitarian people without hereditary chieftainship. In former years they were much addicted to head-hunting. They have a highly developed and complex religion, which at the time of the 1947 census was still practised by over 96 per cent. of the population. In the account that follows I shall be discussing augury as I observed and studied it in the course of field expeditions undertaken during the years 1949–1951 and 1957–1958, among the Iban of the Baleh river, in the Kapit District of the Third Division of Sarawak. All of my enquiries were carried on in the Iban language, and throughout this chapter vernacular references are briefly given for the benefit of students of Iban culture and as a check on my analysis. Although variations do occur from region to region, the system of augury here described is, in its essentials, the system followed by all of the Iban tribes of Sarawak.

[4] There has been a tendency on the part of ethnographers working in Borneo to confuse augury (a type of divination) with animism (the doctrine that the phenomena of animal life, etc., are produced by an immaterial soul). For example, Hose and McDougall (1912) discuss both augury and hepatomancy under the heading of "Animistic Beliefs." This confusion can lead to serious misunderstanding.

[5] For example, the Iban also take omens from the behaviour of various mammals, reptiles and insects. The Iban term *burong* which has the primary and generic meaning of bird, and the secondary and more restricted meaning of an augury, is applied by extension to all these creatures. However, only certain specific birds are used in the formal practice of augury (*beburong*).

them from their remote ancestors (*sigi asal kami ari aki ini munya*).[6]

Augury, like many of the other institutions of Iban society, possesses a mythical charter that proclaims its divine origin. The Iban are a polytheistic people whose pantheon contains scores of named gods and goddesses. The most important of them is Singalang Burong, whose main concern is with conquest and the arts of war, but who also keeps general surveillance over human affairs.

Long ago, runs the myth, an Iban leader named Siu found his way to Singalang Burong's longhouse in the skies, where the god spoke to him of augury. "I am the ruler of the spirit world", said Singalang Burong, "and have the power to make men successful in all they undertake. At all times if you wish for my help, you must call upon me and make offerings to me. Especially this must be done before you go to fight against the enemy, for I am the god of war, and help those who pay me due respect. . . . And to help you in your daily work, my sons-in-law will always tell you whether what you do is right or wrong. In all the work you undertake you must pay heed to the voices of the sacred birds: *ketupong*, *embuas*, *beragai*, *papau*, *bejampong*, *pangkas* and *nendak*. These birds, named after my sons-in-law, represent them, and are the means by which I make known my wishes to mankind. When you hear them, remember it is me speaking through my sons-in-law in encouragement or warning. Whatever work you may be engaged in—farm work, house building, fishing or hunting—wherever you may be, you must always do as these birds direct. Whenever you have a feast, you must make an offering to me, and you must call upon my sons-in-law to come and partake of the feast. If you do not do these things, some evil is sure to happen to you. I am willing to help you and to give you prosperity, but I expect due respect to be paid to me, and will not allow my commands to be disobeyed."[7]

[6] A system of augury essentially the same as that described in this chapter is found among the Mualang (and other Iban-speaking groups) of the Belitang region of the middle Kapuas in Indonesian Borneo. (Personal communication from Dr. F. H. van Naerssen, Reader in Indonesian and Malay Studies, University of Sydney, who did field research among the Mualang in 1949–50.) This distribution (the Iban of Sarawak trace their migrations from the Kapuas) is evidence that augury is an ancient Iban custom and not a recent borrowing as some have suggested.

[7] These words of Singalang Burong are derived from a myth recorded in the Second Division of Sarawak by the Rev. Edwin H. Gomes, and first published in 1904. (The names of the augural birds have been modified to conform with the dialect of the Ulu Ai Iban of the Third Division). Essentially similar accounts of the mythical origin of augury are to be found among the Iban of other parts of Sarawak. In all of them augury is represented as divinely revealed and sanctioned. In some versions Singalang Burong gives detailed instruction in augural signs.

For the Iban then, their birds of augury are (as mythology lays it down) gods, or *petara* in their own right, and members of a divine society. The seven main augural gods are believed to live in the same celestial longhouse as Singalang Burong, and five of them—Ketupong, Embuas, Beragai, Papau and Bejampong—are married to his daughters. It is thus usual for the Iban to refer to their augural birds as *menantu Lang*, or the sons-in-law of Singalang Burong.[8] All the principal gods of the Iban are anthropomorphic, and live in a society which has a structure identical with that of the Iban themselves.[9] The genealogies of these gods are known and remembered by *lemambang*, or religious experts, who make use of their knowledge in the invocations (*timang*) which are chanted at Iban rituals, or *gawai*.[10] All seven of the augural gods have siblings, parents and grandparents, all named, who are important figures in the Iban pantheon. For example, Apai Embuas (the father of Embuas), whose full name is Bujang Bungah Jajingah Tinggi Serukong. lives beneath the immense buttresses of a mythical *plai* tree (*Alstonia sp.*) ; his special task is the safeguarding of *bedilang* (the hearth stones over which enemy heads are smoked), the manufacture of the rotan casings (*ringka*) in which these heads are secured, and of the circular framework (*bengkong*) from which they are suspended. In head-hunting rituals, Apai Embuas is invoked, and is believed to bring these objects (*bedilang*, *ringka* and *bengkong*) to the *gawai*.[11]

[8] Singalang Burong's full name (in invocations, etc.) is Lang Singalang Burong ; it is commonly abbreviated to Lang, as in the phrase *menantu Lang*.

[9] According to several prominent augurs (*tuai burong*) with whom I have discussed this matter, Ketupong (who is looked upon as the most senior of the augural gods) is still living in Singalang Burong's *bilek* family (i.e. practising uxorilocal residence). But the other four who are married to Singalang Burong's daughters have all achieved partition and seceded from his *bilek* family to set up separate domestic apartments in the same longhouse. The two remaining augural gods—Pangkas and Nendak—are unmarried members of *bilek* families of the same community. For an account of the Iban family system, see Freeman (1957).

[10] It is significant that the gods themselves are said, by the Iban, to practice augury. In the invocation (*timang*) that accompanies head-hunting rituals, a description is given of Singalang Burong, his wife, daughters and sons-in-law leaving their celestial longhouse to attend the *gawai* to which they have been invited. At this point Singalang Burong says: "Here let us halt and listen for auguries". (*Ditu kitai ngetu mending ka burong*). Only after the augury heard by Ketupong has been interpreted as favourable by Singalang Burong do the gods continue their journey.

[11] In the space available to me I cannot give details of the ritual significance of all the divine kin of the augural gods. Let me note, however, that their fathers and grandfathers (*Apai Burong* and *Aki Burong*) are of great importance in Iban religion.

Singalang Burong and his sons-in-law—as gods—figure prominently in the religious life of the Iban. For example, they are principal guests at the great head-hunting *gawai*, through the performance of which Iban men seek social and martial prestige. The gods are believed to attend these *gawai* in person, to reside in the resplendent shrines which have been built for them in the gallery of the long-house, and to confer on their human hosts numerous benefits. In the invocations that accompany such rituals the demeanour of the gods is graphically described so that they take on for the Iban personalities which are individual and distinctive like those of men and women. Again, the augural gods, in particular, are important figures in the *dramatis personae* of the great sagas (*ensera*) in which they appear as the traditional adversaries of the culture heroes of the Iban, the mercurial Orang Panggau.

In all these ritual and mythical contexts the augural gods are anthropomorphous. Ordinarily, of course, they cannot be seen, but they do frequently appear to the Iban in their dreams in human form. Singalang Burong, for example, was described to me by an augur, who had encountered him in a dream, as an impressive old man, completely bald, massive of body and heavily tattooed in traditional Iban style.

THE AUGURAL BIRDS

While Iban gods normally assume human form, they also possess the mystical power of metamorphosis, and it is the special characteristic of Singalang Burong and the augural gods that they change themselves into birds (*burong*), in which shape they commonly present themselves to men. Singalang Burong, when he does metamorphose himself, always appears as a Brahminy Kite, or *lang* (*Haliastur indus intermedius*).[12] But, as befits a high god, he does not deign to do this often, electing instead to make his will known

[12] Eagles, hawks and kites are widely associated with sky gods. Cf. Aristophanes, *The Birds* (Trans. Rogers, 1924, p. 179):

" . . . Zeus
who at present is Lord of the Sky
Stands wearing, as Royalty's emblem and badge,
an eagle erect on his head."

to men through the agency of his *menantu*, or sons-in-law,[13] who assume the following bird forms :[14]

Iban name	*Systematic name*	*English name*
ketupong	*Sasia abnormis* (Temminck)	Rufous Piculet
embuas	*Lacedo pulchella* (Horsfield)	Banded Kingfisher
beragai	*Harpactes duvauceli* (Temminck)	Scarlet-rumped Trogon
papau	*Harpactes diardi* (Temminck)	Diard's Trogon
bejampong	*Platylophus galericulatus* (Cuvier)	Crested Jay
pangkas	*Blythipicus rubiginosus* (Swainson)	Maroon Woodpecker
nendak	*Copsychus malabaricus* (Scopoli)	White-rumped Shama

BASIC TENETS

When any of these augural birds is seen or heard (so runs the theory of Iban augury) it can be assumed that the gods have something to communicate to man, for these birds, say the augurs, never reveal themselves without cause, they always have something to tell us (*enda kala bemunyi diri, enda tau enda bisi utai di padah*)[15]. The

[13] The Iban do not use the Brahminy Kite in deliberate divination (*beburong*). This is in contradistinction to the Kenyah of Borneo, who look on the Brahminy Kite (which is believed to represent their high god Bali Penyalong) as their principal bird of augury.

[14] These incarnations, it may be noted, are invariable. I.E. the augural god Ketupong, when he takes on bird form, always appears to men in the shape of a Rufous Piculet, which form none other of the augural gods ever assumes. Again, the name of each augural god is identical with the name of the bird whose shape he takes. In this chapter (because of lack of space) I have not discussed the *engkerasah*, or Little Spiderhunter (*Arachnothera longirostris*), and several other birds which have a very minor significance in Iban augury.

[15] This belief is commonly supported evidentially *post hoc ergo propter hoc*. For example, at four o'clock on the afternoon of 19th April, 1950, as I was talking to Kubu, an augur of Rumah Nyala, Sungai Sut, a *ketupong* (Rufous Piculet) began chirruping close to the *dampa* (farm house) in which we were sitting. All in the house heard the bird. I at once asked Kubu what this augury might mean. He replied : " I'm not sure, but something is being told us." (*Entah, tang bisi utai di padah*). Later that evening, soon after their evening meal, Binya (a woman of the house) and her young son Kachang suddenly developed a gastric sickness. Kubu then announced to me that it was to this sickness the augury had referred ; the sickness, he said, must have been caused by something Binya and Kachang had eaten, and it was against this action that the *ketupong* had issued its warning.

augural gods, it is believed, are all-knowing (*nemu magang burong*) and able to foretell the future; furthermore, whenever they do intervene in human affairs it is always for man's advantage. This brings us to a cardinal feature of Iban augury. The augural birds, it is important to realise, are benign creatures, favourably disposed towards men (*nadai jai ati enggau Iban*); their *raison d'etre* is to help and not to hinder; to confirm men in enterprises that are likely to succeed, to forewarn them of actions and intentions likely to end hurtfully in failure or disaster. Iban augury is thus, in essence, a beneficent and beneficial commentary on human purposes, a system of divine guidance for the well-being of man.[16]

From this belief in augury as a form of divine communication stems the injunction that no augury should be wilfully ignored by the person (or persons) encountering it (*burong enda tau ngereja*). This injunction, naturally enough, applies with particular force to auguries that are inauspicious, and numerous instances are cited of individuals suffering injury or death from defiant or unthinking failure to heed divine prognostications of misfortune. The gods, in their omniscience, ensure that an augury is seen or heard only by those for whom it is intended.[17] It is this way that the Iban account for the fact that one man will sometimes hear an augury, whereas others working close at hand do not. The gods, it is said, are able to stop the ears of men, separating one person from another by an interval no thicker than a leaf (*petara nijal pending enggau entara daun se rambar*).

The augural birds, we have now seen, indicate for man's good the auspicious and the inauspicious. They do this in their movements or cries; it is for men to read these signs aright, relating any given augury to the proposed human action to which it refers. If men fail to take heed of an augury, or, in their ignorance, misread its significance, it is then that undesirable results accrue. One augur (*tuai burong*) put this important point in this way: "These birds of augury they indicate to us things that are hurtful and things that

[16] During my 1957–1958 field expedition I was given striking evidence of Iban attitudes towards their augural birds. I had with me a collection of skins (lent to me by the Sarawak Museum) which aroused fascinated interest. One woman (of Rumah Tungku, Sungai Tiau) spoke of the birds as helpers for whom the Iban had strong affection (*kasih udu*); and several families held special offerings (*bedara*), welcoming the skins to their apartments and asking for continued guidance from their augural birds.

[17] In the case of a corporate work group an augury heard by any one of its members is accepted as referring to the purposeful activity of them all, and so affects the group as a whole.

are not ; but if we do not understand their language, if we do not heed them, then we suffer ". (*Sida burong bisi madah ka utai pemedis, utai enda ; tang enti kitai enda nemu jako padah iya, enti enda beluli iya, nya kitai ka pedis.*)

In other words, it is not an augury in itself which produces results, either good or bad, but rather the behaviour of men in respect of it. This is something which the Iban stress when explaining the principles on which their system of augury is based. To take an example : the beginning of the agricultural year is traditionally marked by prolonged inaugural rites in which the Iban make offerings to their sacred birds and seek favourable auguries for the felling of the forest, its subsequent firing, and the sowing, maturation and reaping of their *padi bukit*, or hill rice. For the Iban the growing of *padi* is of the utmost concern and favourable auguries are much sought after in an attempt to make auspicious the strenuous and hazardous course of cultivation. Such an augury, when it is encountered, enheartens the cultivator giving him confidence in the future, but —if anything—it will cause him to work the harder. There is no expectation that the favourable augury, of itself, like some magical act, will automatically produce a good crop. " Even though one hears a good augury ten times over ", I once heard a *tuai burong* of the Sungai Sut remark, " the harvest will not be an outstanding one without sufficient work." (*Sepuloh kali ninga burong badas, enda turun ka iya, enda bulih padi*). Similarly, if harmful results follow the hearing of an inauspicious augury, the responsibility lies not with the gods but with man for having failed to heed their warning.[18]

[18] In ordinary conversation the Iban often speak of augural birds as though they were able in themselves to cause harm. Such a metaphorical mode of speech is apt to mislead. Further investigation (in my experience) always reveals the theory of ultimate human responsibility as I have described it. In August, 1950, for example, a woman named Pawa died at Rumah Tungku, Sungai Tiau, soon after her arrival from Sungai Julau in the Kanowit District. It then became known that a short distance down-river from Rumah Tungku a *pangkas* (Maroon Woodpecker) had given its alarm cry and flown to and fro across the path of the party of which she had been a member, and that instead of pausing in their journey for the required ritual observances they took no heed of the augury and paddled straight on to their destination. When he heard of this Kara, the augur of Rumah Tungku, publicly upbraided the leader of the party saying : " Idiot ! you know that augural birds are killing things ! " (*Isu ! sigi nemu utai munoh burong !*). In later discussion, however, Kara explained that it was really a failure to take cognizance of augury that had led to Pawa's death ; i.e. if one's thinking (and behaviour) are at fault death may follow an augury (*enti salah pikir parai kitai laban burong*).

THE READING OF AUGURAL SIGNS

The mythical charter and basic ideology of Iban augury are clearly and simply formulated. In contrast, the actual practice of augury is of great complexity. This complexity lies mainly in the related processes of interpretation and application: in determining the significance of casually encountered auguries and in deciding upon the auguries to be deliberately sought for particular human purposes. Both of these processes are concerned with the purport of augural signs, and it is to this somewhat abstruse subject that I would now like briefly to turn. By way of preamble let me say that in what follows I shall understand by the term augural sign: some aspect of the appearance or behaviour of an augural bird which, by general consent, is regarded as having a symbolic meaning.

As I have already noted the augural birds of the Iban are looked upon primarily as gods, and in this form they figure prominently in ritual invocations (*timang*) and sagas (*ensera*). Moreover, in these *timang* and *ensera* the various augural gods possess distinctive personalities and characteristics. Thus, Ketupong has all the marks of a leader: when, for example, the gods (going to attend a *gawai*) find their path blocked by an impenetrable thicket it is Ketupong who springs forward to attempt to cut a way through it.[19] While Bejampong, to take another example, is always described as one possessing (in warfare and tests of prowess) great swiftness and agility.[20] Such attributes of the gods are often taken into account when interpreting an augury, but in addition so are the appearance and behaviour of the augural birds *per se*.

Of most importance are the cries which the birds utter. Two different types of "voice" (*nyawa*) are distinguished: the ordinary call of a bird, and its alarm cry; and in three instances the alarm

[19] Ketupong fails in this attempt as do the other augural gods and it is only when Singalang Burong comes to their aid that the obstruction (*pintu langit*) is breached. This incident is a good example of the subordination of the augural gods to their father-in-law (*entua*), the high god Lang Singalang Burong.

[20] For example, in ritual invocations Bejampong, the god, is spoken of in these words:

> "Keen of eye, quick in seeing,
> Sharp of ear, quick in hearing."
> (*Mata silik, jampat ngelala,*
> *Pending lansik, jampat ninga*).

In most cases, as in this, the attributes of the god resemble closely those of the bird (in this instance the Crested Jay) whose shape he assumes.

cries of augural birds are regarded as possessing a distinct significance and given special names. Thus, the *ketupong* when it utters its alarm cry is referred to as *kekih*, while the *papau* becomes *senabong*, and the *pangkas* becomes *kutok*.[21] All of these alarm cries are regarded as harsher than the ordinary cry and associated with danger and misfortune.

In discussing the character of augural cries the Iban often liken them to human speech—as a way of indicating their symbolic nature. I list below the main ascriptions of two augurs of the Sungai Sut[22]:

English name	*Iban name*	*Nature of cry (nyawa)*
1. Rufous Piculet	(i) *ketupong*	like a man of one word; i.e. deliberate and authoritative (*baka orang tunggal jako*)
	(ii) *kekih* (i.e. alarm cry)	like a fierce person, someone who scolds (*baka orang mangah, baka orang nganu*)
2. Banded Kingfisher	*embuas*	like someone speaking kindly (*baka orang mentas jako*)
3. Scarlet-rumped Trogon	*beragai*	like a man laughing (*baka orang ketawa*)
4. Diard's Trogon	(i) *papau*	like someone conversing, having no desire to find fault with others (*baka orang berandau nadai ati nganu orang*)
	(ii) *senabong* (i.e. alarm cry)	like a man who attacks with sharp words (*baka orang merak kitai, tajam jako*)
5. Crested Jay	*bejampong*	like someone speaking very rapidly (*baka orang dras jako*)
6. Maroon Woodpecker	(i) *pangkas*	like a man shouting in triumph (*baka orang manjong*)
	(ii) *kutok* (i.e. alarm cry)	like someone issuing an emphatic warning (*baka orang tunggal jako, sigi sigi*)
7. White-rumped Shama	*nendak*	like someone speaking soothingly; lit. so as to give shade (*baka orang ke ngelindap jako*)

[21] There is a myth accounting for the existence of these alarm cries. The seven augural birds (it is related) once had a dispute over the direction in which an *ensurai* tree was about to fall. *Ketupong*, *pangkas* and *papau* said that it would fall towards the river on the bank of which it was growing, while the other four insisted that it would fall in the opposite direction. When the tree did fall towards the river, *ketupong*, *pangkas*, and *papau* gave throat to raucous shouts of triumph which became their alarm cries (*nyawa begau*).

[22] I. E. Kubu, of Rumah Nyala and Jang, of Rumah Umpang.

As this evidence indicates the cries of their augural birds have, for the Iban, a symbolic character.[23] Furthermore, the symbolic character of a cry largely determines the interpretation placed upon it. For example, if the cry of the *pangkas* (Maroon Woodpecker) is heard by a war party, this is welcomed as foretelling the shouts of triumph that traditionally accompany the taking of an enemy head (*antu pala*). Similarly, if a *beragai* (Scarlet-rumped Trogon) is heard when on a trading expedition this is also looked on as a good omen, predicting the happy laughter that will follow the acquisition of valuable property.

In the instances so far cited the symbolism has been anthropomorphic. These without doubt are the most numerous, but there are also other kinds of symbolic identification. Thus, the rapid cry of the *bejampong* (Crested Jay) is said to resemble the crackling of burning tinder and so is sought at the beginning of the cultivation cycle as presaging the successful firing of a family's swiddens.[24] By some, the alarm cry of Diard's Trogon (*senabong*) is said to have a sound comparable to the rattle of blood as it issues from the throat of a newly slain animal, and this has led to the *senabong* being described as a *burong darah* (lit. bird of blood) and being much sought after by hunters. Again, the alarm cry of the Rufous Piculet (*kekih*) is likened to the sound of something being scraped by a knife, and consequently the *kekih* augury is sometimes used to rid a swidden of the spirits of misfortune (*antu tisil*) believed to be inhabiting it (i.e. by scraping them away).

The appearance of an augural bird may also possess symbolic meaning. The *beragai*, the laughing call of which we have already noted, also has a brilliantly red breast. Because of this the *beragai* is known as *burong tampak* (lit. bird of brightness) and is associated with success and renown. Again, the top-knot (*jugu*) of the *bejampong* (Crested Jay) is seen as a symbol of the tuft of human hair (taken from a slain enemy) which traditionally adorns the hilt of a head-hunter's sword (*pedang*). This makes the *bejampong* an

[23] The two augurs Kubu and Jang were giving a formal exposition of augural symbolism, and to simplify this exposition all of their ascriptions were phrased anthropomorphically. Ordinarily, however, directly anthropomorphic comparisons are not made. The *beragai*, for example, is spoken of merely as ' the laughing bird ' (*burong ketawa*), or ' the glad bird ' (*burong gaga*) ; the *pangkas* as ' the shouting bird ' (*burong panjong*), and so on. It should also be mentioned that in addition to the examples given there are a number of other symbolic interpretations of augural cries, these, however, I have not the space to discuss.

[24] Because my space is limited I have not in this chapter been able to give any account of the very important association of augury with the cultivation of *padi*. I hope to be able to discuss the rituals of Iban agriculture in a later publication.

auspicious augury for men on the war path portending the slaying of enemies.

It is also possible for the habitual behaviour of an augural bird to be seen as significant. The behaviour of the *bejampong* (Crested Jay), for example, has resulted in this bird becoming known as *burong gegar* (agile bird) and *burong jampat* (swift bird). Accordingly the *bejampong* augury is sought before embarking on such activities as war and hunting in the hope that a comparable swiftness and agility will be imparted to those hearing or seeing it.[25]

Finally, meaning may be drawn from the particular movement or movements of an augural bird from the point of view of the person to whom it appears. A main distinction made is between flight across the observer's line of vision from right to left (*mimpin*), in contrast to flight from left to right (*raup*). The *mimpin* movement is looked on as carrying more force (*kring agi*) than the *raup* movement, the analogy here being to the greater strength of the right arm.[26] Another important distinction is between flight in the same direction as the observer himself is travelling (auspicious), as against flight in the opposite direction (inauspicious). Other kinds of behaviour, such as diving, hovering, alighting, etc. are taken into account if it is thought that a bird is using them as a mode of communication. Thus, if an augural bird persistently alights upon or enters a longhouse this may be interpreted as a warning that the house should be abandoned to avoid impending misfortune.

The seven augural birds of the Iban, it may be remarked at this point, differ considerably in the extent to which they approach human habitations. Both the *ketupong* (Rufous Piculet) and *nendak* (White-rumped Shama) are commonly seen and heard in the immediate vicinity of longhouses, for which reason they are looked upon as taking an intimate interest in human affairs : the diminutive and restless *ketupong* as a kind of watchful guardian, and the *nendak* (the song of which rivals that of the nightingale) as a wholly benign ally against the threatening forces of the world.[27] The *bejampong* (Crested Jay), *beragai* (Scarlet-rumped Trogon) and *pangkas*

[25] An augury may be both seen and heard. This rule applies to all of the seven augural birds, there being no division of *signa ex avibus* depending (as in ancient Rome) on whether they refer to flight (the *alites*) or utterance (the *oscines*). Thus, among the Iban, although an augury may have been only heard, it is nonetheless permissible to refer to non-aural signs (e.g. derived from the appearance of the bird concerned) in assessing its significance.

[26] Similarly, the cries of the augural birds may be heard either to the right (*kanan*) or left (*kiba*) of the observer.

[27] A *nendak* augury is invariably auspicious.

(Maroon Woodpecker) are usually encountered somewhat further afield, as, for example, along the tracks linking a longhouse with its swiddens. All of these birds, frequently seen in the open, commonly *raup* and *mimpin*, and so intervene in human undertakings. The *papau* (Diard's Trogon) haunts more remote and thicker vegetation and is seen still less often; while the habitat of the *embuas* (a primitive tree kingfisher) is the upper levels of primeval forest, from which it very seldom issues to be seen by man.[28] For the Iban, then, their augural birds vary markedly in their characters and habits, a variation which is reflected in the diversity of signs found in their system of augury.

RELATING AUGURY TO HUMAN PURPOSES

We have now seen something of the way in which conventional signs are taken into account in interpreting an augury. The reading of these signs is of central importance; however, a complete interpretation almost always involves the consideration of other factors. As noted earlier augury is for the Iban one of the principal methods by which certain gods reveal their will to men. Further, it is believed that each revelation has as its purpose specific comment on human intentions. In interpreting an augury it becomes important, therefore, to identify these intentions. To achieve this the whole context in which an augury is encountered has to be taken into account: the time, the place, and the human activity being carried out (or about to be initiated).

All this can best be illustrated in the concept of the *jeritan*, on which the Iban themselves place great emphasis. A *jeritan* is an augury which has been observed either just before or during the early stages of an important phase of activity. In these circumstances an augury is thought of as being especially urgent and constraining, for there can be no mistaking the immediate human intentions to which it refers. A *jeritan* may be either auspicious or inauspicious depending on the augural signs involved. For example, if the *beragai* (Scarlet-rumped Trogon) be heard just as a party of hunters beach their canoes with the intention of scouring a nearby hill-side

[28] Thus, for example, although all of the men of Rumah Nyala were familiar with the cry of the *embuas*, a number of them had never clearly seen this bird. For this reason the skin of the *embuas* which I had with me in 1957–1958 attracted very great interest.

for game, this is taken as a favourable omen foretelling a good catch that will bring happiness to the hunters. Again, a *nendak* (White-rumped Shama) heard as a travelling party is setting out is likewise an auspicious *jeritan*—an indication that no harm will befall the travellers. On the other hand, should the alarm cry of the *ketupong* (Rufous Piculet) be heard as the felling of the forest (i.e. to make a swidden) is about to begin this is highly inauspicious, a *jeritan mantap*, warning those concerned that if they continue with the felling one of their number will seriously wound himself with an axe. The only course in such circumstances is to abandon felling for the day and return to the longhouse.[29]

On other occasions the relevance of an augury may be much more difficult to divine, as, for example, when a cry is heard by a group of people who are gossiping idly in the gallery (*ruai*) of a longhouse. Considerable conjecture will often follow the hearing of such an augury without any clear consensus of opinion being reached as to its significance. An augury of this kind (in contrast to a *jeritan*) lacks power of constraint for the simple reason that its precise bearing on human action is uncertain. In these circumstances all that can be done is to ' wait and see ' ; however, it is usual for any untoward event that does ensue to be at once linked (*post hoc ergo propter hoc*) with the previously undetermined augury.[30]

Quite often an augury will be taken by an individual to refer to his personal intentions—intentions, moreover, which he may not have divulged to others. Such an interpretation is, of course, consistent with the theory of augury, one of the dogmas of which is that the gods know the thoughts of all men. An interesting case illustrating the way in which individuals relate augury to their private purposes occurred during our stay at Rumah Nyala, in the Sungai Sut. On the night of 23rd March, 1950, Sanggau, the son of Nyala (who was the *tuai rumah*, or headman of the community) committed adultery with Unsai, the wife of Nyanggau. On discovering this, Nyanggau slashed and destroyed a loin-cloth and other property belonging to Sanggau. This, in the eyes of all concerned, was justifiable retaliation. Two nights later, during a sudden flood, Nyala's canoe disappeared from its moorings at the river bank.

[29] Although an unfavourable augury compels the abandonment of the intended activity to which it refers, it does not affect other undertakings. For example, an Iban who has encountered an inauspicious *jeritan* at his swidden is entirely free to return to his longhouse and engage in some other kind of work. Thus, while augury results in frequent interruptions to work, it does not lead to such great loss of time as some European observers have imagined.

[30] Cf. Note 15 *supra*. Negative instances (as in most mystical systems) are ignored.

Nyala at once alleged that Nyanggau was responsible, and despite Nyanggau's vehement denials insisted in placing the case before a *pengulu's* court at Kapit. Nyala left for Kapit at dawn on 4th April, hearing on his way a *pangkas kanan* (a Maroon Woodpecker) to his right hand side. On encountering this augury Nyala at once uttered a prayer (*sampi*).[31]

I will win: auspicious augury! weak the jaw, weak the bones of my opponents, incapable of argument as I confront them.
(*Aku manang lagi, badas burong! lemi rang, lemi tulang, enda depat bejako orang lagi laban aku*).

In these words Nyala was ascribing to the augury he had casually encountered a meaningful relevance to his immediate personal situation. This was done, it will be noted, by linking the augury with an imprecation directed against Nyanggau and his supporters.[32] This kind of manipulation of augury to make it serve personal ends is very common among the Iban. Augury can thus be said to provide the Iban with the opportunity for sanctioned wishful-thinking, and this, I would suggest, is a principal reason for its popularity.[33]

Expert augurs, indeed, view as one of the highest developments of their art the ritual manipulation of an augury to make it serve wished-for human ends. The term applied to this process is *ngintu*, meaning literally " to take care of something ". Ritual manipulation is resorted to when the import of an augury may be given differing interpretations. An example will make this clear. The *beragai*, as already noted, has a brilliantly red breast and a laughing cry. When a *beragai* enters a longhouse, as it sometimes will, this is an augury the urgency of which cannot be ignored. It is possible, however, to interpret the event in two very different ways: it may be seen as foretelling good fortune (that is its laughing cry and the brightness of the bird's breast may be taken as symbolical of future happiness and fame); or alternatively it may be looked on as an

[31] It so happened that unbeknown to Nyala another member of the longhouse, while in the forest nearby, overheard the utterance of this prayer and later recounted it to me. It becomes, therefore, a most interesting instance of the private use of augury.

[32] As can be seen in the words of his *sampi*, it was Nyala's intention in conducting his case to make the fullest use of his status as an elder and headman. His tort was dismissed, however, on grounds of insufficient evidence. This outcome was later attributed to the fact that Nyanggau, on his way to the court, had himself heard two auguries (a *pangkas kanan* and a *beragai kanan*) which had been more potent than those encountered by Nyala!

[33] Sanctioned wishful-thinking: the socially approved acceptance of the thought that conditions are as an individual would wish them to be, and the rejection of the thought that they are otherwise. (Cf. Drever, 1952).

omen of disaster, foreboding the burning down of the longhouse (the bird's red feathers being symbolical of flames). One reaction to this situation is to fear the worst and abandon the longhouse for a period in the hope that the fire of which warning has been given will not occur. By ritual manipulation, some augurs assert, there can be a much more desirable outcome. This is achieved by making offerings and sacrifices to the augural bird concerned, and in the prayers that accompany these rites accepting with gratitude the blessings foretold. In this manner, it is said, a dubious augury can be turned into an entirely auspicious one.

Deliberate avoidance of possibly bad auguries is also common practice. Thus, whenever a group of Iban are engaged in an undertaking of consequence (for example, moving to a new longhouse, fetching a bride, or performing a *padi* ritual) they take care to see that certain of their number—usually two or three girls—are equipped with bronze gongs which are beaten without cease until the business in hand is concluded. Whether from a party travelling through the forest, or a canoe gliding down a river, the rhythmical throb of gongs is a familiar sound in Iban country. Its purpose is to forestall the hearing of inauspicious omens.[34] Such behaviour may seem flagrantly inconsistent with the basic tenets of augury, but in such cases it is usual for auguries to have been taken in advance and for a series of propitiatory offerings to have been presented to the gods. The attitude is rather that of a man who, having taken good counsel and every safeguard, decides for better or for worse to shut his ears to all further admonition. Augury, then, is far from being an inflexible system unamenable to human regulation.[35]

THE DELIBERATE SEEKING OF AUGURIES

So far the examples I have given have concerned in the main auguries which have been encountered casually. Auguries of this kind, we

[34] Another method sometime adopted (when gongs are not available) is to block the ears with plugs made from leaves.

[35] Augury is also associated with many other ritual practices. For example, it is usual for a visitor to an Iban longhouse to be met at the top of the entry ladder by one of the residents who waves a cock over the visitor's head, and, if the occasion be an important one, recites a prayer and presents him with a bowl of rice wine from which a libation is poured. The purpose of these rites is to cleanse the visitor of the threatening influence of the unfavourable auguries he may have heard on his journey, so safeguarding the ritual well-being of the longhouse.

have seen, are usually related to the purposeful activity being (or about to be) engaged in at the time of observation. I want now to turn to a more important aspect of the practice of augury: the premeditated seeking of augural signs before major undertakings are embarked upon, called by the Iban *beburong*.

It is in this process that the knowledge and experience of an augur are brought most fully into play, for the art of *beburong* lies in the selection of auguries pertinent to the *particular* venture about to be undertaken. The venture before which auguries are commonly sought are numerous and varied: from going to war to the cultivation of *padi*, from the making of distant journeys to the building of a new longhouse. Indeed, any undertaking at all may, at the discretion of those involved, be held to warrant the formal seeking of auguries. Although standard procedures are recognized, it is usual for each case to be fully discussed and any special feature it possesses to be taken into account. The problem facing the experts who join in such a discussion is the selection of those auguries best calculated to make auspicious a particular undertaking. In making this selection the symbolic significance of the various augural birds is again of prime concern, but weight is also given to permutations of auguries which, in the experience of the experts, have proved efficacious on comparable past occasions.[36] Despite a general acceptance of the meaning of augural signs it is not unusual, therefore, for the recommendations of one augur to differ from those of another. This, it may be noted, adds greatly to the fascination of augury for those who practice it: for the Iban debating at length the relative merits of differing augural interpretations is an honoured and favourite pastime.

To illustrate the kind of recommendations made by an augur let me cite two examples. The first is for a *bejalai kampong*, an expedition to the forests of the interior of Borneo.

Auguries to be sought (in order as shown)	*Signification*[37]	*Explanatory Notes*
1. *nendak kanan* (White-rumped Shama—to the right)	to ensure that kin left in the longhouse remain in good health and suffer no hurt (*mri kaban di rumah chelap nadai ngawa*)	the *nendak* is known as *burong chelap*, lit. cool bird; coolness being symbolical of good health

[36] In making their interpretations Iban augurs also give the fullest consideration to precedent. The fact that many different permutations are possible adds greatly to the complexity of Iban augury.

[37] I.E. Signification according to Iban testimony; the explanatory notes are mine.

Auguries to be sought (in order as shown)	*Signification*	*Explanatory Notes*
2. *ketupong kanan* (Rufous Piculet—to the right)	to ensure that during the course of the expedition its members be free from trouble (*mri kitai lama nadai ngawa*)	the *ketupong* as the most senior (*tuai*) of the augural birds is looked upon as a guardian of the welfare of men (*burong ngimpun kitai*)
3. *bejampong kanan* (Crested Jay—to the right)	to ensure that the members of the expedition retain their strength during their prolonged stay in the forests (*mri kitai kring nguan kampong se lama lama*)	the *bejampong* in its movements symbolises swiftness and strength
4. *beragai kanan* (Scarlet-rumped Trogon—to the right)	to ensure gladness of heart; i.e. at the successful outcome of the expedition (*mri ati kitai gaga ila, bulih utai*)	the *beragai* with its laughing call is associated with gladness and success
5. *embuas kanan* (Banded Kingfisher—to the right)	to ensure that the expedition return with much property (e.g. jungle produce, bezoar stones, hornbill feathers, etc. (*mri kitai bulih utai*)	the *embuas* is called a *burong brat* (heavy bird) and is associated with prolific success

My second example is of auguries used in warfare (*burong enggau ngayau*).

Auguries to be sought (in order as shown)	*Signification*	*Explanatory Notes*
1. *papau kiba* (Diard's Trogon—on the left)	to blind the eyes of the enemy; to ensure that enemy bullets miss their mark (*mri munsoh rabun, leka sinapang enda kena kitai*	the *papau* is known as *burong rabun* (lit. bird difficult to see)
2. *beragai kanan* (Scarlet-rumped Trogon—on the right)	to ensure gladness, i.e. at the taking of enemy heads and the carrying away of loot (*mri gaga, bulih munsoh bulih tajau*)	the laughing cry of the *beragai* foretells gladness
3. *bejampong kanan* (Crested Jay—on the right)	to ensure swiftness and agility in battle (*mri kitai gegar*)	the movements of the *bejampong* are swift and agile

This combination of auguries—*papau*, *beragai* and *bejampong*—was employed by an augur well known to me (who shall be nameless) when he participated in the storming of a Japanese stronghold at Song, on the Rajang river, in 1945. He crossed the Rajang in the face of Japanese machine-gun fire, and survived the attack that followed without the slightest wound, returning to the Baleh with a trophy head (*antu pala*) and four large jars (*tajau*) looted from the Song bazaar. This good fortune he attributes to the auguries that made auspicious so hazardous an occasion.

If the venture be an important one (e.g. a major expedition) it is usual for the seeking of auguries to be conducted from a specially selected site. *Adat* ordains that it should be on the true right bank of a river, above the reach of floods, and at a distance from human habitation ; ideally, it should also be reasonably near to primeval forest. At this site a thatched shelter (*langkau burong*, or augury hut) is erected in which the members of the expedition live, spending their spare time in hunting and fishing, and in preparing equipment and supplies for the journey that lies ahead ; again, a *langkau burong* is a favourite place for Iban males to have themselves tattooed.

The actual seeking of auguries is ideally done by a *tuai burong*, or qualified augur. In the absence of such an expert, however, the task may be undertaken by any experienced individual ; in most cases he will be one of the leaders of the expedition, for among the Iban skill in augury is one of the recognized attributes of a leader. Normally an augur will rise some time before dawn to walk in a chosen tract of forest. When a desired augury is heard (at this hour it is almost always the cry of a bird) he utters a few dedicatory words, and with his bush knife cuts a branch from a nearby sapling. This branch, termed a *kayu burong* (augural stick)[38] is taken as a material

[38] The *kayu burong* an augur collects are important ritual objects. They are looked upon as talismans in which the potency of an augury is stored, and many Iban assert that *kayu burong* are even more important than charms given by spirits (*lebis ari pengaroh antu*). The kind of use to which they are put is well illustrated in the following episode. While returning from his swidden on the late afternoon of 10th February 1950, Daga, a man of Rumah Nyala, heard the cry of a *papau* (Diard's Trogon). A Diard's Trogon if heard towards dusk is given the name of *papau malam* (lit. trogon of the night), and is believed to have the special power of ' blinding ' evil spirits. On hearing his *papau malam* Daga at once cut a *kayu burong*, ritually shutting his eyes as he did so, and uttered a prayer :

" This augural stick of the trogon of the night will cause us not to be seen by evil spirits."

(*Tu kayu burong papau malam, ngambi antu enda meda kami.*)

On Daga's arrival at his farm house (*dampa*), pieces of the augural stick (which had now become an *engkarabun*, or ' blinder ') were tied to each end of the house and at the foot of its entry ladder, so making all of its inhabitants invisible to the malevolent spirits of the surrounding forest. Another term for an augural stick is *paong burong*.

symbol of the augury he has heard. And so, morning by morning, in the cool green of the forest an augur listens for the cries that will make auspicious the venture he and his companions have planned.[39]

THE ROLE OF AUGUR

The seeking of auguries for travelling parties and the like is a common practice: similarly, any Iban, should he wish, may take auguries for his own family. It often happens, however, that auguries have to be sought for a whole community, and this important task falls to the community's *tuai burong*, or augur, whose role is one of great ritual and social importance.

The basic units of Iban society are its *bilek* families, there being no large scale corporate kin groups such as lineages or clans.[40] A longhouse community consists of a federation of these independent families, whose privately owned apartments have been built side by side to produce a single attenuated structure. Within the longhouse all *bilek* families are socially at parity with one another, there being an absence of any kind of hierarchical organization. Further, a longhouse holds virtually no property in communal ownership, nor does the community, as such, engage in corporate economic activity. Nonetheless, membership of a longhouse does impose upon a *bilek* family many duties and obligations for it is universally accepted that the well-being of a community is dependent on the proper maintenance of its ritual state, and for this all its *bilek* families are in part responsible. Primary responsibility rests, however, with the *tuai burong* of the longhouse.

Another name for a *tuai burong* is *pun rumah*, meaning house founder, a name which points to a most important aspect of the augur's traditional role. The subsistence economy of the Ulu Ai Iban is based on swidden agriculture and in former times communities were accustomed to change their place of abode every ten years or so as fresh tracts of virgin land were brought under cultivation.

[39] One of the hazards of seeking a pre-decided sequence of auguries is that the augur, in the course of his task, may casually encounter a markedly inauspicious omen—say the alarm cry of a *ketupong*. Such an unwanted augury is called *burong selit* (lit. inserted augury), and is commonly taken as a warning that the entire sequence should be sought anew. Because of interruptions of this kind and delays in encountering particular auguries the process of *beburong* will sometimes last for several weeks.

[40] Cf. Note 3 *supra*.

The founding of a new house, when this is decided upon, is accompanied by protracted rites, the performance of which is always under the supervision of a recognized *tuai burong*. In addition to a knowledge of augury, such a *tuai burong* also possesses an assortment of charms, known as *penchelap rumah*, which are believed to ensure that a longhouse is kept in a ritually "cool" and benign state. Throughout the course of the house founding rites the *tuai burong* listens for the required auguries and collects augural sticks which are fastened to various parts of the site and structure; moreover, the first post to be erected is that of the *tuai burong* (as house founder) whose apartment becomes the ritual centre of the longhouse.[41]

Sometimes the members of a new community will decide to hold a *gawai engkune*—a ritual in which the augural gods play a prominent part. A temporary shrine (*ranyai*) containing offerings, augural sticks, charms, and pieces of wood (termed *engkune*), is erected on the gallery of the longhouse by the *tuai burong*. For one whole night a party of four men skilled in the task parade around the shrine, chanting an invocation (*timang*) to the gods. In poetical words they describe the arrival of the augural gods, who, at the behest of the Iban, build for them a splendid new house. Especially prominent is *Apai Nendak* (the father of the augural god Nendak) who brings most of the materials for the house and furnishes it with charms potent against all manner of evils. The gods, it is believed, enter the shrine charging the objects stored there with supernatural qualities. To conclude the ritual the shrine is dismantled and its contents shared out by the *tuai burong*; to a representative of each *bilek* he hands an augural stick from the shrine, uttering a prayer (*sampi*) as he does so[42]:

> May these hallowed augural sticks, which I now hand out, protect and guard our longhouse, so that free from all harm, from all sickness and disorder, we may dwell in coolness and shade, in happiness and health, for ever.
>
> (*O aku tu bedua kayu paong burong ngibun kami se rumah, ngambi kami enda tabin, enda bebirin, chelap lindap, grai nyamai, se lama lama.*)

---

[41] Further elaborate rites mark first entry into a new longhouse, culminating in the gathering of the whole community on the gallery (*ruai*) of the *tuai burong*. After offerings (*bedara*) have been made, the *tuai burong* waves a cock over the heads of the assembled throng and utters a consecratory prayer. The cock is then sacrificed and some of its blood smeared on the foreheads of all the men, women and children present. During the next three days, no person may leave the immediate precincts of the longhouse, lest by encountering a bad augury he jeopardizes the laboriously contrived state of ritual concord of the new community.

[42] The pieces of wood from the shrine are also shared out for preservation, as symbols of the materials used in the house built by the gods, which is thought of as being mystically fused with the very timbers of the Ibans' own longhouse.

On the completion of these inaugural rites a *tuai burong* becomes specifically responsible for the maintenance of the ritual state of the community. Thus, he is entitled, under Iban *adat*, to fine (*ukum*) individuals and families who have committed any act ritually offensive to the community: again, any family leaving the longhouse must present to its *tuai burong* a quittance payment (*pemali rumah*) as a safeguard against possibly undesirable consequences.[43] It is usual for these fines and payments to include a fowl (or pig), which is sacrificed by the *tuai burong* (should he consider this warranted) on behalf of the community. On especially important occasions (as, for example, at the commencement of the agricultural year, or before a series of *gawai*) a *tuai burong* will act for all his *anembiak* (house members), distributing augural sticks to all those who require them. He is also available for consultation (in matters relating to ritual and augury) by any family, and from time to time organizes protective rites (*gawai sukol*) for the community as a whole.

To become a *tuai burong* a man needs more than a formal knowledge of augury. A true augur, in Iban eyes, will also have undergone a dream experience, divinely sanctioning his vocation. The form which the dream takes is culturally standardized, and closely parallels the myth of Siu, to which reference was made earlier in this chapter. In his dream (*mimpi*) the dreamer after a long journey approaches a strange longhouse which he is invited to enter. He discovers it to be the abode of Singalang Burong, who is discoursing on augury to a large assembly of Iban *tuai burong*. Later, Singalang Burong turns to the dreamer, who has joined the assembly, telling him that having had this divine instruction he may henceforward practice the art of augury. On awakening, the dreamer prepares offerings to Singalang Burong and the augural gods, and after presenting these on the gallery of the longhouse relates his dream of the night before, so achieving public recognition of his new-found status. This recognition does not mean that a man at once becomes a longhouse augur, but it is an important pre-requisite. For the position of *tuai burong* there is no rigid dogma of succession, any suitably qualified male cognate, given popular support, may succeed.

In the absence of hereditary chieftainship the position of *tuai burong* (which was to be found in every longhouse) was of the greatest

[43] It is likewise usual for a *tuai burong* to be presented with a small share of the fine that marks the settlement of a tort. This is a safeguard against the ritual concord of the longhouse being adversely affected by the bitter quarrelling that frequently accompanies the hearing of such cases.

importance in ancient Iban society. Although primarily a ritual figure, a *tuai burong* was also the main custodian of *adat*, or customary law in the community, and so exercised a crucial regulatory function in a society which otherwise lacked institutionalized political authority.[44] Iban augury thus provides us with an interesting example of a ritual institution assuming jural and political significance in a cognatic and acephalous society.

CONCLUDING COMMENTS

In the absence of documentary and archaeological evidence no conclusions can be reached concerning the origins of Iban augury. What can be said, however, is that augury with its pervasive importance in Iban culture, has the appearance of being an institution of considerable antiquity.[45] Again, all of the augural birds recognized by the Iban have a Malaysian distribution, and so the Iban may conceivably have possessed a system of augury prior to their coming to Borneo.[46] One possibility is that augury may have been introduced to Malaysia by Indian traders and settlers, who in turn may have derived it from ancient Greeks. Alternatively, augury could well be of more local origin, for in South-east Asia there is evidence of ritual preoccupation with birds dating from at least the Dongson culture of the Bronze Age.[47]

Concern with the significance of the behaviour of birds is not

[44] It is true that there were also war leaders (*pun ngayau*) who often exercised widespread influence within the tribe; but this influence was essentially personal. The positions of augur and war leader, of former days, have now been superseded by the positions of *tuai rumah* (house headman) and *pengulu* (district leader). These new offices were introduced during the reign of Rajah Sir Charles Brooke, and are recognized by the present Government of Sarawak. The position of augur has persisted, however, in almost all traditional Iban communities. In some longhouses the positions of *tuai rumah* and *tuai burong* are held by the same man; in others there are two separate officiants.

[45] Cf. Note 6 *supra*. It is interesting to note that augury is one of the ritual institutions of the Iban which survives despite marked general cultural change. In the Second Division of Sarawak I discovered communities whose members had abandoned traditional Iban religion, but who still paid attention to bird omens; however, the divine character of augury had been forgotten and superstitious belief taken its place.

[46] There are linguistic and cultural reasons to suggest that the Iban are relatively recent arrivals in Borneo. Further research (particularly archaeological) is required before a chronology can be established.

[47] For a recent discussion of the possible religious significance of the bird figures depicted on the bronze drums of the Dongson culture, see Wales (1957).

difficult to account for in a culture in which there are sky gods, for the skies become the natural region to look to for signs divinely revealed. And granted this situation, the association of the Brahminy Kite with the high god Singalang Burong (as of the eagle with Zeus, Horus and Vishnu) is understandable. In contrast, the bird forms taken by the seven augural gods of the Iban are, at first sight, puzzling in their apparent insignificance. Closer examination, however, shows that the seven birds concerned do possess a range of characters, which—symbolically interpreted—apply to most facets of human behaviour. In this sense, the augural birds of the Iban have proved adequate to the task that men have imposed upon them.

This leads me to an hypothesis—basically sociological—concerning augury, which I would like to note briefly in concluding this chapter.[48] Human behaviour is essentially purposive. In augury, as in other comparable systems of divination, we have, I would suggest, an extension of this notion of purpose to animal species, so that their behaviour in the presence of man and in respect of man is treated as though it were purposive in human terms. This attitude, I would contend, is one which would arise naturally from primitive man's experience as a member of society: the kind of thinking found in augury is fundamentally an extension of the way in which man thinks about his fellows. It is an attitude, interestingly enough, traces of which survived in Western Europe until a century and a half ago in the anthropomorphic interpretations of the great naturalist de Buffon and his annotators. That birds (and other animals) have purposes and ways of their own greatly dissimilar to those of man is a more recent realization, and one still in process of exploration in the researches of students of animal behaviour like Lorenz, Lack and Tinbergen.

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[48] A fuller presentation of this hypothesis is not possible because of restrictions of space. This chapter indeed, presents no more than a summary account of Iban augury. I hope to deal with the subject in more detail in other publications.

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CHAPTER 7

A NOTE ON THE GAWAI KENYALANG, OR HORNBILL RITUAL OF THE IBAN OF SARAWAK

by

J. D. FREEMAN, Ph.D.(Cantab)

The Rhinoceros Hornbill (*Buceros rhinoceros*) with its large body, powerful wings, handsome tail feathers, long ivory-white bill, massive red and yellow casque and raucous cry is among the most impressive birds inhabiting the submontane forests of Borneo. It is not surprising that the Iban (or Sea Dayaks), a proto-Malay people who inhabit these same forests, have made the carved image of a Rhinoceros Hornbill, or *kenyalang*, the centrepiece of one of their major rituals.

The Rhinoceros Hornbill, however, is not sacred as are the augural birds of the Iban which I have discussed elsewhere in this volume. Indeed, the Hornbill is commonly hunted (and eaten), its striking white tail feathers with their black subterminal bands being much sought after (as are the beautiful feathers of the Great Argus) for decorating the helmet and other ceremonial accoutrements of a warrior. Occasionally, it is true, individual families recognize prohibitions (*pemali*) relating to the Rhinoceros Hornbill, but in general the bird, as such, has no ritual significance. What are significant in ritual terms are the carved wooden icons, formalized representations of the Rhinoceros Hornbill, which are among the most striking objects of Iban culture.

The Iban are a polytheistic people and their major rituals, or *gawai*, have as a central feature the invocation of gods who are believed to descend from the skies and dwell for a time among men. The most important of these *gawai* are those to which Singalang Burong, the god of war, is summoned and which have as their theme head-hunting and warfare. In the invocations (*timang*) of these *gawai* (the chanting of which takes three to four days and nights) an attack on enemy territory, made with the assistance of Singalang Burong, is graphically described in mytho-poetical

language. The intention of this attack is the killing of the souls (*semengat*) of existing enemies so ensuring victory when an actual attack comes to be made upon them. In former times the performance of such *gawai* was an essential accompaniment of head-hunting; today they are still staged by men seeking social prestige. A principal embellishment of these head-hunting *gawai* is the hornbill ritual (*gawai kenyalang*), in which a hornbill icon is mystically endowed with life and sent to attack in spirit form the habitations, possessions and persons of enemy tribesmen.

The rites which accompany the performance of a hornbill ritual are protracted demanding (in Iban terms) considerable resources, and the successful completion of a *gawai kenyalang* brings a man wide acclaim. A hornbill icon is made from the green wood of the *plai* (*Alstonia* sp.), and the felling of the tree and the carving that immediately follows are part of a special ritual known as *gawai ningkoh*. The fresh, ungrained wood of the *plai*, which cuts almost like wax, is an admirable medium and enables Iban craftsmen to create striking plastic forms. There is marked variation in style from tribe to tribe: from the simple and beautiful shapes devised by the sub-coastal Balau and Saribas to the intricately ornate decoration of the Ulu Ai tribes of the head-waters. Nowhere, however, is naturalistic representation attempted; instead, the carvers (who are always men) accentuate aspects of the hornbill's appearance to produce aesthetically pleasing shapes and symbols. Thus, almost everywhere the bill is elongated in a delicate curve and the upturned casque transformed into a sweeping spiral. Among the Ulu Ai Iban the ingenuity of the artist is given free scope, and above the arching tail of his *kenyalang* he carves small allegoric figures which are meant to amuse as well as instruct and adorn. For example, a *kenyalang* carved by an Iban of the Baleh region a few years after the great Pacific war was decorated with a Sarawak Ranger astride an elephant, pointing his rifle threateningly at a Japanese soldier, and so protecting a nomadic Punan who crouched behind the elephant grasping its tail!

PLATE 19: Decorating the carved hornbill at the *gawai kenyalang*, Rumah Penghulu Ningkan, Ulu Ai, Second Division.

(*Printed at the Government Press, Kuching*).

After an icon has been carved (some of them are quite large, measuring as much as seven feet in length by three and a half feet in height) it is carefully stored in the longhouse of its owner to await (sometimes for a year or more) the *gawai* with which it is to be associated. An important part of the preparations for this *gawai* is the fashioning of the tapering pole (up to fifty feet in length) on top of which the hornbill icon is to be erected. And during the few days before the *gawai* begins the icon itself is painted.

All is now ready for the rite in which the *kenyalang* is brought to life. The icon is carried in excited procession, given rice wine (*tuak*) from a decorated bamboo container by its proud owner, and then mounted on a carved base which has been set up on the open verandah (*tanju*) of the longhouse. This done, further offerings (*piring*) are made and the carved tongue of the *kenyalang* cut free from the lower bill to which it has until this moment been attached. A prayer (*sampi*) is then uttered, and by these ritual acts the icon, so it is believed, takes on a spiritual existence of its own.

From this point onwards the *kenyalang* becomes the centre of everyone's attention. Young girls annoint it with sweet-scented oils and bedeck it with flowers, multi-coloured beads and tiny hawk bells ; a wonderfully resplendent object it is paraded up and down the great gallery (*ruai*) of the longhouse so that guests may listen to songs sung in its praise and present it with further adornments. Later, ritual experts (*lemambang*) carry the *kenyalang* into domestic apartments (*bilek*) where, on its behalf, they chant verses in which many of the traditional moral values of Iban society are given pointed expression ; in particular, the members of each family are reminded of their various duties and told that they should always attend to them without complaint.

This kind of activity (an interesting instance of the expression of moral values in a primitive religion) continues for two days and nights while the manifold rites of the *gawai* proper are proceeded with ; then, soon after Singalang Burong and his attendant gods have been summoned to the longhouse, comes the major undertaking of setting the *kenyalang* on top of its lofty pole, so launching it on its vital journey. With nothing but manual power this is no easy feat and magico-religious rites accompany every stage of the task. Following a final series of offerings the massive pole is shouldered by a score or so of men, carried out on a high staging in front of the longhouse, and its base lowered into the top of the hole which has been dug to receive it. As the *lemembang* chant their *timang* the *kenyalang*, now hung about with further decorations, sacrificial

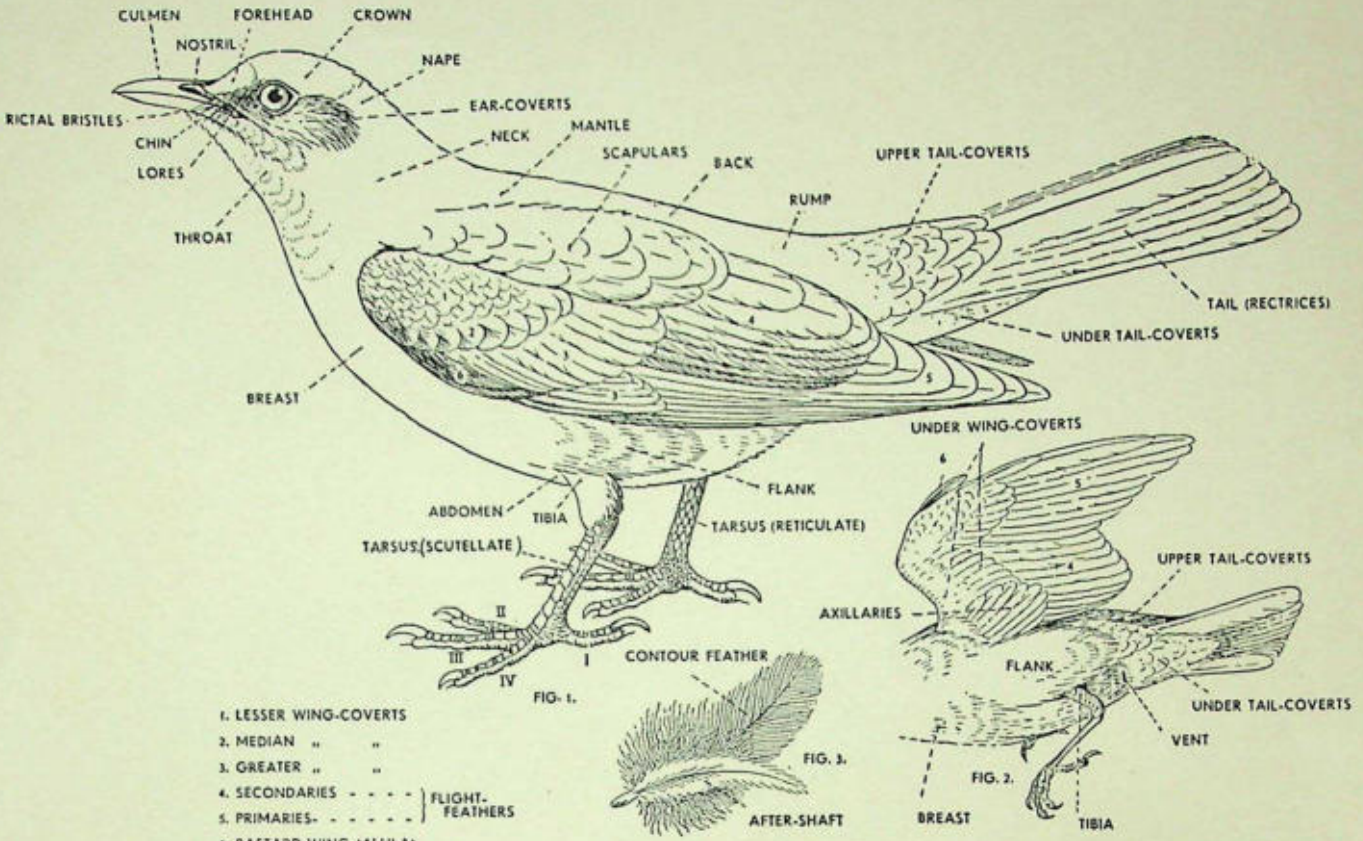
tokens and especially woven ikat banners, is fastened into place, and with shouts of triumph the pole is hauled into an upright position with the icon at its peak facing towards enemy territory.

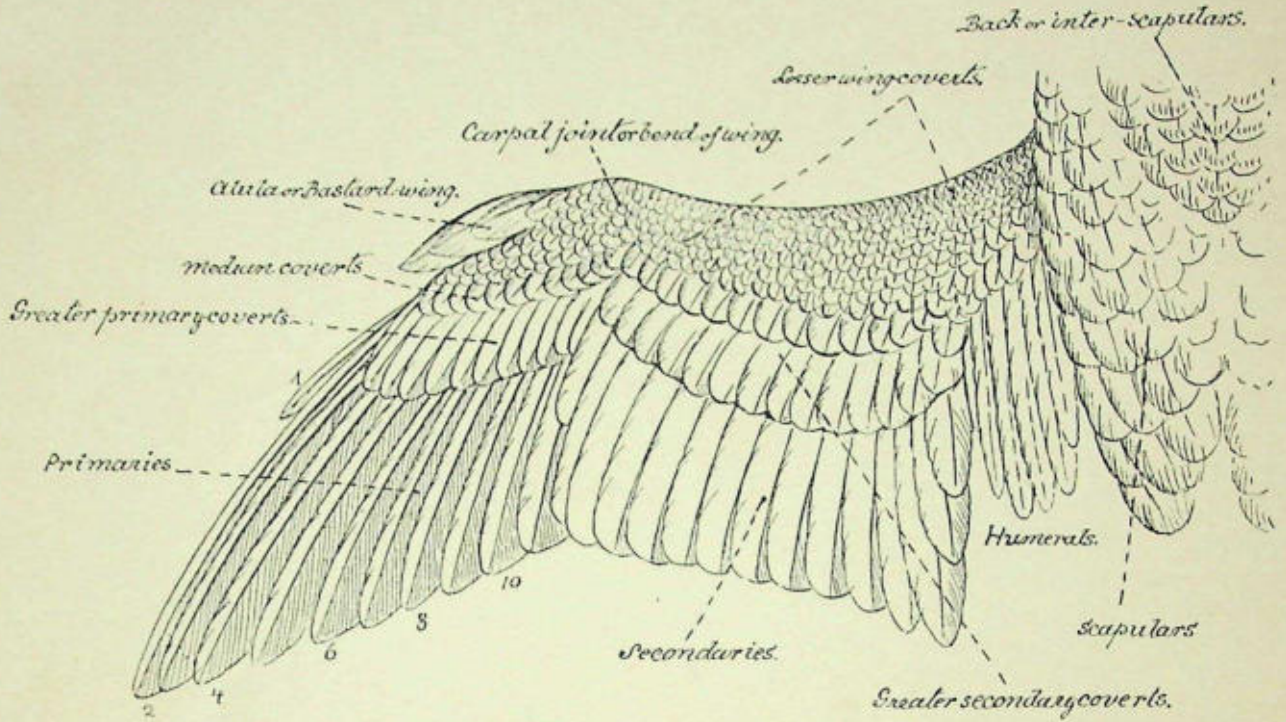
At this moment, say the Iban, the soul-counterpart (*semengat*) of the *kenyalang* detaches itself from the icon and flies straight to the attack for which it has been created. In the chants of the *lemambang* it is described : tearing at the foundations of enemy houses, plundering their property and striking down their warriors.

The Iban assert that the *gawai kenyalang* is an ancient ritual handed down from their remote ancestors. For a bellicose people convinced that all material objects possess soul-counterparts the creation of a spiritual weapon like the *kenyalang* is ingenious tactically—a primitive precursor of the guided missiles of the modern West ! Inasmuch as the Iban had the greatest faith in the efficacy of their hornbill ritual it was of considerable value to them psychologically, as warriors. Until restrained by the Rajahs Brooke the Iban were the most warlike people in Borneo and had inflicted severe defeats on all of the alien tribes they had encountered. Much of their success in warfare they attribute to the efficacy of their *gawai*— of which the hornbill ritual is one of the most notable.

TOPOGRAPHY AND TERMINOLOGY OF A BIRD'S PLUMAGE

(Pp. 104 and 105)


CULMEN
FOREHEAD
CROWN
NOSTRIL
NAPE
EAR-COVERTS
RICTAL BRISTLES
NECK
MANTLE
CHIN
SCAPULARS
BACK
LORES
UPPER TAIL-COVERTS
RUMP
THROAT
TAIL (RECTRICES)
UNDER TAIL-COVERTS
BREAST
UNDER WING-COVERTS
FLANK
ABDOMEN
TIBIA
TARSUS (RETICULATE)
TARSUS (SCUTELLATE)
UPPER TAIL-COVERTS
AXILLARIES
II
III
I
IV
CONTOUR FEATHER
FLANK
UNDER TAIL-COVERTS
VENT
FIG. 1.
FIG. 3.
FIG. 2.
AFTER-SHAFT
BREAST
TIBIA
1. LESSER WING-COVERTS
2. MEDIAN " "
3. GREATER " "
4. SECONDARIES - - - -
5. PRIMARIES - - - - -
FLIGHT-FEATHERS
6. BASTARD-WING (ALULA)


Back or inter-scapulars.
Lesser wing coverts.
Carpal joint or bend of wing.
Ala or Bastard wing.
Median coverts
Greater primary coverts
Primaries
1
2
4
6
8
10
Secondaries.
Humerals.
Scapulars
Greater secondary coverts.

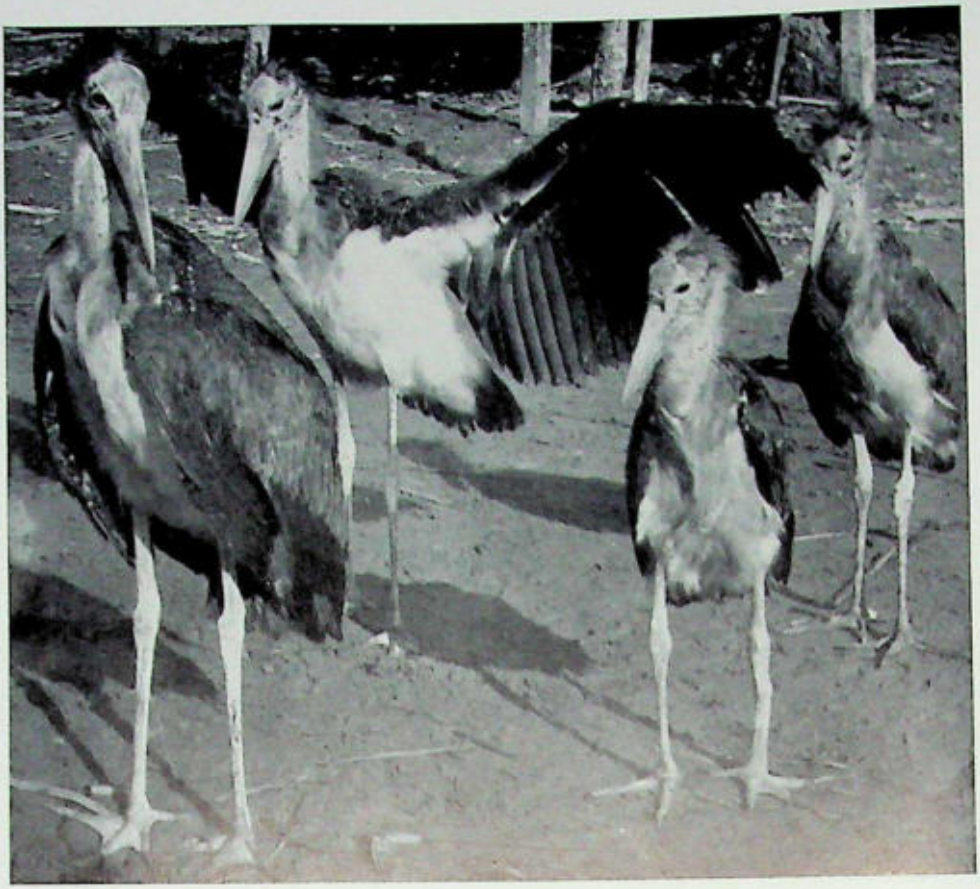
PHOTOGRAPHIC PLATES

BIRDS

Little Green Heron, *Butorides striatus*

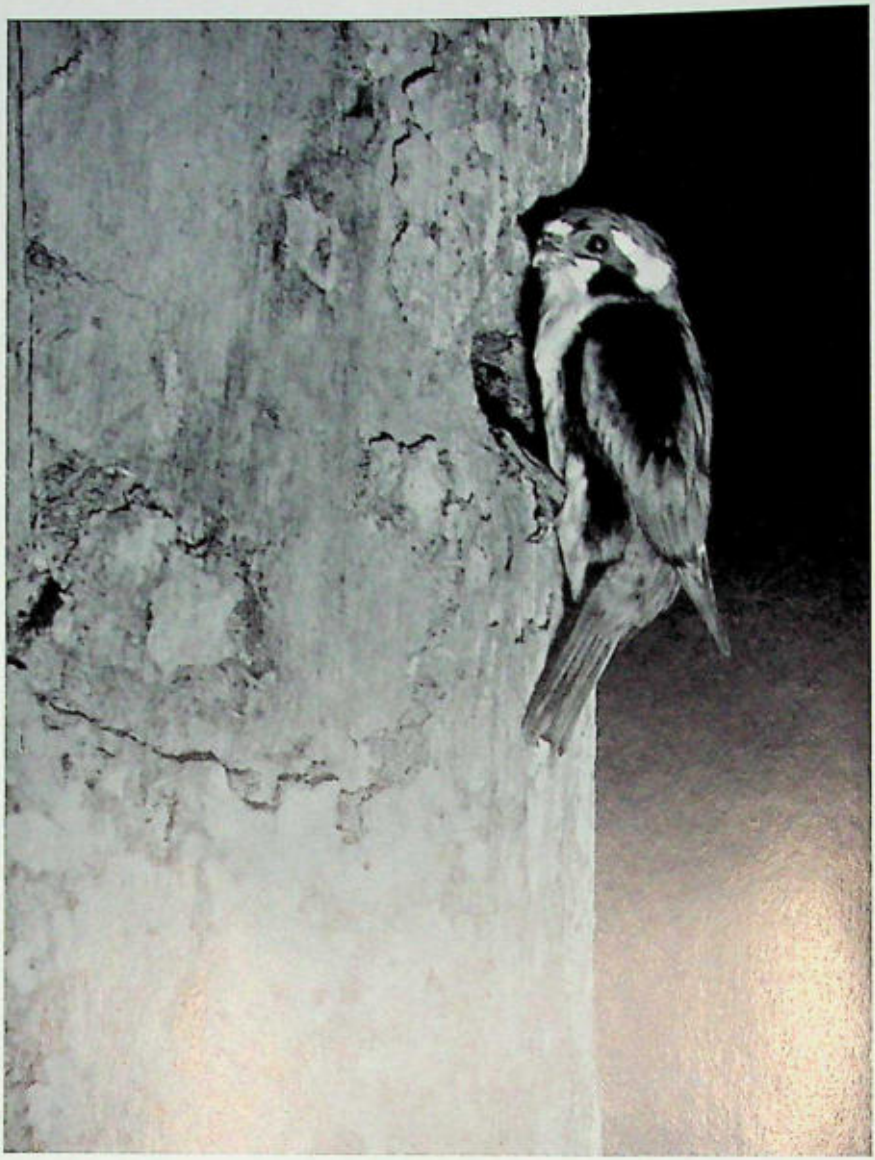
Yellow Bittern, *Ixobrychus sinensis*
The cock bird is shading the young from the heat of the sun

Chestnut Bittern, *Ixobrychus cinnamomeus*



Lesser Adjutant Stork, *Leptoptilos javanicus*

White-bellied Sea Eagle, *Haliaetus leucogaster*



Common Falconet, *Microhierax caerulescens*
Nesting in a hole made by a barbet

Black-naped Tern, *Sterna sumatrana*

(*a*)

(*b*)

(*a*) Common Noddy, *Anous stolidus*
(*b*) White-capped Noddy, *Anous minutus*

Lesser Coucal, *Centropus bengalensis*

(*a*)

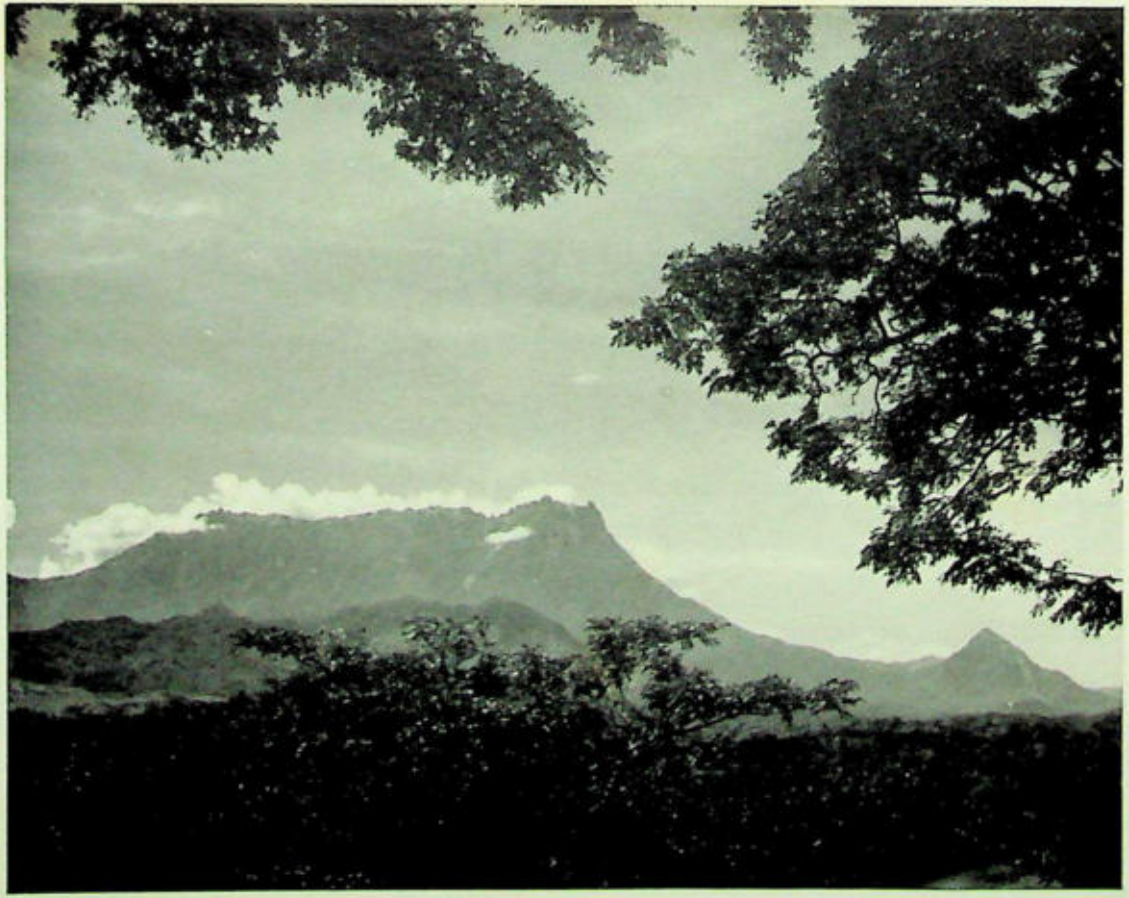
(*b*)

Gould's Frogmouth, *Batrachostomus stellatus*

(*a*) Nest and chick, with adult

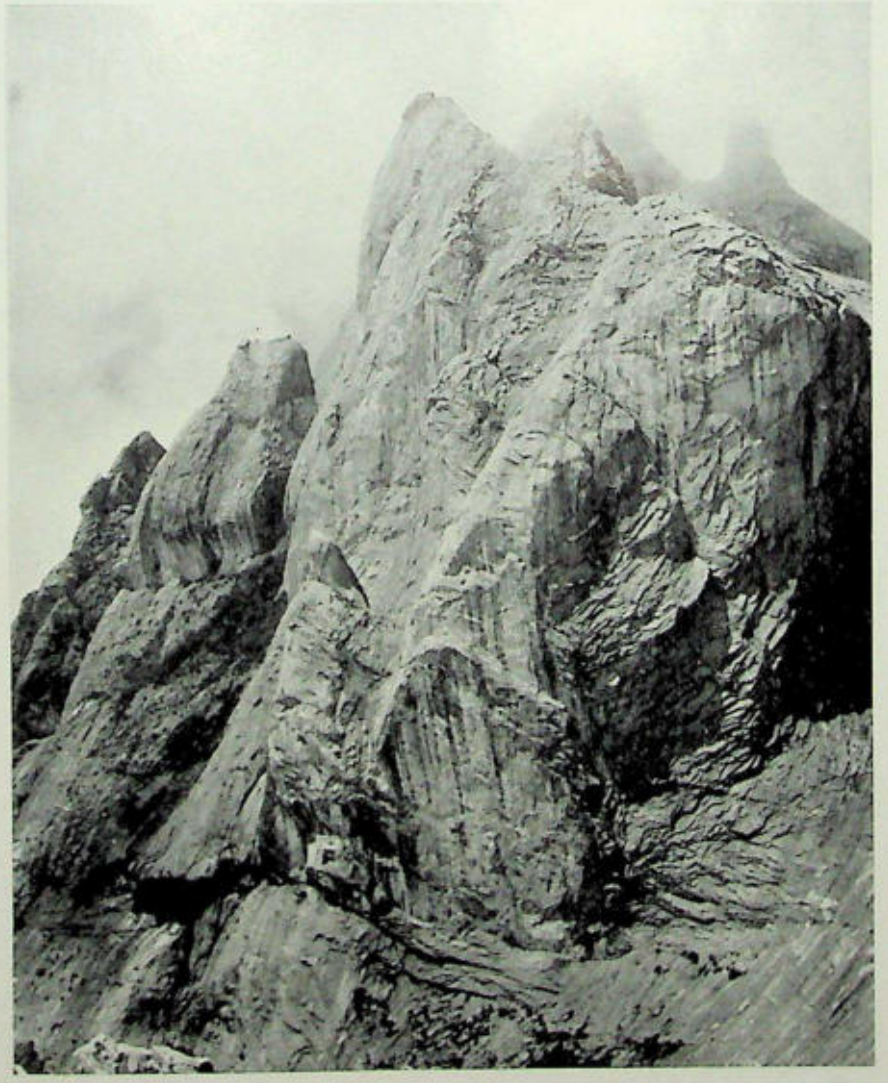
(*b*) Nest and egg

RHINOCEROS HORNBILL

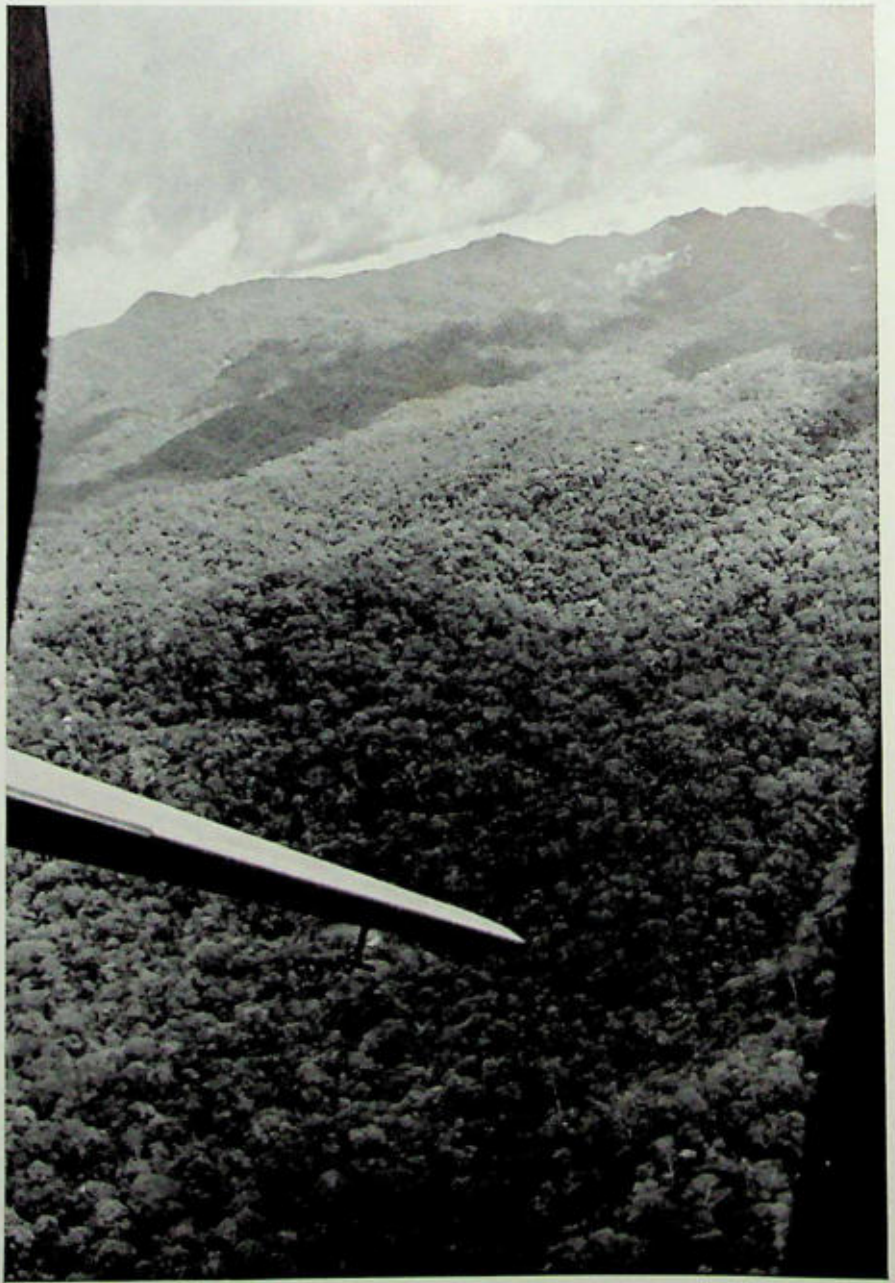


Distant view of Kinabalu from the west

Above the tree-line on Kinabalu, haunt of the Mountain Blackeye

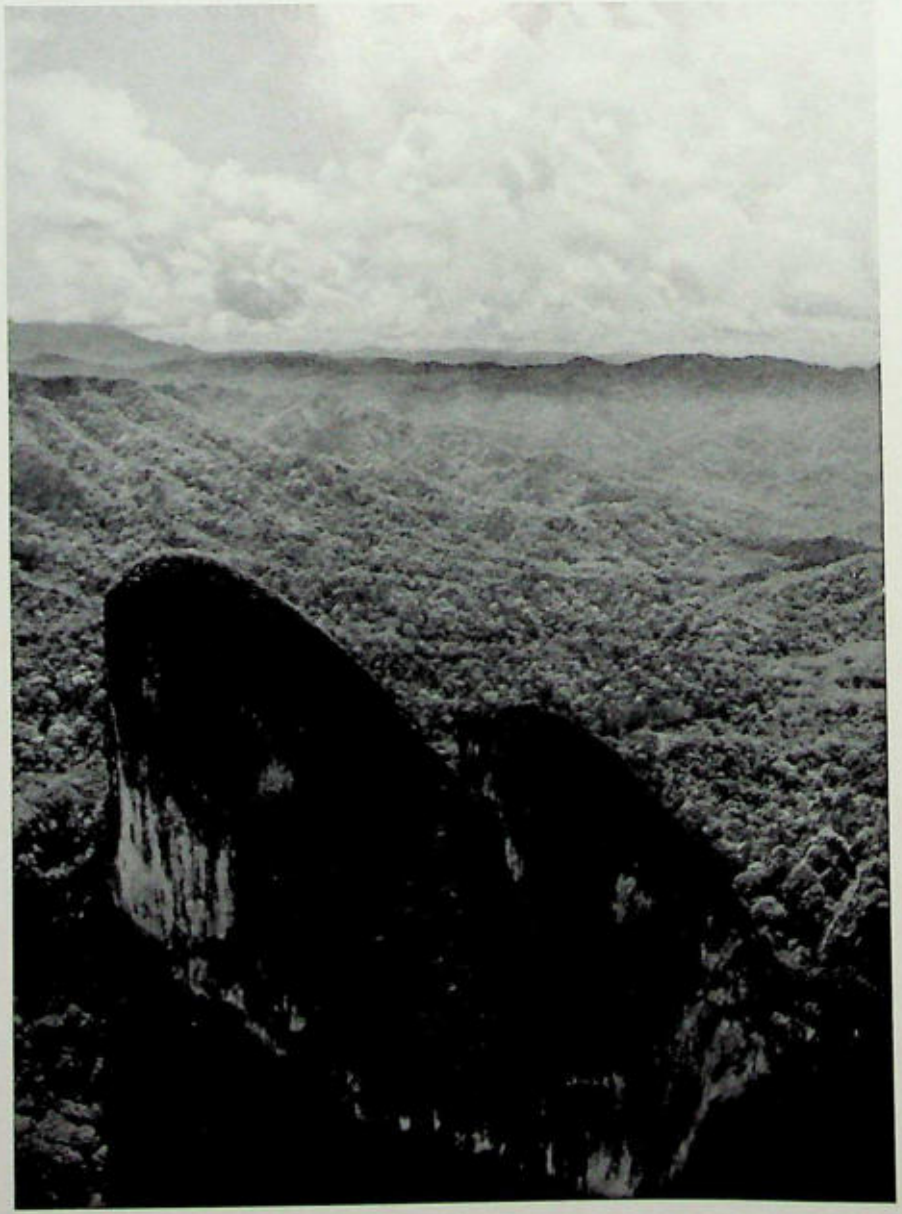


Bare summit rocks of Kinabalu

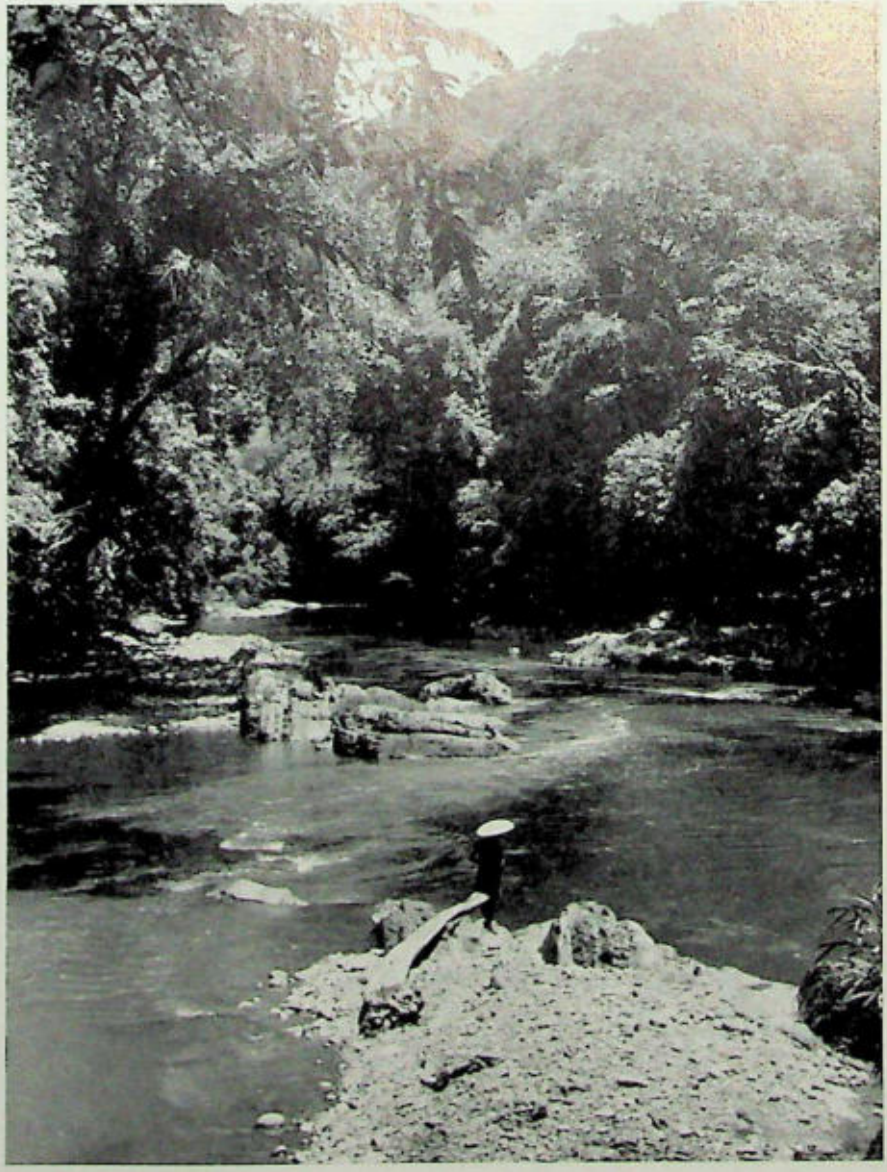


Three-quarters of Borneo looks like this. Primary forest of the Usun Apau Plateau

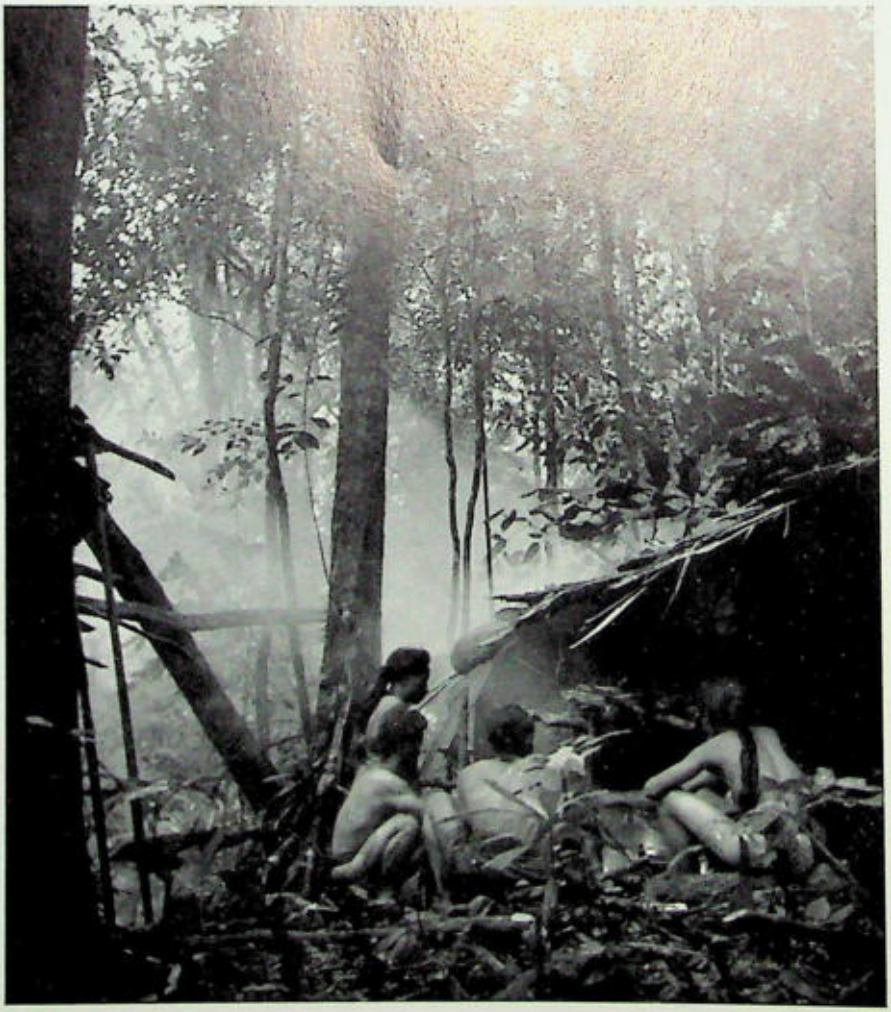
Longhouse in foreground surrounded by typical pattern of secondary forest on bush fallow areas of dry rice shifting cultivation, with some primary forest on the hills. Upper Baram River



Rock peaks like this are rare in Sarawak.
Mountains of the upper Baram River

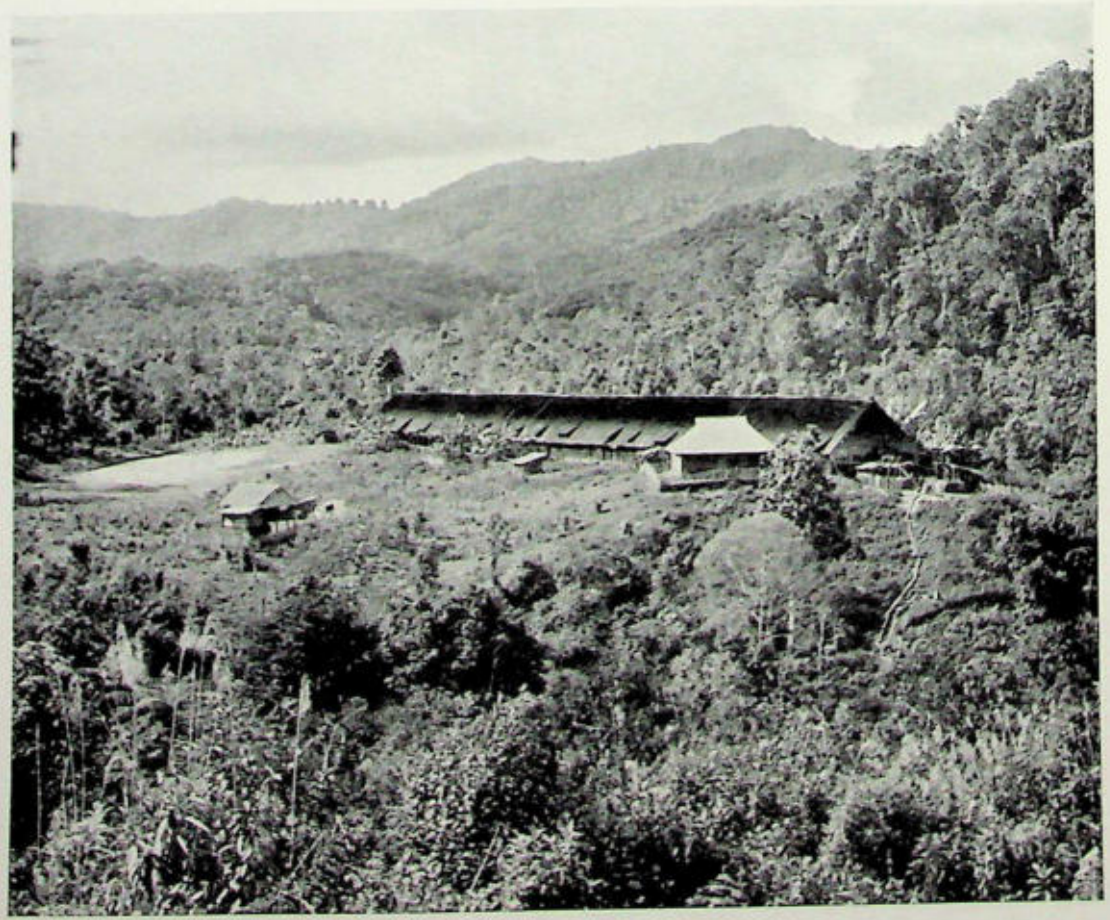


Typical Borneo river scenery. Upper Belaga River



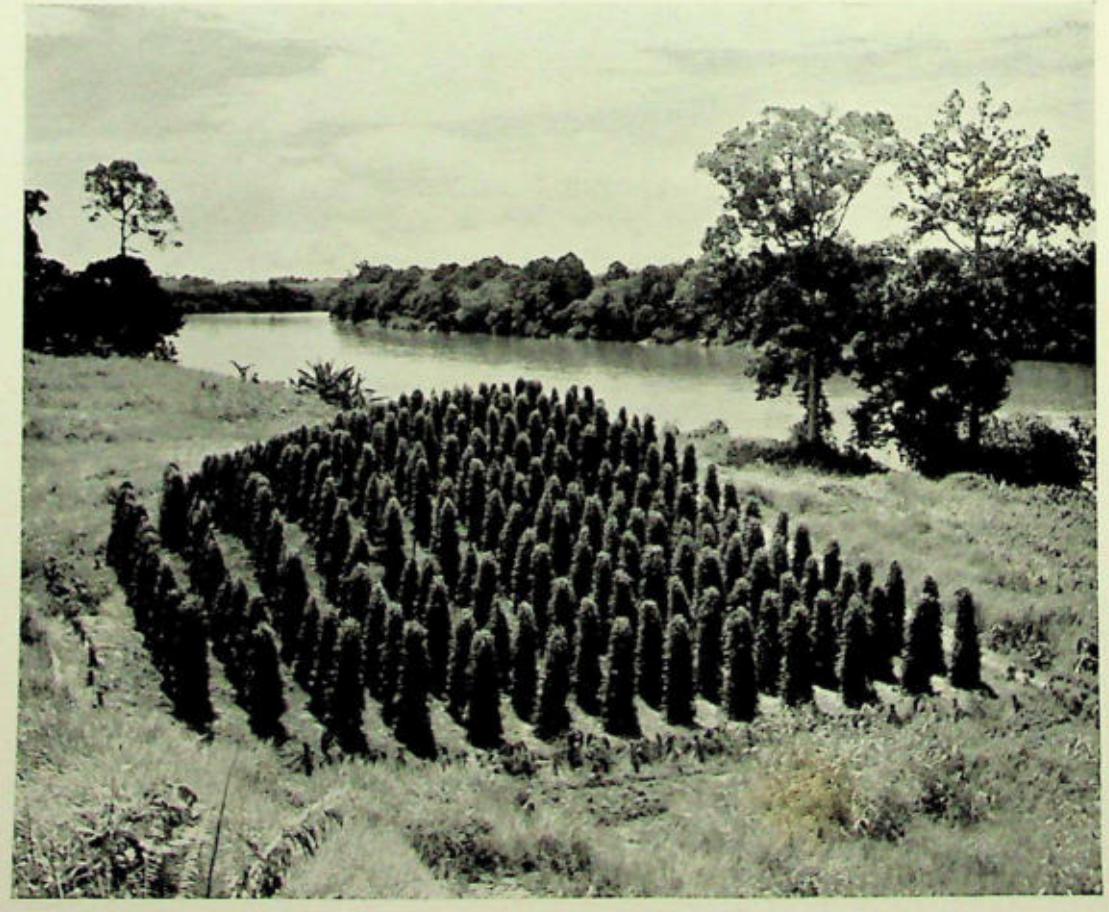
A typical forest camp. On Mt. Sepali, Kanowit district, Sarawak

A Kayan longhouse at Long Sela'an, Baram River

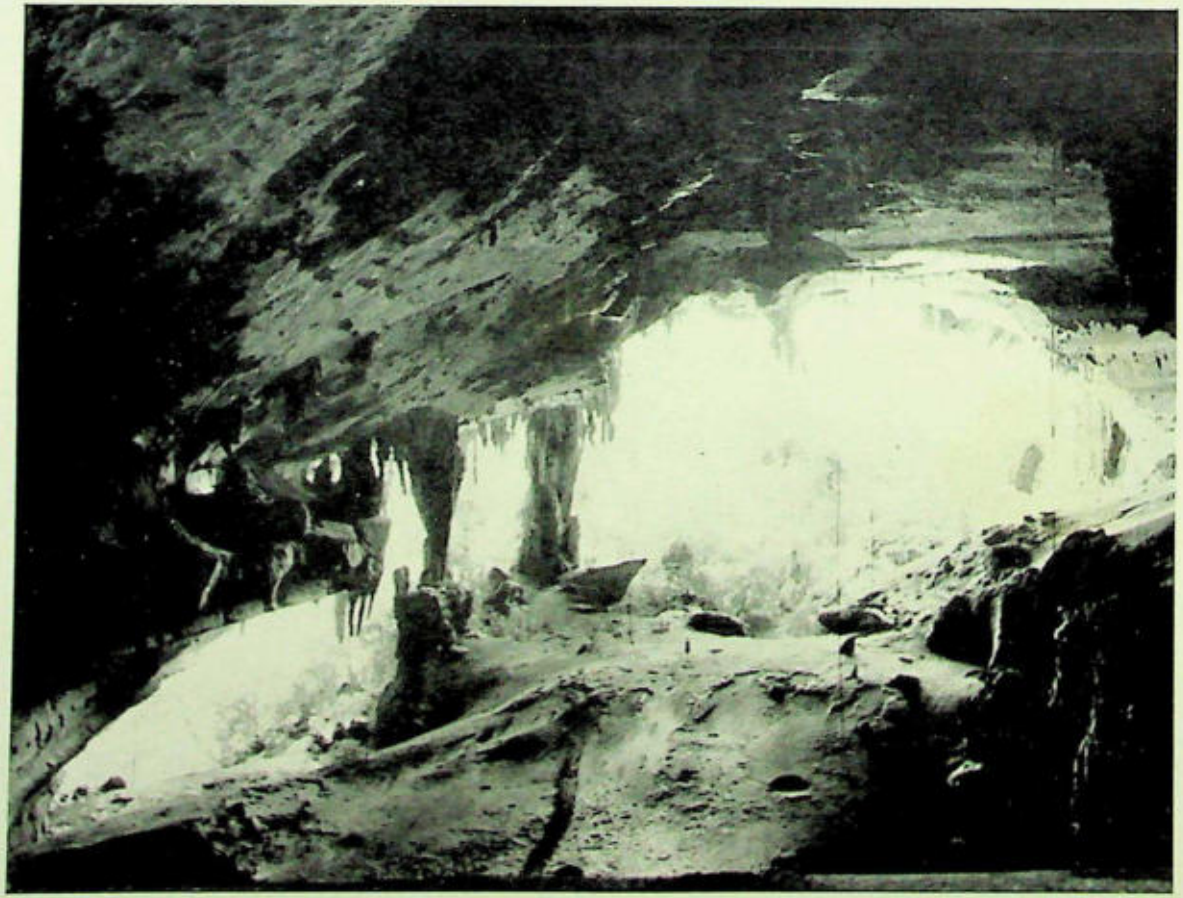


Longhouse at Pa Main, Kelabit uplands

Irrigated rice-fields at Bario, Kelabit uplands

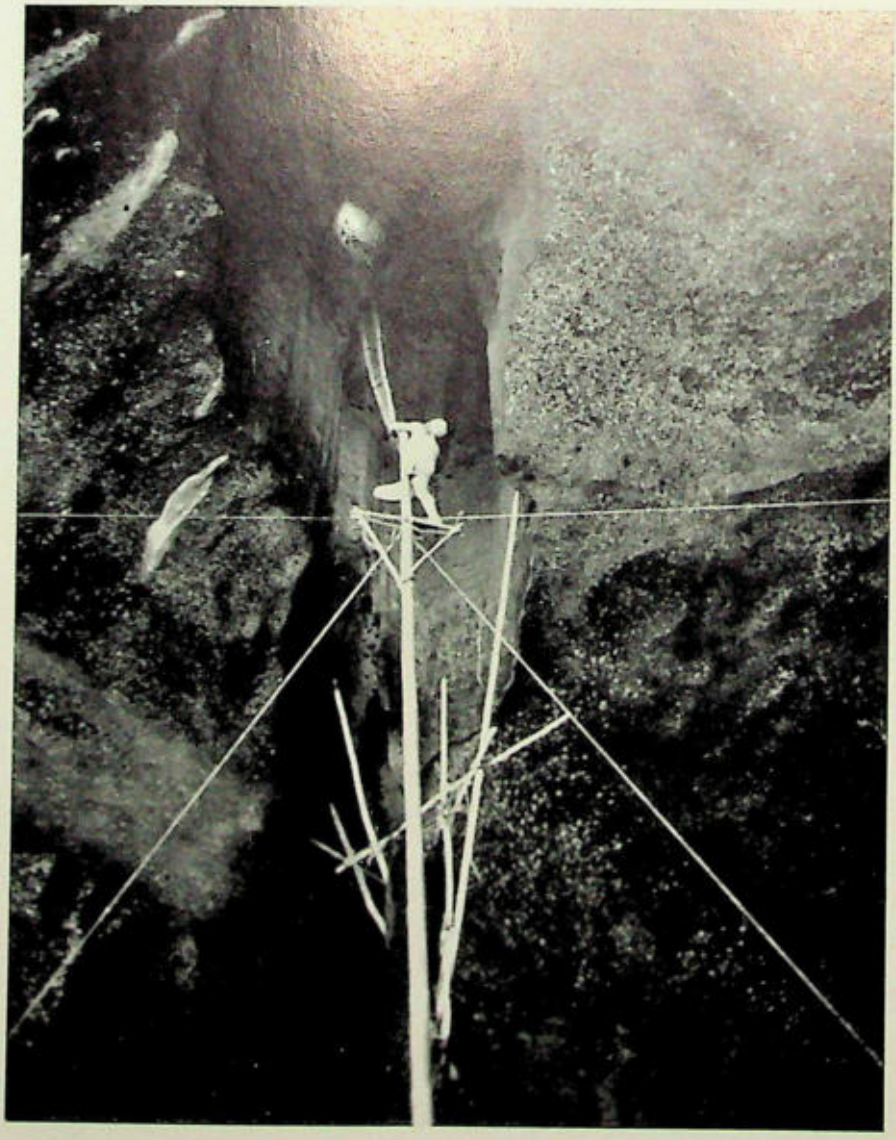


Pepper garden and surrounding grassland is a haunt of the Yellow-bellied Wren-Warbler



Entrance of Great Cave at Niah
Note man in centre and bamboo poles reaching roof

Malay collector climbing to roof of Niah Cave



Perched 150 feet above cave floor, collector uses torch at end of scraping pole to locate nests in dark recesses of cave roof.

Scraping edible swiftlets nests off cave roof at Niah

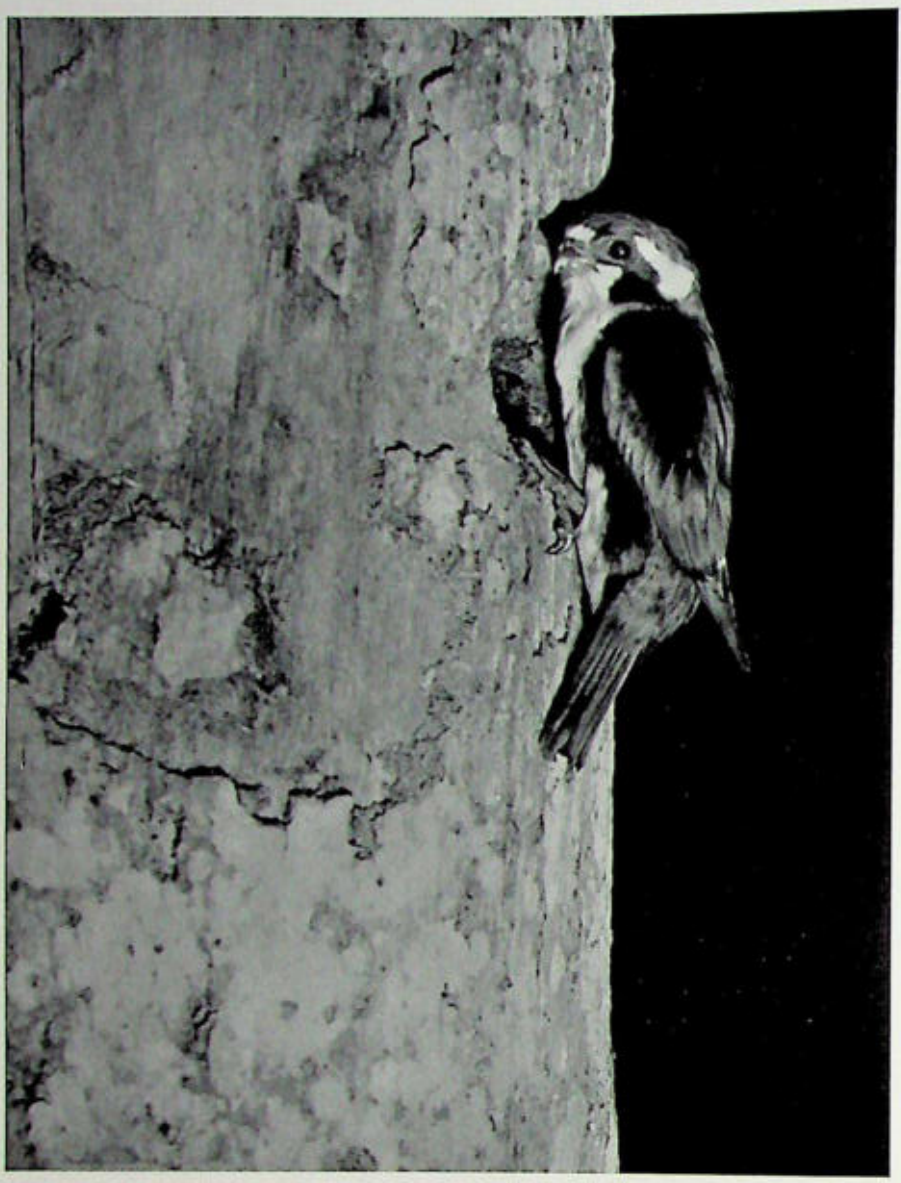
Little Green Heron, *Butorides striatus*

Yellow Bittern, *Ixobrychus sinensis*
The cock bird is shading the young from the heat of the sun

Chestnut Bittern, *Ixobrychus cinnamomeus*

Lesser Adjutant Stork, *Leptoptilos javanicus*

White-bellied Sea Eagle, *Haliaetus leucogaster*



Common Falconet, *Microhierax caerulescens*
Nesting in a hole made by a barbet

Black-naped Tern, *Sterna sumatrana*

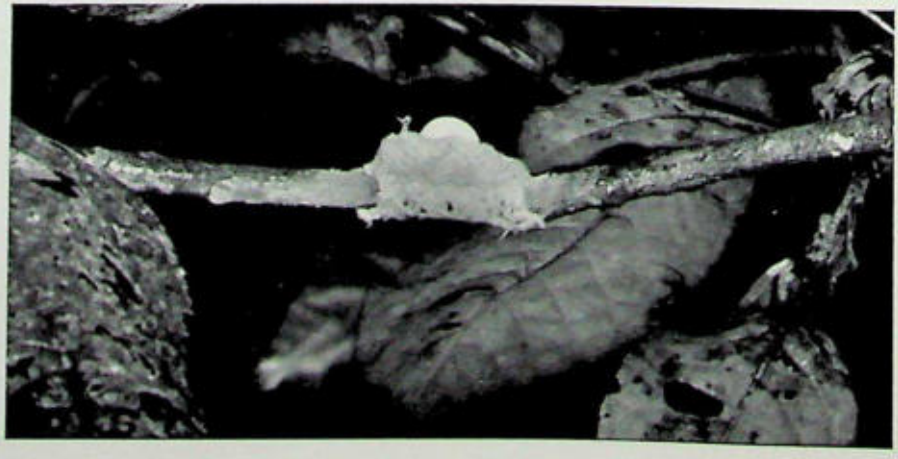
(*a*)

(*b*)

(*a*) Common Noddy, *Anous stolidus*
(*b*) White-capped Noddy, *Anous minutus*

Lesser Coucal, *Centropus bengalensis*

(*a*)



(*b*)

Gould's Frogmouth, *Batrachostomus stellatus*

(*a*) Nest and chick, with adult

(*b*) Nest and egg

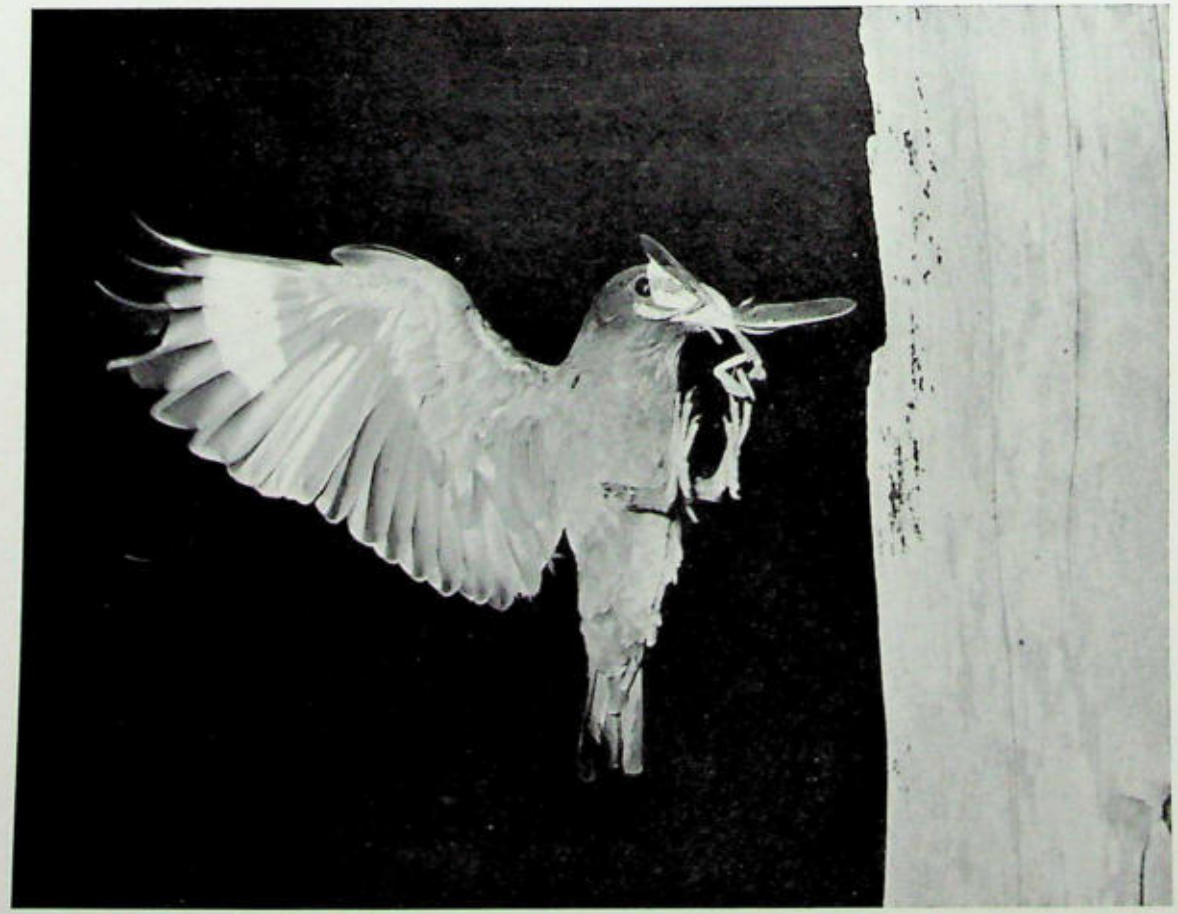
Long-tailed Nightjar, *Caprimulgus macrurus*

White-bellied Swiftlet, *Collocalia esculenta*

Chestnut-collared Kingfisher, *Halcyon concreta*

White-collared Kingfisher, *Halcyon chloris*

Blue-throated Bee-eater, *Merops viridis*
At the entrance to its nesting burrow (often eight feet or more in length)
with a dragonfly



Broad-billed Roller, *Eurystomus orientalis*
Landing at its nest-hole with a praying mantis

(*a*)

(*b*)

(*a*) Long-tailed Broadbill, *Psarisomus dalhousiae*
(*b*) Lesser Blue-winged Pitta, *Pitta brachyura*

Pacific Swallow, *Hirundo tahitica*

Pied Triller, *Lalaga nigra*

Yellow-vented Bulbul, *Pycnonotus goiavier*

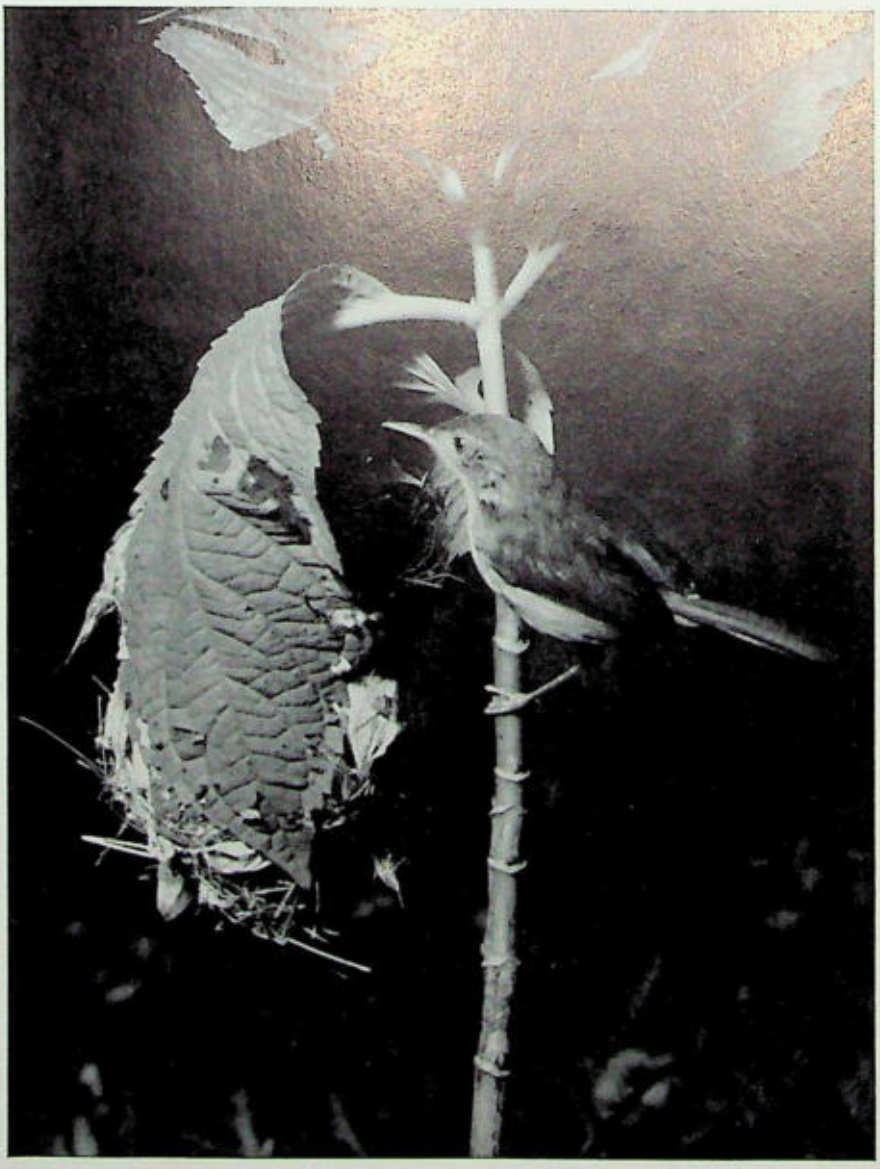
Magpie-Robin, *Copsychus saularis*

Chestnut-naped Forktail, *Enicurus ruficapillus*

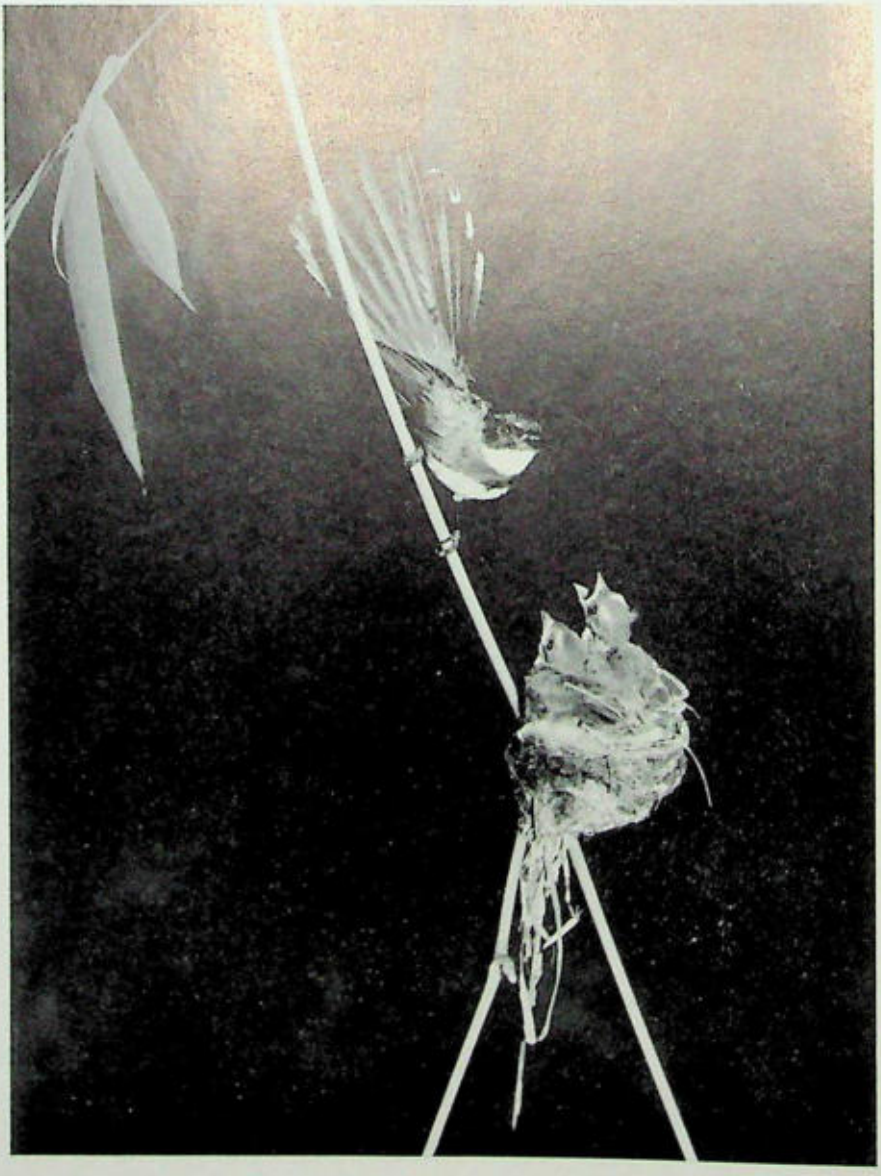
Striped Tit-Babbler, *Macronous gularis*

PLATE 42

Yellow-bellied Wren-Warbler, *Prinia flaviventris*

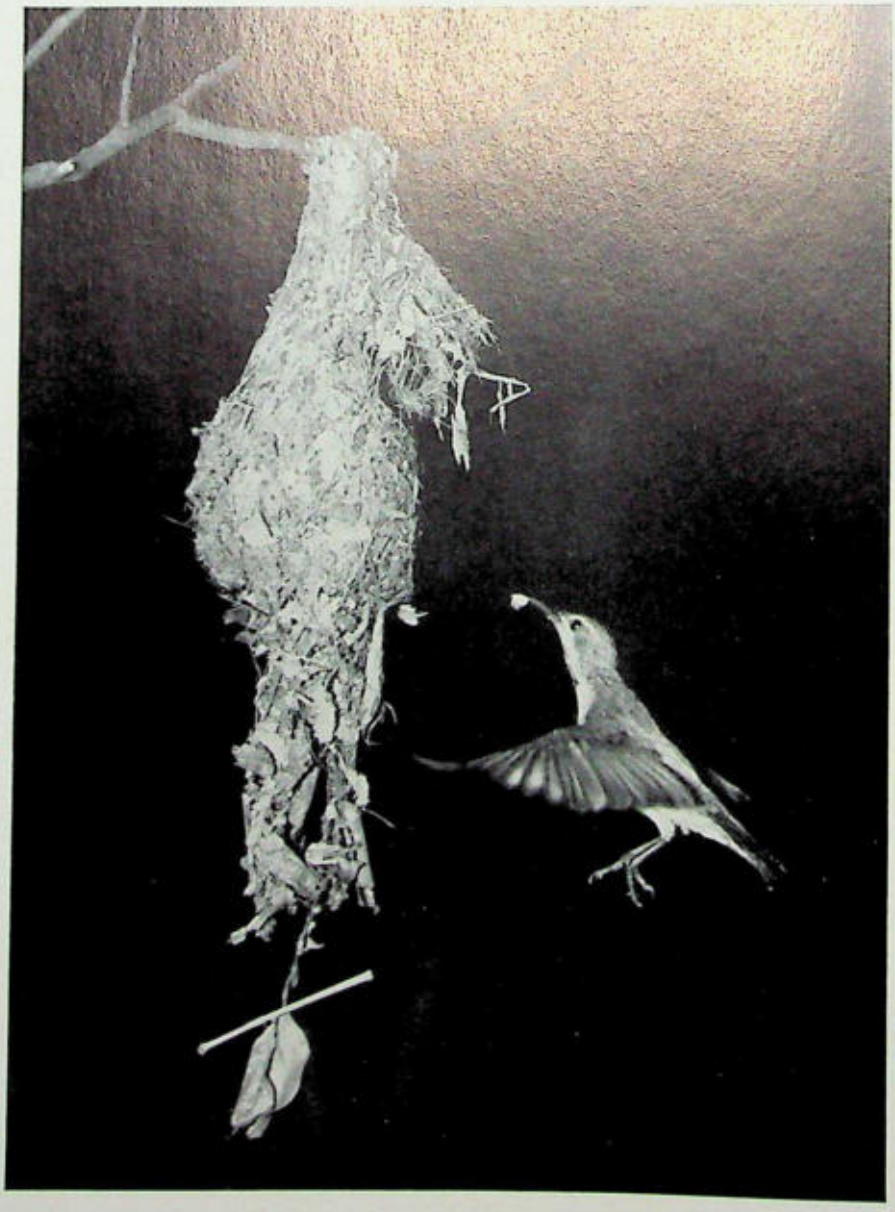


Black-necked Tailorbird, *Orthotomus atrogularis*

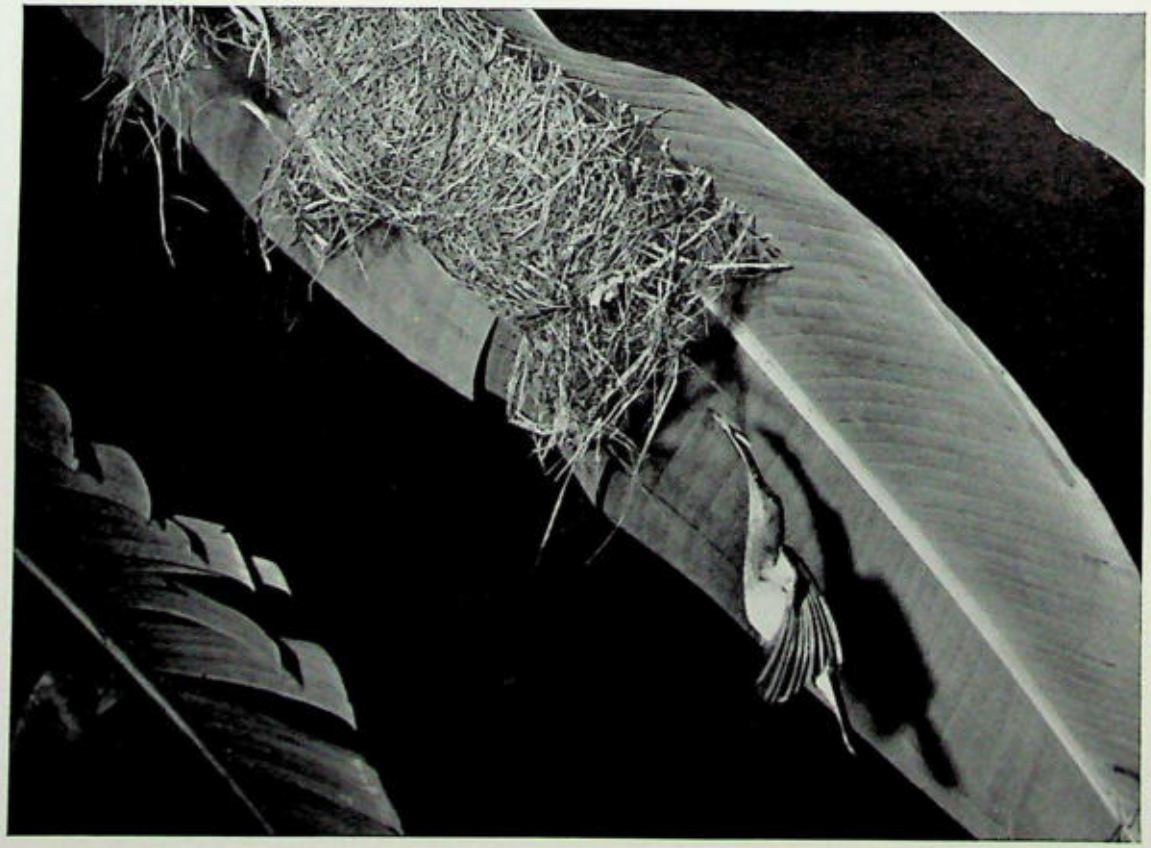


Pied Fantail Flycatcher, *Rhipidura javanica*

Macklot's Sunbird, *Nectarinia chalcostetha*



Yellow-breasted Sunbird, *Nectarinia jugularis*



Long-billed Spiderhunter, *Arachnothera robusta*
Wings fold as bird dives into nest with a praying mantis

Large Racket-tailed Drongo
Dicrurus paradiseus

SYSTEMATIC LIST OF BORNEAN BIRDS

GREBES: Podicipidae

1. LITTLE GREBE or DABCHICK

Podiceps ruficollis (Pallas) 1764

Throughout the Old World.

A stray in our area, once collected on Labuan by Everett in December.

DESCRIPTION. 10". A small swimming bird with lobed feet, disappearing under the surface at the least provocation. In winter plumage dark brown above, white on the throat, with buff cheeks and sides of neck.

RACE. *P. r. philippensis* (Bonaterre) 1790.

[AUSTRALIAN DABCHICK, *Podiceps novaehollandiae tricolor* G. R. Gray, 1861, is listed by Vorderman as having been seen by him in the environs of Bandjarmasin in 1869–71. The species ranges from Java and Celebes to Australia, but confirmation of its occurrence in Borneo is desirable. It differs in having the underparts blackish slightly mixed with white.]

PETRELS AND SHEARWATERS: Procellaridae

These are birds of the open sea, coming to land only when nesting. In the hand they are distinguished by having the nostrils concealed in a single or double tube on the upper mandible, and they are sometimes called " Tube-nosed Birds " for this reason. They are rare on tropical coasts. Alexander in *Birds of the Ocean* lists eighty-two species, but only three of these have been recorded from our area, and then only as rare visitors.

They are usually seen from ships, flying low over the waves. The shearwaters have a rapid gliding flight on rigid wings, tilting over to one side and then to the other, so that the tip of the lower wing seems almost to " shear " through the water. The petrels have a more buoyant butterfly-like flight ; some species habitually follow in the wake of ships whereas others do not ; they often walk on the water with the wings slightly raised and the tail fanned, the feet dangling and touching the waves at intervals, and the name is believed to be a diminutive of Peter, alluding to St. Peter's attempt to walk on the water. Sailors call them Mother Carey's chickens (Mother Carey, according to Alexander, being a corruption of " Mater Cara " or the Blessed Virgin Mary).

2. SWINHOE'S STORM PETREL

Oceanodroma monorhis (Swinhoe) 1867

The nearest breeding station to Borneo appears to be on islands off Formosa. Wanders south to the Singapore Strait and the Java Sea.

Probably an occasional visitor to the coast of Borneo. One was picked up at Jesselton on 21 January 1953; also seen from a ship anchored in Miri roads (Allen).

DESCRIPTION. 6". Entirely sooty-brown, with a forked tail. Most likely to be seen out at sea flying low over the water with an erratic butterfly-like flight, often crossing and re-crossing the steamer's wake.

RACE. *O. m. monorhis*. By some authorities regarded as a race of Leach's Fork-tailed Petrel, *O. leucorhoa* (Vieillot) 1818.

[WILSON'S STORM PETREL, *Oceanites oceanicus* (Kuhl) 1820, with white upper tail-coverts has been observed in Malayan waters, but not so far in our area.]

3. BULWER'S PETREL

Bulweria bulweri (Jardine and Selby) 1828

Pacific and Atlantic oceans. Nearest breeding station to Borneo is in islands off the coast of China, egg dates May–July.

No specimen taken in our area exists, but there are several sight records from off the coast of Sarawak. On 18–19 September 1948 Harrisson and Allen saw a total of thirty-one birds (mostly singles, a few pairs, once four fairly close together) in the Turtle Islands area between Satang and Talang Talang. These were probably a fraction of the birds in the area at the time. The sea was calm with light to medium land breezes. Nearly all the birds were making in the same direction and with the same purposive flight, following the sweep of the great bay between Cape Sipang and Cape Datu, keeping five miles or more offshore. Fourteen were seen on the trip out to Talang Talang in the evening of 18 September, and the remainder on the trip back the following morning. The next day Allen, en route from Kuching to Miri, saw five more of these birds flying northwesterly as before. On 20 December 1954, when on a ship anchored in Miri roads, Allen saw a few more flying about in a small area between the ship and the shore, associated with White-faced Shearwaters and another unidentified species.

DESCRIPTION. 10½". Sooty-black, slightly larger than Swinhoe's Storm Petrel, and distinguished by rather long wedge-shaped (not forked) tail, and by the double tube over the nostrils. Harrisson and Allen also noticed a long wing, strong flight, and absence of fluttering or " paddling ".

[Unidentified petrels. On the Kuching-Miri trip mentioned above, Allen saw four undoubted Storm Petrels following the ship and alighting with characteristic pattering feet to pick up food in the calm part of the wake; they were dark brown in colour with lighter brown on the wing-coverts. Despite very good views, identification proved impossible. They were smaller than Bulwer's, with tails almost square. Harrisson has seen puzzling petrels and shearwaters in winter months at sea; especially two large, long-winged, black shearwaters which rose from the water surface eight miles offshore near Miri at first daylight on 4 April 1958.]

4. WHITE-FACED SHEARWATER

Puffinus leucomelas (Temminck) 1835

" North-western Pacific Ocean from Korea and Japan south in winter to Philippine Is., Borneo, Molucca Is., and New Guinea, occasionally to Ceylon. Breeds at the Pescadores Is., near Formosa, and Oh-Sima I., N. Japan " (Alexander). Occasional visitor to the coast of Borneo. There are four specimens and two sight records. It is most likely to be seen when the N.E. monsoon is blowing strongly, in December or January.

DESCRIPTION. 19". Upperparts brown ; front and sides of head and underparts white, the face and neck streaked with black. A double tube on the upper mandible.

PELICANS : Pelecanidae

[WHITE PELICAN, *Pelecanus onocrotalus* Linnaeus 1758, and SPOTTED-BILLED PELICAN, P. *roseus* Gmelin 1789, have both been recorded as occasional vagrants in Malaya, and the latter is a common breeding bird of the Philippines. One might therefore expect them on the coast of Borneo, but no one claims to have seen them except Spenser St. John, who reported " monstrous Pelicans " on Balambangan Island a century ago. In non-breeding plumage the White Pelican is white with much black on the wings, whereas the Spotted-billed Pelican is mostly brown in colour.]

GANNETS AND BOOBIES : Sulidae

These powerful seabirds feed on fish, which they capture by diving into a shoal from a height of 60–100 feet and pursuing them under water. This dive, at a steep angle with half-closed wings, is one of the finest sights a bird-watcher can hope to see, the bird striking the surface of the sea at tremendous speed. This habit of diving at once distinguishes a bird as a gannet. The term " booby " has been applied to the tropical species owing to their inability to resist the constant persecution they suffer in tropical waters from the Frigate Birds (*Fregata*), who swoop down on them as soon as they have caught a fish (Meinertzhagen, 1954). Young birds of different species are sometimes difficult to distinguish, the adult plumage requiring several years to develop.

5. BLUE-FACED BOOBY or MASKED GANNET

PLATE A, 1

Sula dactylatra Lesson 1831

Tropical seas. Nearest breeding station in the Sulu Sea.
Known in our area from one specimen, taken off the mouth of the Kuching

PLATE A

Page

1. BLUE-FACED BOOBY 111
Sula dactylatra personata.

1*a*. BLUE-FACED BOOBY (Immature) 111
Sula dactylatra personata.

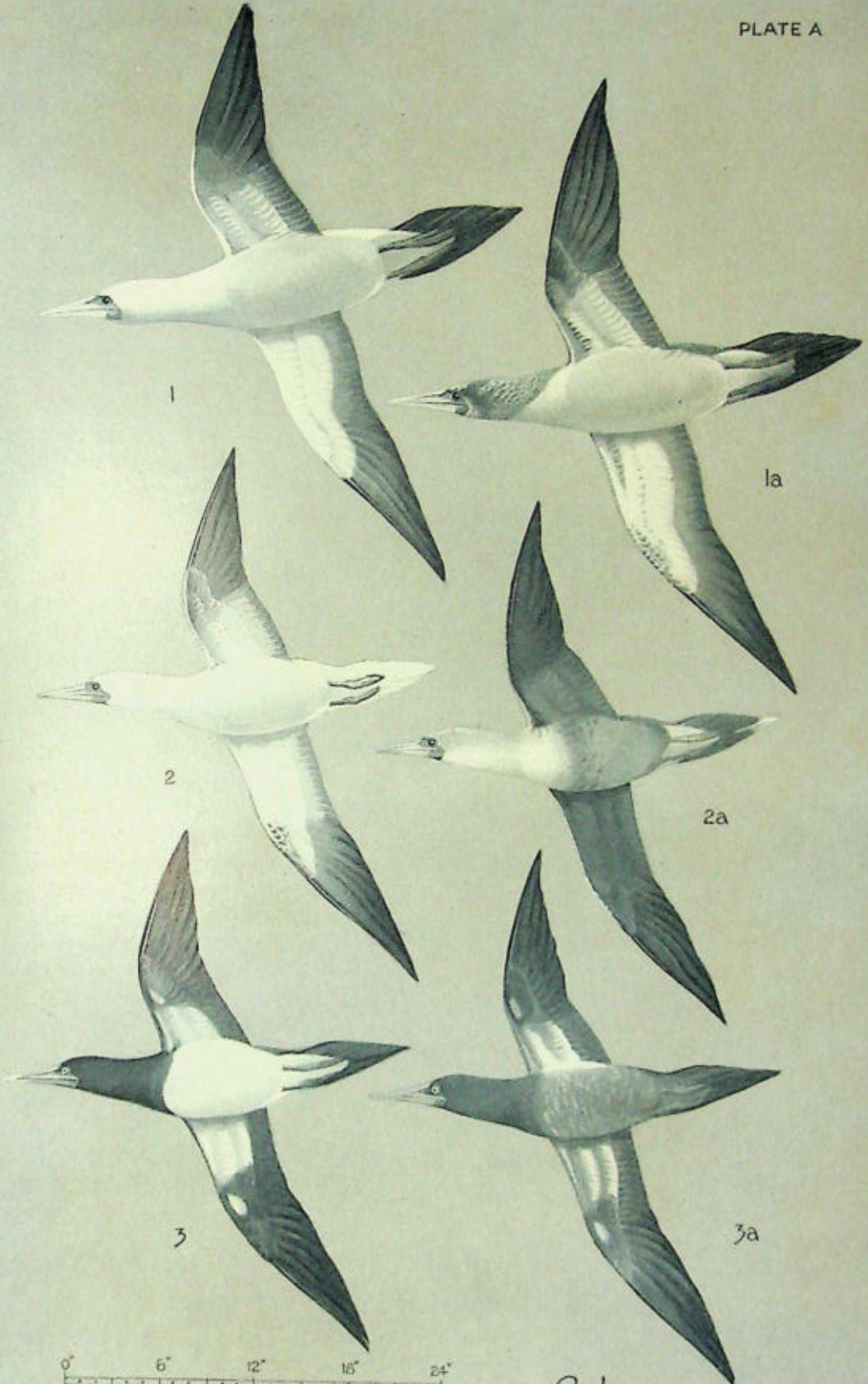
2. RED-FOOTED BOOBY 113
Sula sula rubripes.

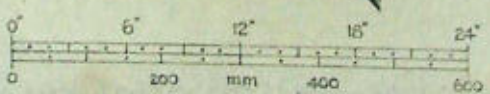
2*a*. RED-FOOTED BOOBY (Immature) 113
Sula sula rubripes.

3. BROWN BOOBY 113
Sula leucogaster plotus.

3*a*. BROWN BOOBY (Immature) 113
Sula leucogaster plotus.

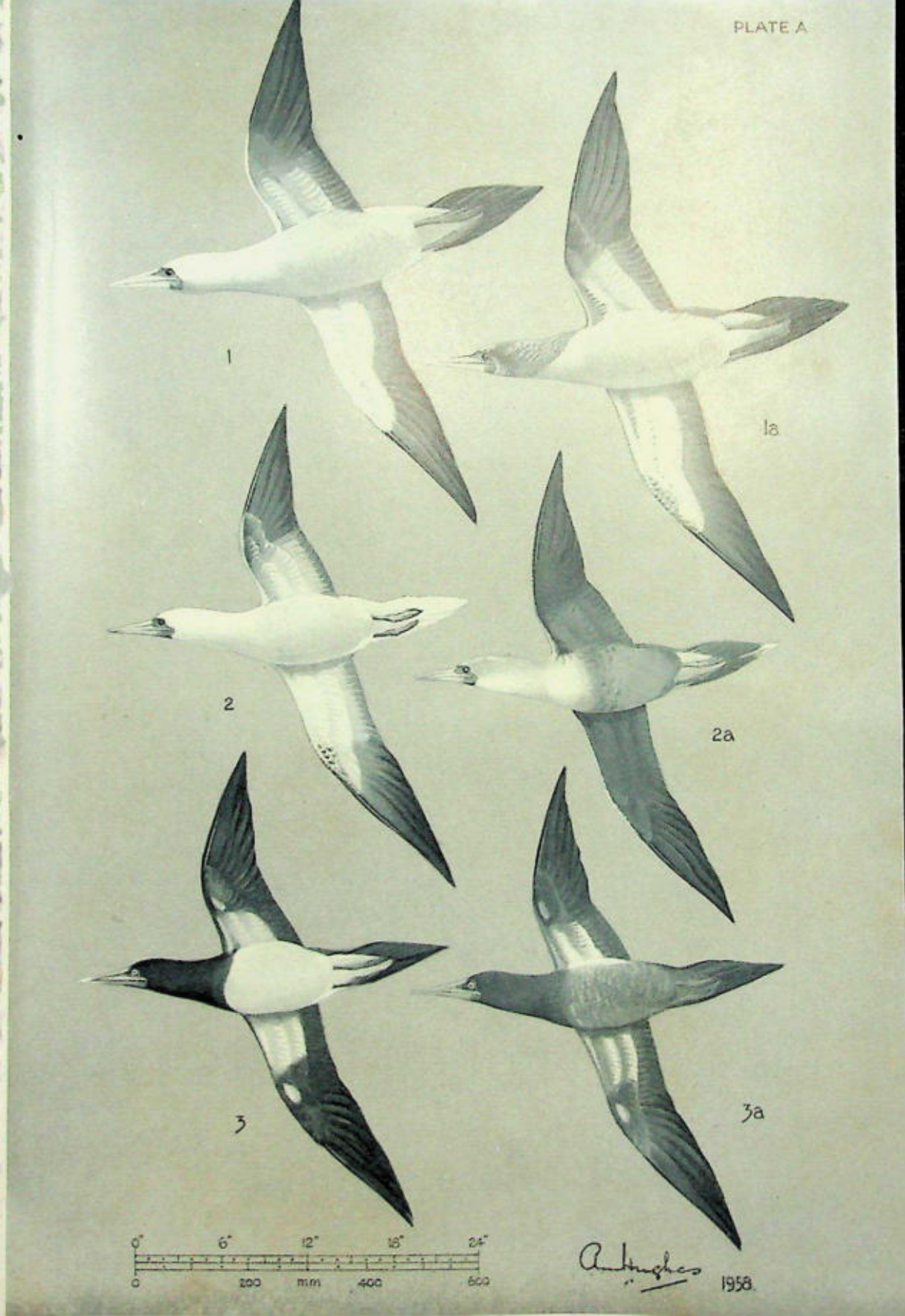
PLATE A





A. Hughes 1958.

PLATE A



River, 11 December 1934, and another taken off the mouth of the Baram River, 7 December 1903 (both skins in the Sarawak Museum).

DESCRIPTION. 32–36″. For adult see under the next species. The young bird in first juvenile plumage has the head and neck dark brown and the underparts greyish-brown; progressive somewhat irregular whitening occurs over the three or four years of immaturity, giving some rather untidy piebald effects (Gibson-Hill, *in litt.*).

RACE. *S.d. personata* Gould 1846.

6. RED-FOOTED BOOBY PLATE A, 2

Sula sula (Linnaeus) 1766

Tropical seas. Nearest breeding stations are on Bankoran Island and on Tubbataha Reef in the Sulu Sea (Bankoran Island is 100 miles, and the Tubbataha Reef 200 miles, roughly N.E. of Banggi Island). Nevertheless there is no certain record of this species in our area.

DESCRIPTION. 26–29″. Adults of this and *dactylatra* have the head and body white and the primaries black, but the whole trailing edge of the wing is black in *dactylatra* due to black secondaries, and tail is black also. Immature birds resemble immature *leucogaster*, being all brown in colour, but *leucogaster* has the belly noticeably paler than the breast whereas *sula* has the underparts almost uniform throughout. In the hand *leucogaster* is seen to have a heavier bill, and *sula* has red feet (tucked up in flight and not normally visible except when the bird is turning or landing).

RACE. *S. s. rubripes* Gould 1838.

7. BROWN BOOBY PLATE A, 3

Sula leucogaster (Boddaert) 1783

Tropical seas. Nearest breeding station is on Bankoran Island in the Sulu Sea (100 miles N.E. of Banggi Island), where the Brown Booby nests on the ground and the Red-footed Booby on trees.

During the north-east monsoon small numbers are found annually along the west coast of Borneo as far south as the Turtle Islands—an immature female obtained on 8 August 1953 on Talang Talang Island is the earliest record to date.

DESCRIPTION. 28–30″. Most birds are seen in the immature plumage, which is all brown but with the belly markedly lighter than the breast. Adult is unmistakeable with whole head, neck, and breast brown, upperparts brown, remaining underparts white. Bare skin at base of bill dark blue in the male, bright lemon-yellow in the female (Worcester).

RACE. *S. l. plotus* (Forster) 1844.

FRIGATE BIRDS: Fregatidae Sambang (M)

"The large tropical sea-birds which constitute this family are the most completely aerial of water-birds and perhaps of all birds except swifts. They have very long wings, long forked tails, and very short legs. They never settle on the water or on a level coast and are probably incapable of rising from such situations. Throughout the hours of daylight they remain in the air, floating over the water or their island home without the slightest effort on motionless wing, plunging down to the surface of the sea to pick up some floating object, or pursuing other sea-birds to make them disgorge their booty. At dusk they retire in companies to some favourite clump of trees near the coast to roost" (Alexander).

8. CHRISTMAS ISLAND FRIGATE BIRD PLATE B, 1

Fregata andrewsi Mathews 1914

Eastern Indian Ocean.

The nearest breeding station may be in the Anamba Islands.

An occasional visitor to the coast of Borneo, where seven specimens have been obtained (Buntal, Santubong, Rambungan). On 2 February, 1958, one was found nearly dead at Bau Lake, the first inland record; it was heavily parasitized externally by Mallophaga (biting lice) and internally by Nematoda (round worms).

DESCRIPTION. 35–40". The adult male is the only frigate bird with black plumage and a white abdomen. The female can be distinguished from female *minor* by its black throat. Gibson-Hill (*Bull. Raffles Mus.* No. 18, 1947 : 135) gives characters for distinguishing first juvenile plumage from that of *minor*, one of these being that in *andrewsi* the inner secondaries are olive-brown, whereas in *minor* they are almost black on the outer webs and very dark amber on the inner webs.

HABITS. During sardine fishing with cast nets in Buntal Bay they skimmed close by over the water picking up exhausted fish (Banks).

9. LESSER FRIGATE BIRD PLATE B, 2

Fregata ariel (G. R. Gray) 1845

S. Atlantic and Indian Oceans and W. Pacific. The nearest breeding station is not known; possibilities (see Gibson-Hill 1950 : 43–49) are Sipadan Island (St. Lucia Bay, N.E. Borneo), Cavilli Island (Sulu Sea), and the Paracel Islands (S. China Sea); St. Pierre and the Natuna Islands might also be worth exploring.

It occurs at times all round the coast of Borneo, and is abundant in some localities, notably Darvel Bay and Santubong Bay ; Harrisson has daily figures of absence or occurrence over the Turtle Islands over a five-year period, and reports that the evening flight in to roost on Satang Kechil Island, always from the North-East, is an impressive sight.

The figures for July 1951–54 may be summarised as follows : On rather over a third of the days in any one year there will be no birds around Satang, these blank days falling almost entirely between January and July (March to May being the blankest) ; on rather over another third there will be many (fifty or more) birds with September and October the richest months ; and on the remaining 100 days or so of a year there will be a few (under fifty) birds about. There is no completely blank month.

DESCRIPTION. 32". Conspicuous white patch on each side under the wing is distinctive in adults. Young birds have the head, neck, breast and abdomen white, streaked with rusty, the head sometimes brown. Breeding males have a prominent red gular pouch, but this shrivels after the breeding season and ultimately becomes scarcely detectable, except at close quarters (Gibson-Hill).

HABITS. " Lacking webbed feet, and with their short, weak legs and very long wings, they cannot dive, and they have little chance of getting into the air again if they once come down on the water. They are, however, adept at hovering over it in calm weather and picking up small fry from shoals that have been driven to the surface by larger fish. . . . They will also chase and catch flying fish while they are in the air. . . . Like the skuas, they normally obtain much of their food direct from the sea or shore and only parasitize their neighbours during the breeding season, when the adults require additional supplies, at frequent intervals, to satisfy the demands of their chicks " (Gibson-Hill 1956 : 167).

Both Banks and Harrisson confirm that in Sarawak waters they do not parasitize other birds ; Banks twice saw them chasing terns, but no food changed hands. Harrisson, in many hours of observation, did not even see them feeding off the sea.

The powerful graceful flight on rigid wings is lovely to watch. If there are many birds in the sky individuals tend to take up station at different altitudes, so that the sky is dotted with birds from near sea level to 1,000 feet or more, as if flying under orders from a Control Tower.

RACE. *F. a. ariel.*

10. GREAT FRIGATE BIRD PLATE B, 3

Fregata minor (Gmelin) 1789

" Tropical Indian and Pacific Oceans and South Atlantic off coast of Brazil. . ." (Alexander). Owing to confusion in the past between *minor*, *andrewsi*, and *ariel* it is impossible to say where the nearest breeding station may be.

An occasional visitor to the coast of Borneo, where three or four specimens have been obtained (Labuan and Buntal); Harrisson saw one round the Turtle Islands, 4 July 1956.

DESCRIPTION. 34–40". Adult male is all black except for a brown band on the wings; adult female is the only frigate bird with white underparts and white throat. For juvenile plumage see under *andrewsi*.

RACE. *F. m. minor*.

CORMORANTS: Phalacrocoracidae

Cormorants are web-footed birds feeding on fish and crustacea, which they obtain by diving. Though found all over the world except the Central Pacific, they are inexplicably rare in Borneo.

Key (measurements from B.M. cat.)	*Phalacrocorax*
Wing 12·5–14"; culmen 2·3–3·2". . . .	*carbo*
Wing 9·5–10·4"; culmen 1·6–1·8". . . .	*sulcirostris*
Wing 7·5–8·0"; culmen 1·1–1·3". . . .	*pygmaeus*

11. COMMON CORMORANT PLATE I, 2

Phalacrocorax carbo Linnaeus 1758

Distribution world-wide.

They have been seen round Labuan, but nowhere else in Borneo up to now.

DESCRIPTION. 35–40". Large size and white cheeks and throat contrasting with black plumage distinctive. In breeding plumage there is a white patch on the flank and the race *sinensis* has the head and neck almost completely white. Young birds are browner.

HABITS. In our area cormorants should be looked for on rocky coasts and islands, where they may be seen standing on rocks near the sea, or flying low over the surface of the water; they take off with difficulty, the feet assisting with strong kicks. They often stand in an upright position, the wings open and half-spread. Thompson (*in litt.*) saw a party on the west side of Labuan Island, 19–22 March 1949, the only authentic record to date:

" I saw each evening a party of Common Cormorants (*P. carbo sinensis*) four to six birds on the shore in the evening as the tide ebbed searching the pools left by the tide. On the same days there were several shoals of tiny fish within fifty yards of the shore, and these may have attracted the birds. The birds were seen with the naked eye and through glasses at ranges down to fifty yards and watched for about an hour."

RACE. *P. c. sinensis* (Blumenbach) 1798.

12. LITTLE BLACK CORMORANT

Phalacrocorax sulcirostris (Brandt) 1837

Malay Archipelago and Australia. Four specimens were collected in S. Borneo probably near Martapura by Croockewit in 1851, since when there has been no further record for Borneo.

DESCRIPTION. 25". See key. Entirely black except for the upper back, scapulars, and wing-coverts, which are mottled silvery-grey and black owing to these feathers being grey margined with black. In breeding plumage there is a small tuft of white feathers behind the ear, and a number of white plumules on each side of the head above the eye, and scattered here and there on the neck, but these features are probably difficult to see in the field.

HABITS. According to Delacour, this is an inland bird, frequenting lakes and rivers and nesting in trees.

RACE. *P. s. territori* (Mathews) 1915.

13. LITTLE CORMORANT

Phalacrocorax pygmaeus (Pallas) 1773

Central and S.E. Europe, N. Africa and S. Asia to Malaysia.

It was collected in S. Borneo by Schwaner, and round Bandjarmasin by Croockewit, but no one has reported it in the past 100 years.

DESCRIPTION. 20". See key. In non-breeding plumage there is a white patch bordering the throat pouch ; scapulars and wing-coverts mottled, the feathers being silvery-grey margined with black and long and narrow in shape (in worn plumage the silver-grey tint almost disappears, the feathers becoming nearly uniform blackish-grey). Juvenile browner. In breeding plumage there is a line of scattered white plumes commencing above the eye and continued along the sides of the neck (scarcely visible in the field).

HABITS. In other territories it is typically a bird of rivers and inland lakes, even roadside ditches and ponds, but nothing is known of its habitat in Borneo, where it is presumed to breed.

DARTERS : Anhingidae

Some authorities (*e.g.* Delacour) combine the Darters with the Cormorants in one family ; they differ, however, in their thin snake-like necks (hence the name Snakebirds) and the absence of a hook at the end of the bill. There are five forms, which some authorities treat as races of one species whereas others regard them as five distinct species.

14. DARTER PLATE I, 1

Anhinga anhinga (Linnaeus) 1766. *Indu labi* (I)

Distribution world-wide.

Throughout Borneo along the rivers. It has apparently disappeared from the coast where it was once common. Thus Ussher

collected it on Labuan ; Whitehead reported it as fairly common along the tide-ways of most Bornean rivers ; Shelford (in his posthumous book) found it very common at the mouths of the Trusan and Limbang Rivers. My own observations spread over five years (1953–57) in Brunei Bay, including periodical visits to the mouths of the Limbang, Trusan, and Lawas Rivers, do not include a single record of a Darter ; and in 1935 Banks described it as an up-river bird living in pairs and not to be found near the sea or in tidal waters. Tubb, however, informs me (*in litt.*) that he saw several on visits to Labuk Bay, east coast of N. Borneo, usually around the mouths of the large channels debouching from the mangrove swamps and on the fringes of the islands. It seems probable that the bird is rapidly decreasing in numbers and that it may become as rare in Borneo as it is now in Malaya ; it is shot for food, and is easily killed with a shotgun while travelling up or down rivers by dugout.

DESCRIPTION. 36". The long snaky neck, spear-like bill, and whitish chin throat and breast prevent confusion with the Common Cormorant ; the long silvery-grey feathers of the wing-coverts are also distinctive. Iris brown ; bill yellow-horn, ridge of upper mandible black ; feet dark grey.

HABITS. " The flight is heavy and it rises from the water with much splashing making off laboriously and low down with head and neck outstretched, pitching without much discretion, only to be flushed again. It may rise to some height and perch in a lofty tree, but is more usually to be seen on a low branch overhanging the river, its wings outstretched to dry and its head pointing inanely up in the air ; sometimes they even sit on the river bank and flap their wings to dry them, very like a Cormorant.

" They dive into the water with a large ' plop ' and whilst a stay (under water) of about two minutes is more usual a captive once managed nearly seven ; they do not of course always wholly rise to the surface, just the head and part of the neck protruding for a look round and some fresh air. Under water they are not very fast swimmers but twist and turn, poking right and left with each few strokes of the webbed feet, thrusting the head and neck into all sorts of nooks and crannies, using the tail as a rudder and keeping the wings half-flexed and slightly raised away from the side of the body. Fish and prawns were apparently speared, sometimes to be eaten under water, sometimes on the surface, and my captive one died trying to swallow too large a fish " (Banks).

Beccari records taking a fish from two Darters that had caught it

and taken it on shore. The fish weighed seven or eight pounds and its head was riddled with holes made by the birds' bills.

On several occasions I have seen a Darter circling over a river at a considerable height.

NEST AND EGGS. Writing of the Padas estuary, Whitehead says: "On one occasion I visited a breeding-place of the Darter or Snakebird, which was situated in an unfrequented channel of this huge nipa swamp. During the breeding season these birds collect in numbers, nesting on some low mangrove trees; in the 'rookery' visited by me there were about fifty nests; about the middle of November some four or five white eggs are laid, which become much discoloured."

Hose found it nesting around Loagan Tujoh, Baram River. The nests were built at a height of about thirty feet on trees surrounding the lake, and at the time of his visit contained white-coated young birds. Nicholl (*in litt.*) reports that it breeds on an island in the middle of Loagan Bunut, Tinjar River.

RACE. *A. a. melanogaster* Pennant, 1769.

HERONS, EGRETS AND BITTERNS: Ardeidae

These birds have long slender straight bills, long necks, long legs, and long toes. Compared with other countries in S.E. Asia they are rather scarce in Borneo, only the Little Mangrove Heron and one or two of the white egrets being common and conspicuous.

15. DUSKY-GREY HERON PLATE 1, 3

Ardea sumatrana Raffles 1822 *Kuju* (I)

S.E. Asia to New Guinea and Australia.

An uncommon resident of the coastal mudflats and mangrove swamps throughout Borneo.

DESCRIPTION. 45". Considerably larger than Grey Heron, and more or less uniform brownish-grey in colour except for white chin and throat and silver-grey long pointed feathers of crest, nape, upper breast, and scapulars. Iris yellow, skin round eye yellow-green; upper mandible black, lower pale flesh with yellowish tip; feet and claws black.

HABITS. Usually seen solitary standing on the greasy bank of a mangrove creek.

NEST AND EGGS. Low sent to the British Museum two eggs from Labuan, pale greenish-blue in colour, 69×50 mm. (Robinson and Chasen 1936 : 179).

RACE. *A. s. sumatrana.*

16. GREY HERON PLATE I, 5

Ardea cinerea Linnaeus 1758

Throughout the Old World.

Although resident in Malaya, this species appears to be only an occasional visitor to our area. One was collected at Sundar on 12 January 1932 and another at Cape Sirik on 30 January 1935 (not June as printed in Checklist p. 560). Others have been seen at Kota Belud (where the local people say it is a regular visitor) in January and at Sibu, Sarikei River, and the mouth of the Balingian River, between November and March ; it is also an occasional winter visitor to the wider open plains of the Kelabit uplands.

DESCRIPTION. 40". Distinguish from Dusky-grey Heron by the white head and underparts, with a black band running back from above the eye to terminate in a long pendant crest ; there are some black streaks down the front of the neck. Young birds are greyer, especially on the neck, and lack the black markings on the head. Iris bright lemon-yellow, skin round eye greenish-yellow ; upper mandible dark horn at base, paler at tip, edge yellowish ; lower mandible yellowish, more orange towards the tip ; tarsus pale yellowish, feet and claws dark horn.

HABITS. The habits of this well-known European bird may be summarised from *The Popular Handbook of British Birds* as follows :—" It spends much time on the ground where it moves with a deliberate walk, and is frequently seen standing erect and motionless, often on one leg by the water's edge, but it also perches freely on trees, etc. When fishing it walks slowly along in shallow water with neck curved ready to be shot out to seize prey ; at other times it stands motionless in shallows waiting for a fish to pass within reach . . . its long slender neck more or less extended, or resting with head sunk between its shoulders ". These remarks apply equally well to most of the herons and egrets found in Borneo.

RACE. *A. c. rectirostris* Gould 1843.

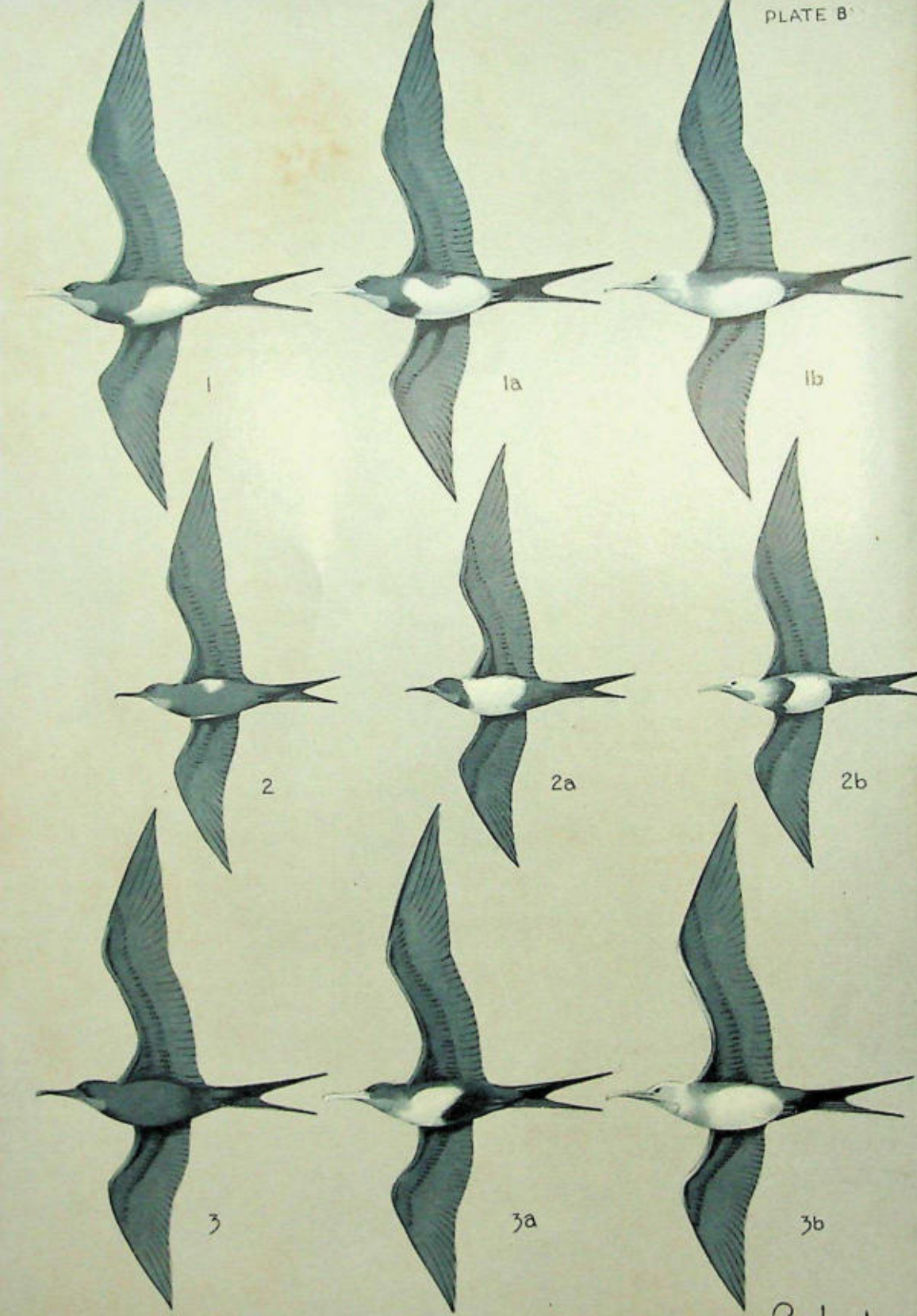
17. PURPLE HERON PLATE I, 4

Ardea purpurea Linnaeus 1766

Throughout the Old World.

Resident in Borneo, and probably sparingly distributed in padi lands and open swamps. Motley found it common round Bandjarmasin a century ago, and Banks found it quite numerous at Sundar ; there are scattered records from other localities, including one from the Kelabit uplands. Everett thought it was only a winter visitor to Bintulu, and it is possible that the population is augmented by migrants in winter.

PLATE B



0" 6" 12" 18" 24" 30" 36" 42" 48"

0 200 400 600 800 1000 1200

mm

A. Hughes

1958

PLATE B

Page

1. CHRISTMAS ISLAND FRIGATE-BIRD (♂) 114
Fregata andrewsi.

1*a*. CHRISTMAS ISLAND FRIGATE-BIRD (♀) 114
Fregata andrewsi.

1*b*. CHRISTMAS ISLAND FRIGATE-BIRD (Immature) . . 114
Fregata andrewsi.

2. LESSER FRIGATE-BIRD (♂) 114
Fregata ariel ariel.

2*a*. LESSER FRIGATE-BIRD (♀) 114
Fregata ariel ariel.

2*b*. LESSER FRIGATE-BIRD (Immature) 114
Fregata ariel ariel.

3. GREAT FRIGATE-BIRD (♂) 116
Fregata minor.

3*a*. GREAT FRIGATE-BIRD (♀) 116
Fregata minor.

3*b*. GREAT FRIGATE-BIRD (Immature) 116
Fregata minor.

DESCRIPTION. 38". About the same size as the Grey Heron, but easily recognized by the reddish neck, strongly striped with black, and by the rufous underparts. Iris very pale yellow, skin round eye bright yellow; upper mandible dark horn, paler at tip; lower mandible yellowish, horn at tip; tarsus yellow, feet and claws dark horn.

VOICE. A deep harsh croak (Motley).

HABITS. It seems to avoid open estuaries and river banks, otherwise its habits resemble those of the better known Grey Heron. "It usually perches on a low tree or tuft of reeds, and often on a tall dead tree. In the evening they may often be seen flying at a great height, and in a steady straight course, as if bound for a long journey" (Motley, writing of the Bandjarmasin area).

"A bird of backwaters and riverside long grass, rarely found in cattle grounds or rice fields, and usually seen perched solitary on small trees above the secondary growth" (Banks).

NEST AND EGGS. "The nests are either solitary or, at most, two or three together, and are built a few feet from the surface of the water, among tall reeds in almost inaccessible marshes. They are mere platforms of sticks. The eggs are a light green, about the size of a goose, and three in number" (Motley).

RACE. *A. p. manilensis* Meyen 1834.

KEY TO THE WHITE EGRETS

(*Egretta* and *Bubulcus* spp.)

If we include the rare white phase of the Reef Egret, there are six different species of white egrets in our area. Both in the field and in the museum (some of the specimens in the Sarawak Museum collection were at one time wrongly identified) considerable care is necessary to distinguish between these species. Partly for this reason, and partly because white egrets have been protected in Sarawak by law for many years, we still know very little about the status and distribution of these species in Borneo. The following key should enable any specimen in the hand to be identified correctly, while salient field characters are given in the description of each species. Several species grow ornamental plumes in the breeding season; in the early years of this century these plumes were collected and sold in Europe as "Osprey feathers" for ornamenting the enormous hats fashionable for women at that time, and in different parts of the world vast numbers of egrets were slaughtered on their breeding grounds. Partly owing to a change in fashions, and partly owing to international agreement to prohibit traffic in birds' feathers, this trade has now died out.

The Malay name *bangau* is applied to most egrets and storks.

1.	Tarsus green	*E. sacra*
	Tarsus not green	2
2.	Culmen much shorter than mid-toe and claw	3
	Culmen equal to or longer than mid-toe and claw	4
3.	Wing over 300 mm.	*E. intermedia*
	Wing under 260 mm.	*Bubulcus ibis*
4.	Wing over 300 mm.	*E. alba*
	Wing under 300 mm.	5
5.	Tarsus 83-110 mm. Mid-toe with claw 60–76 mm.	*E. garzetta*
	Tarsus 73–97 mm. Mid-toe with claw 51–63 mm.	*E. eulophotes*

COLOUR OF BILL

E. sacra. In white phase bill mostly yellow.

E. alba, *E. intermedia* } Bill yellow in winter, yellow tipped black in late winter, black in summer.

Bubulcus ibis. Bill always yellow.

E. garzetta garzetta. Bill black, with the basal half or two-thirds of the lower mandible greyish-white in life, changing to yellow after death.

E. garzetta nigripes. Bill black, basal half of lower mandible yellow in life.

E. eulophotes. In most specimens the whole bill (after death) is horny yellow ; occasionally bill dark horn, base of upper mandible and basal two-thirds of lower mandible yellowish.

COLOUR OF TARSUS AND TOES

E. sacra. Tarsus and toes greenish. Naked area above " knee " quarter length of tarsus.

E. alba, *E. intermedia* } Tarsus and toes black.

Bubulcus ibis. Tarsus and toes greenish-yellow, darker on toes.

E. garzetta garzetta. Tarsus black ; toes greenish-yellow, conspicuous in flight. Naked area above " knee " three-quarter length of tarsus.

E. garzetta nigripes. Toes black like tarsus, only the soles a greenish-yellow.

E. eulophotes. Described by La Touche as " legs and basal half of feet black, extremities of feet yellow, claws greyish-red ". And by Banks on the label of a Sarawak Museum specimen as " tarsus greenish-yellow ; toes light yellow-green ; claws horn ". Naked area above " knee " not more than half length of tarsus.

18. LARGE EGRET or GREAT WHITE HERON

Egretta alba (Linnaeus) 1758

Distribution world-wide.

There are only four formal records for our area, from Pontianak, Tanjong Java (Barito River), Belajan River, and Sandakan, but sight records by Harrisson for Lundu, Bako, and Batu Lintang (Kuching) in recent years suggest that it is a regular visitor in small numbers. Tubb (*in litt.*) has numerous sight records of single birds, each in its own feeding territory, along the Kinabatangan River from Abai up to Lamag in June.

PLATE I

Page

1. DARTER. 117
Anhinga anhinga melanogaster.

2. COMMON CORMORANT 116
Phalacrocorax carbo sinensis.

3. DUSKY-GREY HERON 119
Ardea sumatrana sumatrana

4. PURPLE HERON 120
Ardea purpurea manilensis

5. GREY HERON 120
Ardea cinerea rectirostris.

6. STORM'S STORK 134
Ciconia stormi

7. RUFOUS NIGHT HERON 131
Nycticorax caledonicus manilensis.

8. COMMON NIGHT HERON 130
Nycticorax nycticorax nycticorax.

1
2
3
4
5
6
7
8
1956
0"
6"
12"
18"
24"
0
200
mm
400
600

DESCRIPTION. 35". See key. For distinctions from Intermediate Egret see under that species. For soft parts see Gibson-Hill (1956 : 187–88).

RACE. *E. a. modesta* (Gray) 1831.

19. INTERMEDIATE EGRET PLATE II, 1

Egretta intermedia (Wagler) 1829

From E. Asia through S. Asia to Japan and Australia.

A winter visitor and non-breeding visitor to our area. Banks found it numerous on coastal mudflats in winter, a few remaining all the year round without breeding. Harrisson collected one at Bario in the Kelabit uplands (where it is exceptional) on 14 October 1949.

DESCRIPTION. 28". See key. Considerably smaller than the Large Egret, which approximates in size to the Grey Heron, whereas the Intermediate Egret is little larger than the Little Egret ; when the two are seen side by side the difference is obvious, the Large Egret having much thicker legs, larger feet, and more massive bill. In breeding plumage both have black bills and back plumes, but the Intermediate Egret also has breast plumes which the Large Egret lacks. In non-breeding plumage there is no observable difference between the two species other than size. Iris very pale yellow (almost white), skin round eye yellow or greenish ; feet and claws black.

VOICE. Generally silent, but a harsh rasping call *kraa-krr* similar to that of the Large Egret but less deep in tone, is uttered on taking wing.

FOOD. Fish, padi crickets, etc.

RACE. *E. i. intermedia.*

20. LITTLE EGRET

Egretta garzetta (Linnaeus) 1766

Distribution world-wide.

The nearest breeding ground to our area is in the Philippines.

Winter visitor to Borneo. There are a few formal records from various parts of the island. The two specimens in the Sarawak Museum come from Kuching and Oya. I have seen three in breeding plumage roosting in a tree near the Bintulu wharf on 20 May 1958. Small white egrets are common in Sarawak, both on the coast and inland up certain rivers but much careful field work by observers competent to distinguish between *garzetta, eulophotes*, and the white phase of *sacra* is required before we can begin to define the status of these three species in Borneo at the present time.

DESCRIPTION. 22". See key. Easy to recognize in breeding plumage on account of the two long white feathers from the nape, and the gracefully upward curling filamentous dorsal plumes. Wing 250–295 mm. (Meinertzhagen).

VOICE. Generally silent away from the breeding colony.

HABITS. In South-East Asia the Little Egret is a bird of wet padi fields and of quiet rivers and streams. At least some of the large numbers of small white egrets that frequent the sand and mudflats of the Buntal-Bako area in winter are believed to be this species.

RACES. (*a*) *E. g. garzetta* is probably an occasional winter visitor to Borneo ;

(*b*) *E. g. nigripes*, which extends from Java to Celebes, Philippines and Australia, has been collected in breeding plumage in S. Borneo (though evidence of breeding is lacking) and Harrisson obtained one in the Kelabit uplands. Other specimens are from Labuan, Kudat, and Baram (Smythies and Harrisson, 1959). Far more information on these two forms is required before their distribution in Borneo can be defined.

21. CHINESE EGRET PLATE II, 2

Egretta eulophotes (Swinhoe) 1860

Breeds in China (where the colonies were almost wiped out by plume hunters at the end of the nineteenth century), Formosa and Korea. Amadon (*Philippine Journal of Science*, 1951 : 53–54) suggests it may also breed in the central Philippines and possibly Celebes, where a specimen in breeding plumage has been collected in April.

Seven specimens were collected in Sarawak in the 1890s, suggesting this species must have been a common winter visitor at that time. Since then single birds have been collected in 1934 at Rangau (Limbang River estuary), and in 1952 at Sandakan. These nine birds are in the Sarawak Museum. There are two specimens from the Natuna Islands in the Raffles Museum, which also has a specimen taken in Singapore in 1940. For reasons given under the preceding species, it is impossible to define this bird's status today.

DESCRIPTION. See key. In breeding plumage the tuft of rather long plumes on the nape is distinctive. La Touche wrote, " Iris pale yellow ; facial skin in front of eye bright blue ". Banks, on a label of a skin in Sarawak Museum, writes, " Iris bright yellow, skin round eye paler ". More notes on the soft parts of this species are required.

HABITS. Probably similar to the Little Egret, but without far more field notes it is impossible to define its habitat in Borneo.

22. REEF EGRET PLATE II, 3

Egretta sacra (Gmelin) 1789 *Ujoh laut* (M)

E. Indian Ocean and W. Pacific.

Resident and probably distributed all round the coast of Borneo where there are suitable rocky reefs and islands. Also migratory to some extent, Harrisson noting that large numbers arrive in the Santubong area in the spring.

DESCRIPTION. See key. This is a dimorphic species, found in two colour phases; one is pure white (speckled with black when immature), the other slaty-black except for white chin and white stripe down the throat. In W. Borneo, however, the white phase is very rare, less than one for every hundred in the dark phase (there are two white and one speckled specimens in the Sarawak Museum). Iris bright yellow; bill dark horn; feet yellow-green, claws dark horn. Delacour states that the bill varies from brown to yellow, the legs and feet from yellowish to dark green.

VOICE. Not recorded.

HABITS. Typically seen singly or in pairs chasing crabs and other sea-food on rocks close to the waves, but Ussher noted that on Labuan it was generally found in freshwater swamps (? possible confusion with *Egretta eulophotes* which Sharpe did not recognize as a distinct species, see B.M. Cat. XXVI: 141). From October to April they are regularly seen on Santubong beach and nearby mud (Harrisson).

" On one occasion a shoal of fish were moving in the channel off Talang Talang Island pursued and plagued by some hundreds of terns. Amongst them, as well as a school of unidentified large dolphins dancing attendance, a Reef Heron swooped, stalled, plunged its head, for all the world like a trick-flying helicopter. This is the only time I have seen or heard of this usually sedate bird feeding otherwise than along rocks and reefs on foot " (Harrisson). Cairns on Penang Island once saw a bird diving off a rock and submerging completely under water to catch sizeable fish, which it brought back to its young ones on the rock by swimming on the surface.

NEST AND EGGS. Motley and Dillwyn described a breeding colony on a bare rock north-west of Labuan. The eggs (c/3), clear green in colour, were laid in small depressions in the ground. Harrisson writes that one pair has nested regularly on Tokong Ara, Santubong Bay, for some years; he reared a nestling from there (photograph in *Malayan Nature Journal* 1952: 100).

[NOTE.—This is now a protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

23. CATTLE EGRET

Bubulcus ibis (Linnaeus) 1758 *Burong apuh* (M)

Africa, S. Asia, Malaysia to the Moluccas.

A common breeding bird of Siam and the Philippines.

In Borneo a passage migrant and winter visitor; according to Banks a few remain all the year round, but there is no record of breeding. Flocks have been noted in various parts of Borneo, *e.g.* Kuching, Sibu, upper Kapuas, Kelabit uplands, Tenom, etc.

DESCRIPTION. 19". See key. In breeding plumage the head, neck, breast and back become pinkish-buff in colour (hence the European name of Buff-backed Heron), and on first arrival in Borneo in September or October some birds often show traces of buff in these feathers. The bill yellow at all seasons and of distinctive shape and the bulgy chin are good guides. Iris light yellow, eyelids greenish with yellowish edge; feet and claws black.

VOICE. Silent, except at the breeding colony.

HABITS. In Borneo it tends to go about in flocks, unlike the other white egrets, which tend to be solitary. It is usually, though not invariably, found along with buffaloes and cattle on their grazing grounds. "This is the common padi bird that catches the biting flies so troublesome to buffaloes, and shares the smaller fry set up by the movement of the great brutes. As far as I know they stick to cattle grounds and are a common sight winging their way up and down the river morning and evening, their wings almost touching the water; they appear to pick up little or no food on the river bank and none at all on the seashore" (Banks).

They also frequent well-kept lawns such as those in the centre of Sibu town, and they have been seen in Kuching, but not for some years now. Harrisson records that a solitary bird spent the whole winter under a Kelabit longhouse at Pa Tik.

Unlike other egrets it feeds mainly on insects. It has a curious technique of fixing the insect with a stony stare, the neck being wiggled from side to side for a brief moment or two (much as a cat will loosen up its muscles before making a rush), and then darting out its beak in a lightning jab to seize the morsel—a technique also used by some other egrets and herons.

FOOD. Grasshoppers, wasps, dragonfly larvae, insects, water crickets (Harrisson).

RACE. *B. i. coromandus* (Boddaert) 1783.

[NOTE.—A protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

24. JAVANESE POND HERON

Ardeola speciosa (Horsfield) 1821

S. Indo-China, Java, Borneo, Celebes : not Malaya.

Resident in S. Borneo where Grabowsky described it as a very common breeding bird of the Bangkau Lake ; also collected at Muara Tewe, Bandjarmasin, and Rantau. It is very rare in Sarawak and known only from three skins (Kuching 24.9.96 and 9.4.98 and Paku, Saribas, 1.4.17 in breeding plumage). It has been collected once in North Borneo.

DESCRIPTION. 18". In breeding plumage the crown and nape are pale buff, the breast cinnamon, mantle black. In non-breeding plumage, a brownish bird which suddenly comes to life with a flash of white wings ; in the field it cannot be distinguished from the next species, and only with great difficulty in the hand, especially if the specimen is in moult or immature.

HABITS. Nothing recorded in Borneo.

NEST AND EGGS. Grabowsky collected fresh eggs on the Bangkau Lake on 25 April.

25. CHINESE POND HERON PLATE II, 7

Ardeola bacchus (Bonaparte) 1855

Breeds in China and Indo-China, migrating south in winter to Malaya and Borneo.

There are a few specimens in the Sarawak Museum, and Banks considered it to be a regular visitor every year from September to February, usually in pairs, sometimes up to six birds in a flock. It seems to have become scarcer since the war, and I have seen only one Pond Heron (which might have been this or the preceding species) in ten years. More observations are required.

DESCRIPTION. In breeding plumage the maroon-chestnut crown, crest and neck distinguish it from the preceding species. In winter plumage expert examination is necessary. It cannot apparently be separated on measurements, as some books claim. Iris light golden-yellow to rather dark yellow, eyelid green, skin round eye greenish-yellow or light yellow ; upper mandible black with yellow-ochre margin ; lower mandible dark at tip, rest greenish-yellow ; feet pale green, claws horn.

HABITS. A bird of padi fields and cattle grounds, occasionally on river banks in the interior.

PLATE 11, 4 **26. LITTLE GREEN HERON** PHOTO PLATE 20

Butorides striatus (Linnaeus) 1758 *Ujok* (M) ; *tapa lelabi* (I)

(From *tapa*=soles of the feet, *lelabi*=turtle, because of its habit of standing in the water.)

Distribution world-wide.

In our area represented by a resident race and by a winter visitor from the mainland of Asia. Insufficient work has been done to determine the relative abundance of these two forms, but the species is common along rivers in winter, and an occasional visitor to the Kelabit uplands.

DESCRIPTION. 16". In the field the bird appears slate-grey rather than green, and invariably raises its crest on alighting. Iris lemon-yellow or grey, skin round eye greenish-yellow ; upper mandible black, lower yellowish or green ; tarsus dull green, feet yellow, soles yellow and usually conspicuous in flight.

VOICE. Usually silent.

HABITS. This is one of the typical birds of the rivers of Borneo, both down in the tidal reaches where the banks are lined with mangrove or nipa palm, and up in the headwaters ; it is usually flushed from bushes by the water's edge, or flies up into them if disturbed from the bank of the river or the bed of the stream, and is nearly always solitary. It has often been seen on the rocks and reefs of the seashore (Harrisson). In the Kelabit uplands it frequents only the grassy swamps. Not so crepuscular as the Black Bittern, but is more active towards dusk (Medway).

FOOD. Fish, prawns, crickets, insects, etc.

NEST AND EGGS. Not described from Borneo. Juveniles of the resident race have been collected in S. Borneo (Barito River and Riam).

RACES. (*a*) *B. s. javanicus* (Horsfield) 1821, the resident race ; (*b*) *B. s. amurensis* (Schrenck) 1860, a winter visitor.

27. COMMON NIGHT HERON PLATE 1, 8

Nycticorax nycticorax (Linnaeus) 1758

Distribution world-wide.

Resident in limited, suitable localities throughout Borneo.

DESCRIPTION. 24". Black crown and mantle contrast with grey wings and white underparts. One to three long narrow white feathers on the nape. " In flight a short-bodied, compact-looking bird with

closely retracted head appearing to merge directly into the rather stout body. . . . Young birds are dull, dark brown above spotted and streaked with buffish-white, the under-parts dull greyish with dark streaks " (*Popular Handbook of British Birds*). Iris ruby-red or reddish-orange ; upper mandible and tip of lower mandible black, remainder pale greenish ; feet yellow, claws black.

VOICE. The usual flighting call, *wock* or *kwaak*, has yet to be reported in Borneo.

HABITS. Banks described it as a local seasonal bird, found on cattle grounds and on the mudbanks of rivers. A nocturnal feeder, sleeping by day in heavily-foliaged trees, and flighting singly to its feeding grounds at dusk.

NEST AND EGGS. Hose found them breeding at Lake Ansok in the Baram district, a lake we have been unable to locate. For Penang breeding notes and photographs see article by Cairns, *Malayan Nature Journal*, 1956 : 145–148.

RACE. *N. n. nycticorax.*

28. RUFOUS NIGHT HERON PLATE I, 7

Nycticorax caledonicus (Gmelin) 1789

Java, Borneo, Philippines to Australia and W. Pacific.

Apparently a straggler to N. Borneo from its breeding area in the Philippines; collected by Everett and Whitehead, but not since.

DESCRIPTION. Described by Delacour as resembling the Common Night Heron in shape, but a little larger ; deep chestnut above and rufous-buff below.

HABITS. Nothing recorded in our area.

RACE. *N. c. manilensis* Vigors, 1831.

29. TIGER BITTERN PLATE II, 6

Gorsachius melanolophus (Raffles) 1822

Widespread in S.E. Asia, but rather rare.

An occasional visitor to Sarawak and N. Borneo.

DESCRIPTION. 19". Black crown and crest and light rufous colour of the upper-parts unmistakable; under-parts buff streaked with black. Young birds very different ; crown and nape black with large white spots ; upper-parts dark brown with narrow buff bars ; throat white ; under-parts brown barred with dark brown ; tips of primaries and of primary coverts white. Iris greenish-yellow ; upper mandible black, lower greyish-horn ; feet dark green, claws pale horn (imm. ♂).

HABITS. " A heavy dull unaggressive bird, foxy-red with round-winged owl-like flight ; it feeds on the edge of Chinese vegetable gardens, hiding in adjoining grass, and does not live in damp rice fields or on river banks " (Banks).

RACE. *G. m. melanolophus.*

PLATE II, 5 **30. YELLOW BITTERN** PHOTO PLATE 21

Ixobrychus sinensis (Gmelin) 1789

S.E. Asia and W. Pacific.

Of uncertain status in our area ; Banks thought it bred in Sarawak in March, but so far proof of breeding is lacking. The nearest known breeding colony is on Penang Island. It is well distributed in Borneo in winter, and a regular visitor to the Kelabit uplands.

DESCRIPTION. 14". Piebald appearance in flight, conspicuously black and fawn. In the hand distinguish from Schrenck's Bittern as follows :

	Ixobrychus
Tibia feathered to heel Basal joint of middle toe much shorter than second joint Wing $4\frac{3}{4}$–$5\frac{1}{4}$"	*sinensis*
Tibia not feathered to heel ($\frac{1}{4}$" bare) Basal joint of middle toe equals second joint Wing $5\frac{3}{4}$–6"	*eurhythmus*

Iris golden-yellow, skin round eye greenish-yellow ; black ridge along upper mandible, rest of bill horn, greenish at base ; feet greenish-yellow, claws horn.

HABITS. Frequents padi fields and grassy swamps.

FOOD. In the Kelabit uplands the people regard it as a friend because it feeds on the crickets that so severely damage the stems of the ripening rice plants in the irrigated padi fields.

NEST AND EGGS. For interesting accounts and photographs of nesting on Penang Island see articles by Cairns in *Malayan Nature Journal*, 1954 : 11–15 and 28–31, and by Loke Wan Tho : 81–83.

PLATE II, 6 **31. CHESTNUT BITTERN** PHOTO PLATE 22

Ixobrychus cinnamomeus (Gmelin) 1789 *Engkruak tepang* (I)

(*Tepang* is a form of bewitchment akin to evil eye, and to answer the bird's call at night is believed to be dangerous (Medway).)

N.E. and S.E. Asia.

Found throughout Borneo as a resident in suitable localities, including the Kelabit uplands.

DESCRIPTION. 15". Uniform cinnamon wings without dark tips are diagnostic. Sexes differ, the female being much duller than the

male. Young birds are browner, barred and spotted with buff above, streaked darker below. Iris golden, skin round eye green ; gape green ; upper mandible dull black edged with yellow not quite reaching the tip ; lower mandible dull white, greenish at tip ; feet green, paler at joints, soles yellow, claws horn.

HABITS. Frequents padi fields and suitable freshwater swamps, and is more often seen than the other two small bitterns. It will often remain hidden in long grass on the edge of a pond or reservoir and leap up at the last moment when in danger of being trodden on. The old reservoir in Kuching usually holds one or two birds in the rather scanty cover available.

FOOD. Five small prawns in an upland male (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *I. c. cinnamomeus.*

32. VON SCHRENCK'S BITTERN PLATE II, 10

Ixobrychus eurhythmus (Swinhoe) 1873

S.E. Siberia, China and Japan ; migrating south in winter as far south as Malaya and Celebes.

An occasional winter visitor to Borneo, a few specimens having been obtained in different parts of the island.

DESCRIPTION. Slightly larger than Yellow Bittern, and in flight appears a rich purple-brown. For other distinctions see under that species. Iris yellow ; bill greenish-yellow except for black ridge of upper mandible ; feet light green.

HABITS. A bird of wet padi fields and swamps.

FOOD. Frogs and many large ground crickets in the uplands (Harrisson).

NEST AND EGGS. A young bird just out of the nest was found by Allen at Kuching at the end of November 1956 (see Checklist). It is possible that this came from a local nest.

33. BLACK BITTERN PLATE II, 9

Dupetor flavicollis (Latham) 1790

S.E. Asia to Australia.

Occasional winter visitor ; it is very common in the seasonal lakes (padangs) of S.W. Sarawak (Medway), and there are a few specimens from various other parts of Borneo.

DESCRIPTION. 23". Very long neck, carried half-extended in an "S" curve for a short flight, at once distinguishes it from Little Green Heron, which retracts its neck at once on taking off. Dark appearance and slender build of the bird when on the alert help to identify it. Iris red to brown (female browner than male) ; skin

round eye brown ; bill dark brown, the lower mandible a little paler ; feet and claws black or dark horn. Young birds are described by Delacour as brown with buff margins above ; mottled buff and chestnut below.

HABITS. Medway is the only observer who has made notes on this bird in our area. He describes it as shyer than the Little Green Heron and very rarely seen in daylight ; large flights take place at dusk, a massive simultaneous movement from daytime roosts in forest (and reed beds ?) to the river side.

FOOD. Stomach contents indicate that they feed either early in the morning or in the evening. Fish (*e.g. Ikan poyu*), insects, etc.

RACE. *D. f. flavicollis.*

STORKS : Ciconiidae

Storks differ from herons chiefly in their larger size and much more massive bills. They are very poorly represented in Borneo.

35. STORM'S STORK PLATE 1, 6

Ciconia stormi (Blasius) 1896 *Bangau* (M)

Borneo, Sumatra, Malaya.

Resident and distributed sparingly through Borneo but distinctly local. Probably decreasing because it is shot for food.

DESCRIPTION. 34". Long straight bill. Black body and wings contrast with white belly and under tail-coverts. Vermilion facial skin noticeable in field, contrasting with black crown. Cheeks, nape, and three central pairs of tail-feathers white.

VOICE. Recorded as *karau.*

HABITS. Frequents freshwater swamps and is occasionally seen flying over rivers and perching freely on trees. I have found it to be fairly common up the Tutong and Belait Rivers in Brunei, where it frequents the *loagans* or open grassy swamps subject to periodical flooding.

FOOD. Earthworms (Büttikofer).

NEST AND EGGS. Not recorded from Borneo.

[NOTE.—A protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

36. LESSER ADJUTANT STORK PHOTO PLATE 23

Leptoptilos javanicus (Horsfield) 1821 *Bangau* (M)

Widespread in S.E. Asia.

Resident in Borneo, but local. It is remarkable that there are so few records of so conspicuous a bird. Banks found them in numbers on the seashore at Cape Sirik and Awat Awat, and in the padi fields at Sundar, but they have not been seen in these areas since 1940. They breed on the Sadong River and probably somewhere near Semporna, where Banks and Sims found them common in 1956.

DESCRIPTION. Iris pale grey ; bill an indefinite pale horn, tinged with pink along top of upper mandible ; bare top of head brown ; bare skin below eye pale pink ; legs and feet grey ; (described from a captive bird).

VOICE. Writing of a tame bird Shelford says : " When the Adjutant bird expects food to be thrown to it . . . it nods its head up and down, uttering the while a continuous harsh grating sound like a rusty saw cutting through wood ; at other times it is a very silent bird ".

HABITS. It prefers open spaces, and may be seen on the seashore or in padi fields. It is a splendid flier, the great wings making a high-pitched note as it soars like a vulture. One became involved in a fight with a Sea Eagle, both birds being crippled and captured (Harrisson).

It is often kept as a pet, and tame birds display to human beings with fascinating bows and scrapes (Harrisson). For five years (1952–57) a bird known as Agong was a well-known character in Kuala Belait. According to an account printed in the *Borneo Bulletin* (16 January 1954) Agong was captured as a nestling with four of his brothers and sisters in a high treetop near Tutong and given to a Malay (Rayup bin Mani) employed by the Public Works Department. Agong settled down immediately to an urban existence, and soon became a familiar figure patrolling the football field in search of frogs, snails, snakes, etc. He kept strict Government hours, turning out on patrol shortly after seven in the morning and returning promptly at four to his owner for a meal of small fishes. At one time he used to fly long distances in search of extra food, the padi fields at Labi being one of his favourite hunting grounds, but always at four o'clock he would come winging home. Eventually his wings had to be clipped for his own safety, and, after someone had been seen stalking him on the football field with a gun, long

strips of red cloth were attached to his legs to show that he was a tame bird. His owner claimed that Agong was Kuala Belait's most efficient watchdog, clashing his beak and flapping his wings if anyone came near the house after dark.

Although a male bird, Agong occasionally went broody, collecting wisps of paper and other rubbish to build himself a nest, then collecting round egg-like stones and trying to hatch them out for a few days. Agong fell sick and died in 1957, when he was about five years old.

FOOD. The bird is a scavenger, more or less omnivorous.

NEST AND EGGS. The only known breeding colony is in S.W. Sarawak on the Sadong River (young birds were taken yearly and fattened for food by the Chinese—so many were being taken that the bird has now been protected ; the young ones were caught by chasing them over muddy estuaries till they became exhausted). According to Banks they formerly bred in the Belangsat forest near Lawas, and Agong came from a nest near Tutong, but there is no evidence of breeding in these localities at the present time. More information is required about the nesting of this interesting and conspicuous bird in Borneo.

[NOTE.—A protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

IBISES AND SPOONBILL : Plataleidae

Ibises have long curved bills, and the species found in Malaysia are either black or white in colour. The Spoonbill is closely related but has a flat spatulate bill. All are rare birds in Borneo.

37. WHITE IBIS

Threskiornis melanocephala (Latham) 1790

Continental Asia from India to Japan ; appearing in Malaysia as a rather rare winter visitor. Twice collected (Sibu and Trusan River) and once seen (Bintulu) in our area.

DESCRIPTION. 25". Curved black bill and naked black head contrast with white plumage. Young birds are brown above and have some white on head and neck.

RACE. Some authorities regard this bird as a race of *T. aethiopicus* Latham 1790, the Sacred Ibis of Egypt.

38. GLOSSY IBIS

Plegadis falcinellus (Linnaeus) 1766

Distribution world-wide.

Once collected in S. Borneo by Croockewit in 1851.

DESCRIPTION. 24". Blackish, with green and purple gloss, about the size and shape of a thick-set Curlew, but with more rounded wings (Meinertzhagen). For distinctions from Black Ibis see under that species.

RACE. *P. f. peregrinus* (Bonaparte) 1855.

39. BLACK IBIS

Pseudibis papillosa (Temminck) 1824

S.E. Asia.

Collected three times in S. Borneo: on the Barito River in 1836; at Puruktjau (upper Barito River) in 1909; and at Long Iram, lower Mahakam River, in 1912. Spurway reports sight records of single birds at Pangkalan Buun, S. Borneo, in January 1942 and in wet padi at Batu Lintang, Kuching, in November 1946.

DESCRIPTION. 30". A large black bird, easily distinguished from Glossy Ibis by bare head, conspicuous white wing spot, and absence of chestnut on the under-parts. Legs and feet coral-red.

RACE. *P. p. davisoni* (Hume) 1875.

40. SPOONBILL

Platalea leucorodia (Linnaeus) 1758 *Burong Ali Baba* (M)

S. Europe, S. Asia, Australia.

Banks (1935) reported this bird to be a regular visitor to Cape Sirik annually in November, normally staying far out on the mud but occasionally visiting padi fields. No other naturalist has met with it in our area.

DESCRIPTION. 33". A tall white bird recognized by its long flat spatulate bill, black in colour like legs and feet. In adults at close range a crest is visible, and an orange-tawny patch on the crop. Feeds by sweeping the bill from side to side, like a man scything grass. Head and neck outstretched in flight, and not retracted as in herons (Meinertzhagen).

RACE. *P. l. regia* Gould 1838.

DUCKS: Anatidae

Ducks are rare in Borneo. Nine species have been recorded, of which the two Whistling Ducks are resident in the south, the Cotton Teal may be a resident or a migrant, and the other six are well-known Palaearctic species which occasionally straggle to our area in winter—Borneo being on the extreme fringe of their winter range. As they are so seldom seen, the ducks are here treated very briefly.

41. INDIAN WHISTLING DUCK

Dendrocygna javanica (Horsfield) 1821

S.E. Asia.

Motley found it very common on the marshes round Bandjarmasin, and Grabowsky found it on the Bangkau Lake, usually in flocks of several hundred birds. Harrisson saw 90–100 off the Bako National Park, 20 July 1958.

DESCRIPTION. Resembles the next species but has no spots on the neck.

HABITS. See under next species.

NEST. Presumably breeds in S. Borneo, but no one has found the nest.

RACE. *D. j. javanica.*

42. WANDERING or LESSER WHISTLING DUCK

Dendrocygna arcuata (Horsfield) 1824

Malaysia and Philippines to Australia and S.W. Pacific.

There are two specimens from Pleihari and four from Rantau in the Leiden Museum. Presumably resident in S. Borneo, but there are no other records.

DESCRIPTION. 17". Rufous colour with black markings distinctive; white on the flanks. According to Delacour, in flight the wings appear black underneath.

HABITS. The Whistling Ducks are goose-like ducks with long legs and a long neck, broad wings, and a whistling voice. They normally frequent lakes with trees round about, in which they roost and breed. A regular sibilant whistle, not very clear, and by no means harsh or shrill, is uttered constantly on the wing.

NEST. Not described from Borneo. Nests in hollow trees.

RACE. *D. a. arcuata.*

43. MALLARD

Anas platyrhynchos Linnaeus 1758

Holarctic, migrating south in winter.

Two specimens have been collected in Sarawak: Bintulu 23 November 1925 and Tarikan (below Niah) January. Medway saw one flying over Niah village on 26 November 1957. Banks thought it occurred rather sparingly every year in favoured places like Sundar.

DESCRIPTION. 23". Resembles domestic duck; male in eclipse plumage and female identified by broad purple speculum between two white bars (conspicuous in flight); flight rapid with shallow wing-beats.

HABITS. It should be looked for on quiet grassy river backwaters and on lakes.

44. WIGEON

Anas penelope Linnaeus 1758

N. Palaearctic.

Twice collected in our area: by Whitehead on the Tampassuk plains near Kota Belud (two birds out of a small flock), and by Everett at Bintulu.

DESCRIPTION. 19". Speculum green, bordered with black on each side. Female is mottled brown, and may be distinguished from other surface feeders

by small short bill, more red in plumage, and pointed tail; young males resemble the females.

HABITS. A surface-feeder, like Mallard.

45. COMMON PINTAIL

Anas acuta Linnaeus 1758

Holarctic.

Twice collected in our area: by Everett at Bintulu and by Bampfylde at Kapit.

DESCRIPTION. 22". "Speculum of male is bronzy-green, shading to black behind with a warm buff bar in front; that of female is obscure and brownish. General plumage of female is much like Mallard duck, but the combination of more delicate form, slender neck, pointed tail . . . and grey, not dark olive, bill readily separate her at reasonable range." (*Popular Handbook of British Birds*).

HABITS. Surface-feeder, like Mallard.

RACE. *A. a. acuta.*

47. GARGANEY

Anas querquedula Linnaeus 1758

Palaearctic.

About fifteen have been collected, from all parts of Borneo including the Kelabit uplands and the upper Plieran.

DESCRIPTION. 16". Speculum is green, bordered with white at each side, but is obscure in the female. Small size, distinct pale stripe over eye, and whitish throat without spots are other distinctive features.

HABITS. Surface-feeder like Mallard. Usually solitary in Borneo, and the only species so far recorded in the far interior. Regular at Cape Sirik in flocks up to ten out on the edge of the tide, visiting rice fields in November before the rice is too high (Banks).

48. SHOVELLER

Anas clypeata Linnaeus 1758

Holarctic.

Five specimens have been collected, all in Sarawak. Probably an occasional winter visitor.

DESCRIPTION. 20". Enormous spatulate bill (hence the name of Shoveller) is diagnostic on the water or in flight. Speculum is green with a white wing-bar in front and white margin behind.

HABITS. Surface-feeder like Mallard. In our area frequents wet padi fields and river backwaters.

49. TUFTED DUCK

Aythya fuligula (Linnaeus) 1758

Palaearctic.

Three specimens have been collected: Labuan, Sibu and Kuching.

DESCRIPTION. 17". In flight both sexes show a broad white wing-bar,

and the general appearance is black with a white belly. No speculum. Tuft at back of head, more noticeable in drake.

HABITS. A diving duck, habitually diving for food or to escape ; takes off with difficulty, pattering along the surface.

50. COTTON TEAL

Nettapus coromandelianus (Gmelin) 1789 *Itek badan* (M)

S.E. Asia and Malaysia to New Guinea and Australia.

Passage migrant and winter visitor in our area. Grabowsky found it in flocks of ten to fifteen birds on the Bangkau Lake but did not report any evidence of breeding there. It is regular in some parts of northern Sarawak, fairly regular at Cape Sirik and Lundu (Banks) ; small flocks have been seen up the Baram and Rajang Rivers, usually on a drifting log.

DESCRIPTION. 13″. The smallest duck in our area. Mainly white sides of head, neck and under-parts, and absence of speculum prevent confusion with other ducks. The male has a prominent white patch on the wing ; in full plumage he is largely white, with the crown metallic dark brown, a broad black collar, and the upper-parts metallic green and purple. The female has a brown line through the eye and no white wing-patch.

HABITS. This is the only representative in our area of the perching ducks, distinguished by rather long hind toe lacking a lobe, neck shorter than the body, upperparts (especially in the male) more or less glossy, and a rather long tail. Very noisy on the wing, uttering a peculiar note that has been likened to the words *fixed bayonets*. Usually found resting on the water, or in padi fields, or among the grass in a backwater.

RACE. *N. c. coromandelianus.*

HAWKS AND EAGLES : Accipitridae
Lang, Menaul (M)

The diurnal birds of prey, a group that includes this and the two families that follow, have strong curved beaks with a hooked tip and strong legs with powerful claws ; this equipment enables them to prey on other living creatures, such as small mammals, birds, snakes, fish, and reptiles. They build large nests of sticks on trees or cliffs, and the young are unable to leave the nest for several weeks after

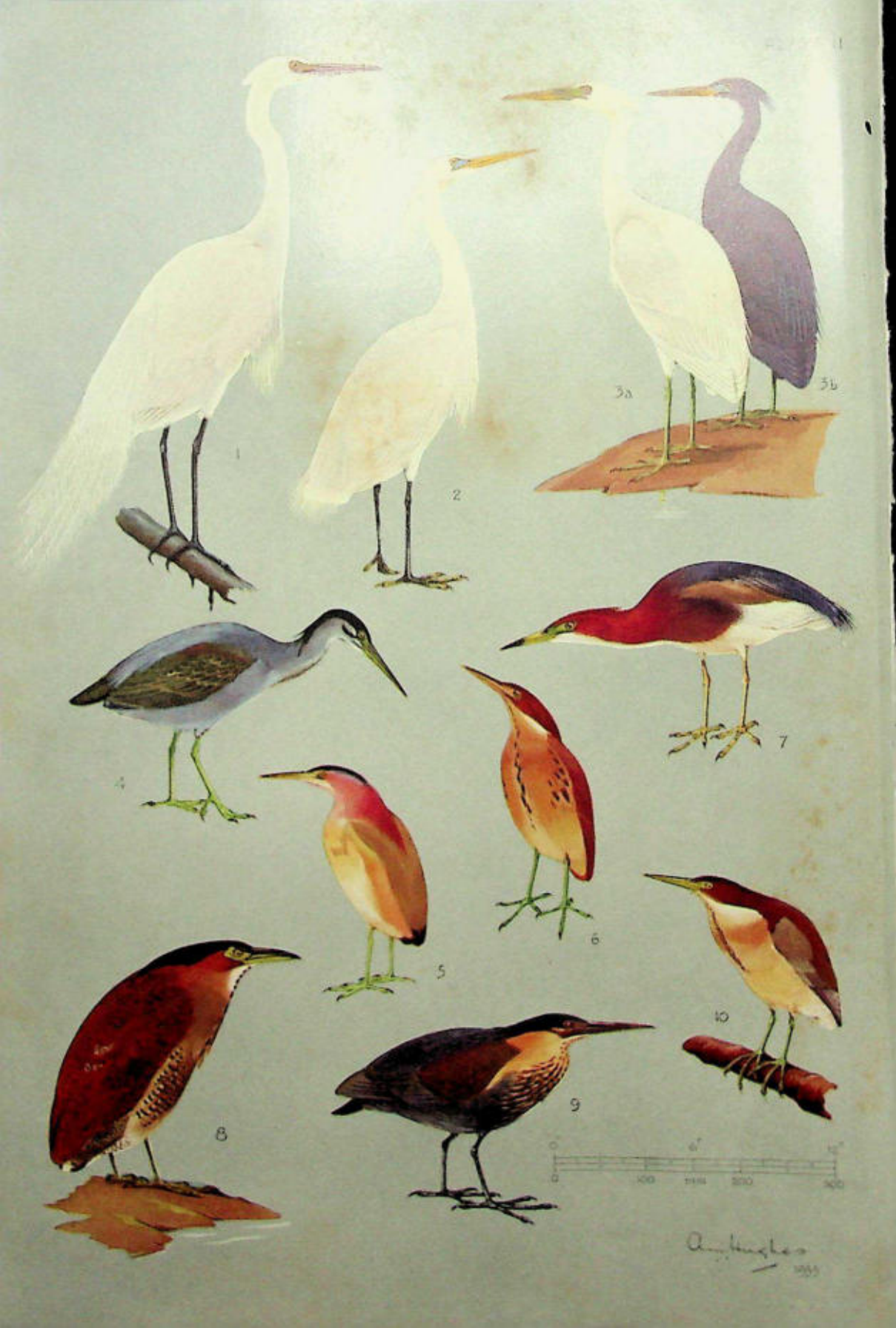

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PLATE II

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1. INTERMEDIATE EGRET 125
Egretta intermedia intermedia.

2. CHINESE EGRET. 126
Egretta eulophotes.

3*a*. REEF EGRET (White phase) 127
Egretta sacra.

3*b*. REEF EGRET (Grey phase) 127
Egretta sacra.

4. LITTLE GREEN HERON 130
Butorides striatus.

5. YELLOW BITTERN 132
Ixobrychus sinensis.

6. CHESTNUT BITTERN 132
Ixobrychus cinnamomeus cinnamomeus.

7. CHINESE POND HERON 129
Ardeola bacchus.

8. TIGER BITTERN 131
Gorsachius melanolophus.

9. BLACK BITTERN 133
Dupetor flavicollis flavicollis.

10. VON SCHRENCK'S BITTERN 133
Ixobrychus eurhythmus.

hatching. Identification in the field is not easy, partly because they are usually seen at long range, partly because some species are polymorphic (the adults having two or more quite different types of plumage) and most have different plumages for males, females, and immature birds. For this reason a coloured plate of only the more distinctive types is provided in this book. The outline of the bird on the wing and its flight behaviour should suffice to place it in one of the five more or less artificial groups into which the family is divided. Only the more puzzling species are included in the key.

KEY TO SOME HAWKS AND EAGLES

(excluding *Elanus, Machaeramphus, Haliastur*)

1.	Cutting edge of upper mandible with two sharply pointed conical " teeth " near the end	*Aviceda*
	Without teeth	2
2.	Legs feathered to base of toes ; toes bare	3
	Legs and toes bare, or with only the upper part of the tarsus feathered	7
3.	Claws much curved ; inner claw shorter than outer toe with claw	4
	Claws straighter ; inner claw longer than outer toe with claw. Wing about 22″	*Ictinaetus*
4.	Feathering of leg continued on to basal joint of toe	5
	Legs feathered to base of toes only	6
5.	Mid-toe without claw 35 mm. or more	*S. alboniger*
	Mid-toe without claw 31 mm. or less	*S. nanus*
6.	Primaries exceeding secondaries by less than length of tarsus. Wing 14½–17½″	*S. cirrhatus*
	Primaries exceeding secondaries by more than length of tarsus	*H. kieneri*
7.	Lores almost naked or with bristly hair-like feathers	8
	Lores covered with short, close-set normal feathers	*Pernis*
8.	Tail forked	*Milvus*
	Tail not forked	9
9.	Tarsus long ; at least twice length of bill from gape	*Circus and Accipiter*
	Tarsus short ; less than twice length of bill from gape	10
10.	With a wide long conspicuous black and white crest covering crown and nape	*S. cheela*
	Without such a crest	11
11.	Wing under 14″. Plumage mainly brown, streaked and barred	*B. indicus*
	Wing over 14″	12
12.	Hind claw rounded beneath	*Icthyophaga*
	Hind claw flattened and grooved beneath	*H. leucogaster*

I. KITES

Medium-sized hawks with long wings, of which the Brahminy Kite is the best-known example in our area.

51. BLACK-SHOULDERED KITE

Elanus caeruleus (Desfontaines) 1789

Distribution almost world-wide. Resident and widely distributed in Malaya and the Philippines, but in our area is only a stray, represented by three specimens from S. Borneo (no locality), Bandjarmasin and Brunei.

DESCRIPTION. 13". A small handsome little kite with pure white underparts; the long pointed white wings with triangular black patches, graceful flight with slow deliberate wing-beats, and habit of hovering identify it on the wing.

RACE. *E. c. hypoleucus* Gould 1859.

52. BAT HAWK PLATE III, 1

Machaeramphus alcinus (Westerman) 1848

Africa, Madagascar, Malaysia to New Guinea.

Resident in Borneo; a cave-dweller, found in all parts where there are suitable caves. Occasionally seen elsewhere (Harrisson has seen it two evenings running in Kuching). Harrisson considers that it has decreased markedly in numbers in the last twenty-five years, perhaps as a result of a price put on its head in the 1930s in Sarawak to protect the birds' nest swiftlets on which it feeds.

DESCRIPTION. 18". Blackish colouring with white throat and breast diagnostic. In flight the long tail is evident, the wings appear short, the head round and blunt and remarkably fore-shortened, so that the bird resembles a bomber plane (Harrisson). Iris golden-yellow; bill black; feet light grey, claws black.

VOICE. It calls constantly and distinctively (Harrisson). The call is a rapid petulant yelp *quick quick* . . . repeated many times, often heard at night (Madoc).

HABITS. The flight is very rapid and they dive and twist incessantly; the wing-beat is regular, rapid, rather shallow, with the wing-tips drooped (Madoc). Banks describes them at the Niah cave: "One was observed flying about with a bat and another with a swiftlet in its claws, but no attempt was made to feed on the wing. Another in particular perched on a ledge above the cave-mouth and except for an occasional erecting of its crest took no notice of the many swiftlets passing in and out as dusk fell; without warning it

PLATE III

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1. BAT HAWK 143
Machaeramphus alcinus alcinus.

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Aviceda jerdoni borneensis.

3. BRAHMINY KITE 146
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4. CRESTED GOSHAWK 148
Accipiter trivirgatus.

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Spizaetus alboniger

6. GREY-FACED BUZZARD-EAGLE 150
Butastur indicus.

7. LESSER FISHING EAGLE 155
Ichthyophaga nana nana.

8. CRESTED SERPENT EAGLE 156
Spilornis cheela pallidus.

9. HONEY BUZZARD 145
Pernis ptilorhynchus orientalis.

10. BLACK EAGLE 154
Ictinaetus malayensis.

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300
1953

made a vertical dive, flattened out, took a swiftlet and calmly flew off ".

FOOD. Bats and swiftlets.

NEST AND EGGS. Not described from Borneo.

RACE. *M. a. alcinus.*

53. JERDON'S BAZA or CRESTED LIZARD HAWK

PLATE III, 2

Aviceda jerdoni (Blyth) 1842

Himalayas through Malaysia to Philippines and Celebes.

Resident and widely distributed in our area, but not often seen.

DESCRIPTION. 16–19". Long black crest tipped white and broad rufous bars on under-parts of adults are distinctive. Immature birds are more or less pure white below and could be confused with Wallace's Hawk-Eagle, but the tarsus is feathered only half-way down to the toes. In the hand the two "teeth" on the upper mandible prevent confusion. Iris yellow; gape greenish; underside of lower mandible grey, rest of beak and cere black; feet light yellow, claws black.

HABITS. Banks found them on the edges of quiet river backwaters.

FOOD. Caterpillars, mantis, insects.

NEST AND EGGS. Not described from Borneo.

RACE. *A.j. borneensis* (Sharpe) 1893.

54. HONEY BUZZARD

PLATE III, 9

Pernis ptilorhynchus (Temminck) 1821

Siberia and Japan to S.E. Asia.

Two races in Borneo; one is resident and widely but sparsely distributed throughout Borneo; the other is a winter visitor.

DESCRIPTION. 22". See key. A polymorphic species, the plumage being extremely variable. At close range the scale-like feathers in front of the eye distinguish it from all other hawks. In overhead flight the rounded tail, cross-barred black and white is conspicuous; wing moth-like, with a broad pale buff band, the primaries separated and upturned. The normal flight is a quick flapping, unrelieved by sailing, from one tree to another, but it occasionally soars. Iris bright lemon-yellow; gape yellowish-green; bill dark horn; feet yellow, claws black.

VOICE. A high-pitched loud ringing note of four syllables, which can be heard from a great distance. Harrisson's pet bird called intermittently at dusk for about half-an-hour, a long melancholy

musical call *whi-whee-uho* with slight variants. A shorter double version of the first two syllables was occasionally uttered by day.

HABITS. Forests, rubber gardens, trees by rivers, swamp edges, etc. According to Harrisson it can hop or jump astonishing distances and commonly uses this method of locomotion on the ground or in trees, and it has a noticeable habit of letting one wing or leg hang down loose.

FOOD. As its name suggests, it feeds mainly on bees and their honey, wax and larvae, but I have seen one shot which was accused of seizing domestic chickens. Stomach contents include snakes, soft fruits, tapioca tops, etc.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. p. torquatus* Lesson 1830 is the resident form with a long crest; (*b*) *P. p. orientalis* Taczanowski 1891, a winter visitor, is dark and almost crestless. As old records did not differentiate between these two races it is difficult to assess the abundance of *orientalis* in our area.

54a. PARIAH or BLACK KITE

Milvus migrans (Boddaert) 1783

Widespread in Africa and Asia.

Once collected in our area, by Everett on Labuan in December 1889.

DESCRIPTION. 28". General colour brown, easily distinguished on the wing from other hawks in our area by forked tail.

RACE. *M. m. lineatus* (Gray) 1831, breeding from Siberia to trans-Himalaya.

55. BRAHMINY KITE PLATE III, 3

Haliastur indus (Boddaert) 1783 *Singalang burong* (I)

India to the Philippines and Solomons.

The commonest bird of prey in Borneo; it occurs far up the rivers in the interior, but is more abundant on the coast.

DESCRIPTION. 18". Young birds are mottled brown and in overhead flight the primaries appear light on the basal third and blackish on the apical two-thirds; flight very graceful. (Adult ♀). Iris dirty-white flecked brown; cere yellow, upper mandible pale yellow, lower white; feet yellow, claws black.

VOICE. A long shrill mewing squeal *chee-e-e.*

HABITS. They are found inland on lakes and large rivers, but like best to scavenge in the sea and can be seen to advantage in Sandakan Harbour, where there is a large nomadic population.

FOOD. A great robber of chickens and much detested by the natives (Whitehead). Eats snakes, lizards and refuse (Motley).

Also locustids, large beetles, etc. It catches fish by swooping, pausing with legs held rigid, plunging feet in water, and seizing fish up to one pound weight ; the fish is usually carried close under the belly, head-first (Harrisson).

NEST AND EGGS. The nest is a large structure of sticks in a tall tree, usually beside a river or lake or cultivation. Eggs are laid in December and January and are greyish-white in colour, unmarked or feebly blotched with red or brown, 50×36 mm. I have seen young being fed in a nest on the Rajang River below Kapit on 16 March. Harrisson found a nest at 3,500 feet in the Kelabit uplands in January.

RACE. *H. i. intermedius* Gurney 1865.

II. GOSHAWKS

Goshawks are small to medium hawks with comparatively short broad wings, long tail and long legs. They can be identified by their flight behaviour, a few rapid flaps of the wings being followed by a glide ; soaring is not infrequent, the bird circling upwards with a few wing-beats from time to time. They live in the forest and when hunting fly fast and low along the forest edge and pounce on an unsuspecting small bird before it has time to take cover. The five species in our area are not easy to separate from each other ; the following key may help.

KEY TO THE GOSHAWKS (genus *Accipiter*)

1.	A distinct nuchal crest formed by several lengthened feathers. Wing ♂ 7·8–8·2″, ♀ 9·0″	*trivirgatus**
	No such crest	2
2.	Outer toe with claw about as long as the middle toe without claw. Wing 7·2–7·9″ (little difference between sexes) cere yellow even in old skins	*soloensis*
	Middle toe very long, and without claw much longer than outer toe with claw	3
3.	Wing ♂ 8·2″, ♀ 9·5″	*nisus*
	Wing ♂ under 7″, ♀ under 8″	4
4.	Second primary slightly shorter than sixth. Fourth and fifth primaries equal	*virgatus*
	Second primary longer than sixth. Fourth primary longer than third which is longer than fifth	*gularis*

* The inner toe (without claw) reaches the base of the outermost phalanx of the middle toe; the inner toe extends to beyond 60 per cent. of the length of the middle toe (without claw). The middle toe is less than 58 per cent. of the tarsus. This foot structure separates *trivirgatus* at once from *nisus* and *virgatus* (Mayr, *Am. Mus. Novitates*, 1949, 1415: 2).

56. CHINESE GOSHAWK

Accipiter soloensis (Horsfield) 1821

A Chinese species, wintering in the tropics.

A few specimens have been collected in various parts of Borneo including two from the Turtle Islands and one from Kinabalu at 1,000 feet.

DESCRIPTION. 11". See key. The adult is dark grey above and white underneath, with a rufous-grey wash on breast and flanks. Young birds are dark brown above, blackish on the head ; breast white with spots, flanks barred with rufous-brown. In all plumages the yellow cere is diagnostic in the hand. Iris bright lemon-yellow ; bill dark horn, cere yellow ; feet yellow.

HABITS. Swinhoe described it as often poising over Hong Kong with almost motionless wings while the tail is continually opened and shut like a fan.

FOOD. Sand lizards, caterpillars.

57. CRESTED GOSHAWK PLATE III, 4

Accipiter trivirgatus (Temminck) 1824

Widespread in S.E. Asia.

Resident and fairly common throughout the lowlands of Borneo.

DESCRIPTION. 14". See key. When perched in a tree it looks about the size of a green pigeon. In the field the head appears grey with a short crest ; there is one stripe down the centre of the throat and a stripe on each side ; breast barred ; under tail-coverts white. Iris yellow, with a green tinge when alive ; cere and gape pale yellow, beak dark horn ; feet yellow, claws black. In flight the wings and especially the tail appear banded light and dark.

HABITS. Those of the goshawks. I have watched a pair circling over the Berakas forest at Brunei, a few rapid wing-beats followed by soaring. It is, however, the tamest of all Bornean birds-of-prey. It has a positive predeliction for sitting on low branches over rivers and paths, where it is easily approached—and only too easily shot (Harrisson).

FOOD. Small birds and rodents, lizards, etc.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *A. t. microstictus* Mayr 1949 on the mainland of Borneo ;

(*b*) *A. t.* subspecies in the North Natunas.

58. JAPANESE LESSER SPARROW-HAWK

Accipiter gularis Temminck and Schlegel 1844

Breeds in N. China and Japan and winters in the tropics.

A common winter visitor throughout Borneo, and in the Kelabit uplands it is so regular that it is one of the birds on which the Kelabits base their calendar. Recorded from the North Natunas.

DESCRIPTION. ♂ 10", ♀ 12". Sexes differ markedly in colour, the male being rather pale rufous or buff-brown below with regular though narrow and rather inconspicuous cross-barring on breast, flanks, abdomen and tibia; in the female the under-parts are regularly barred with grey-brown and white, and the upper-parts are brown and not grey. Young birds are white below with regular streaks. Iris yellow or reddish-brown; gape greenish; cere yellow with a greenish tinge; base of beak blue-grey, remainder black; feet greenish-yellow, toes lemon-yellow, claws black.

HABITS. Those of the goshawks.

FOOD. Small birds. Has been shot chasing green pigeon.

RACES. (*a*) *A. g. gularis* from Japan; (*b*) *A. g. stevensoni* Gurney 1863 from China, the males of which are conspicuously paler on the underparts than males of *gularis* but females are indistinguishable. Some authorities treat both as races of the next species.

59. ASIATIC LESSER SPARROW-HAWK

Accipiter virgatus (Temminck) 1823

Malaysia, Philippines, Celebes.

A submontane resident, ranging from Kinabalu along the spinal chain to Mt. Dulit, altitude range 1,000–4,000 feet.

DESCRIPTION. ♂ 10". See key. The rufous thigh of the Bornean race is diagnostic. Sexual difference in plumage rather slight, but sexual difference in size is much more pronounced than in *A. gularis*, the wing of the male only reaching about 84 per cent. of the wing of the female as compared with 89 per cent. Both sexes differ from *A. gularis* in being much more rufous below with a well-developed rufous breast-shield, and the black stripe down the centre of the throat is much broader. Young birds are regularly streaked below.

HABITS. A bird of hill clearings.

FOOD. Rodents, etc.

NEST AND EGGS. Whitehead had two eggs brought to him by a native, " evidently of this hawk, which had been seen by me about the locality where the nest was found. One egg was of the typical

Sparrow-Hawk type [*i.e.* blue-white in ground-colour heavily marked with reddish], the other nearly spotless", 38×30 mm. Harrisson found a nest on 5 June 1948 at Pa Umur, Kelabit uplands, containing a quarter-grown nestling and two addled eggs.

RACE. *A. v. rufotibialis* Sharpe 1887.

60. EUROPEAN SPARROW-HAWK

Accipiter nisus (Linnaeus) 1758

Palaearctic.

Once collected at Kuching, 30 March 1895.

DESCRIPTION. 14". See key. Much larger than the preceding species and has no stripe on the throat.

RACE. *A. n. nisosimilis* (Tickell) 1833, breeds in northern and central Asia east to Japan.

III. BUZZARDS

Buzzards are medium-sized hawks with large broad wings and spend much time soaring in a leisurely manner. One species is a winter visitor to our area.

61. GREY-FACED BUZZARD-EAGLE PLATE III, 6

Butastur indicus (Gmelin) 1788

Breeds in E. Asia and Japan, wintering in S.E. Asia.

Passage migrant and winter visitor from September to mid-April to N. Borneo and Sarawak, commoner in the north and in the Kelabit uplands, not recorded from Indonesian Borneo to date.

DESCRIPTION. 17". Seen through glasses at close range it is a handsome bird, but the usual view is that of a medium-sized brownish hawk, with a whitish rump patch clearly visible as it flies away (Edgar). In flight its pale grey head, brown breast, heavily barred white and brown under-parts and ashy tail showing three black bars are diagnostic (Cairns). Iris pale yellow ; bill black, yellow at base ; feet dull yellow.

VOICE. Once heard can never be mistaken—it is a clear but slightly tremulous *pit-kwee* sometimes *chee-whee* the second syllable of each call accented and rising (Cairns).

HABITS. " It seemed to be of a confiding and somewhat indolent disposition, preferring to seat itself on some dry tree or other point of vantage, from whence it keeps a look-out for lizards, locusts, etc."

(Davison). Precisely describes the habits of birds I have seen near Brunei town. The flight is slow with laboured wing-beats (Cairns).

FOOD. Lizards, grasshoppers, beetles, rodents, crabs, etc.

[FULVOUS-WINGED BUZZARD-EAGLE, *Butastur liventer* (Temminck) 1827, occurs in S. Indo-China and Celebes but there is no reliable record for Borneo.]

IV. EAGLES

Eagles are in general the largest and most powerful members of this family, though the Honey Buzzard is as large as some eagles. The wings are long and broad, enabling eagles to soar for long periods over the forest.

62. CHANGEABLE HAWK-EAGLE

Spizaetus cirrhatus (Gmelin) 1788

Widespread in S.E. Asia.

Resident and sparingly distributed throughout Borneo.

DESCRIPTION. 26". See key. A lightly built slender eagle with proportionately long tail. A polymorphic species with two main colour phases ; in the rare blackish phase it can easily be confused with the Black Eagle ; in another phase the underside of the wing in flight appears white barred and streaked with black-brown, easily confused with immature *S. alboniger* or with *S. nanus* except for larger size. Iris bright yellow, yellow-brown, or brown ; cere and beak black ; feet yellow or greenish-yellow, claws black.

VOICE. Characteristic call a prolonged shrill scream, *yeep-yip-yip-yip, yeep-yip-yip-yip*, frequently uttered, or else a rising-in-pitch *quick,quick,quick,quick,quick,quick, kweeeee.*

HABITS. Chiefly a forest bird, though it may raid villages for fowls.

FOOD. Birds, lizards, etc.

NEST AND EGGS. Like other eagles it builds a large nest of sticks in a tall tree. Eggs (c/1) are laid from December to February, white with a few strains of ochraceous-brown, 71×56 mm. (Sharpe).

RACE. *S. c. limnaetus* (Horsfield) 1821.

63. BLYTH'S HAWK-EAGLE PLATE III, 5

Spizaetus alboniger (Blyth) 1845

Malaya, Sumatra, Borneo.

As this species and *S. nanus* were confused for many years, until Stresemann in 1938 showed how to distinguish them, there are few

records by which to determine its status in our area, and all known specimens are from N. Borneo or Sarawak, where it has a preference for mountains or submontane localities.

DESCRIPTION. ♂ 20″, ♀ 21″. See key. The black and white adult is distinctive, but the immature plumage, which is more frequently met with, seems impossible to separate from *S. nanus* in the field. Iris bright yellow ; cere and beak black ; feet yellow, claws black.

HABITS. It seems to be exclusively a bird of primary forest.

NEST AND EGGS. Not described from Borneo.

64. WALLACE'S HAWK-EAGLE

Spizaetus nanus Wallace 1868

Malaya, Sumatra, Borneo.

Resident. See remarks under preceding species. According to skin records it is commoner than *S. alboniger*, and more widely distributed in the lowlands, including Indonesian Borneo.

DESCRIPTION. ♂ 17″, ♀ 19″. See key. Head and under-parts pinkish-buff. Sex for sex smaller than immature *S. alboniger* but female *nanus* is about as large as male *alboniger*. Immature *nanus* (head and underparts buffy, back brown) resembles immature *alboniger* ; adult *nanus* is quite similar to *alboniger* in intermediate plumage. In *nanus* the tail is usually less than 0·70 of the wing length, in *alboniger* usually more than 0·73. Iris yellow or pale with yellow fringe ; cere and beak black ; feet lemon-yellow, claws black.

HABITS. No information for Borneo.

FOOD. Birds, lizards, bats (at Niah).

RACE. *S. n. nanus*.

65. RUFOUS-BELLIED HAWK-EAGLE

Hieraaetus kienerii (E. Geoffroy) 1835

India to Celebes, rare throughout its range.

It has turned up in most parts of Borneo as a rare bird of uncertain status.

DESCRIPTION. 18″. Upper-parts black. In flight the underside of the wings and tail is pale grey in contrast to the deep rufous abdomen and the white throat and upper breast. Young birds have the under-parts white throughout. Iris dark brown ; cere yellow, beak dark horn ; feet yellow or yellow-green, claws black.

HABITS. Nothing recorded, except that in the upper Baram at 1,200 feet Harrisson saw one of these and a Stork-billed Kingfisher expire together on a river bank in front of him after fighting a mortal duel.

NEST AND EGGS. Not described from Borneo.

RACE. *H. k. formosus* Stresemann 1924.

4
5a
5b
6
7a
7b
8a
8b
1955
0"
6"
12"
0
100
mm
200
300

PLATE IV

Page

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2. LONG-BILLED PARTRIDGE 166
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6. CHESTNUT-BREASTED TREE PARTRIDGE . . . 168
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7*b*. CRESTLESS FIREBACK PHEASANT (♀) 170
Lophura erythrophthalma pyronota

8*a*. CRESTED FIREBACK PHEASANT (♂) 170
Lophura ignita nobilis.

8*b*. CRESTED FIREBACK PHEASANT (♀) 170
Lophura ignita nobilis.

66. BLACK EAGLE PLATE III, 10

Ictinaetus malayensis (Temminck) 1824

Widespread in S.E. Asia, extending to Celebes and Moluccas.

Resident throughout Borneo from the coast to the Kelabit uplands, but not common. Whitehead did not find it on Kinabalu but frequently observed it on the large plains on the sea coast (Kota Belud area ?) beating low over the hillsides. Harrisson reports that it quite often floats over the Kelabit uplands in its splendour.

DESCRIPTION. 25". A magnificent blackish eagle with a noticeably long tail and a slow deliberate round-winged flight. Iris brown ; cere ♂ black, ♀ yellow ; gape yellow ; beak ♂ black, ♀ greyish with black tip ; feet yellow or yellow-green, claws horn.

HABITS. Usually seen sailing in small circles over a forested hillside. Almost always moves in pairs and clearly mates for life. On one occasion in the uplands I saw a Kelabit shoot one on the wing. Out of " nowhere " another bird came swooping down, low over the corpse ; it then spiralled up and overhead till out of sight, as if in some ghastly reproof of aquiline love (Harrisson).

FOOD. Banks collected two somewhere near the Niah caves ; one had a bat and the other had two swiftlets in its stomach. Eggs and young of other birds, rats, lizards, ants, etc. The one shot by the Kelabit had three rats in its stomach and three *more* in its crop (Harrisson).

NEST AND EGGS. Not described from Borneo.

67. WHITE-BELLIED SEA EAGLE PHOTO PLATE 24

Haliaeetus leucogaster (Gmelin) 1788

S.E. Asia, S.W. Pacific and Australia.

Resident on all the main groups and on the coast of Borneo, a pair to several miles of coast. It is in danger of becoming scarce owing to thoughtless persecution.

DESCRIPTION. 26". One of the world's finest eagles, distinguished by white head and under-parts of the adult contrasting with grey mantle. Young birds are dark brown. Iris dark brown ; beak steel-grey darkening towards black tip, paler along edges of mandibles ; feet pale flesh or dirty white, claws black.

VOICE. A loud clanging cry of many notes, audible at a great distance, and a harsh duck-like quack (Davison).

HABITS. Lives in pairs, and is typically seen soaring majestically over the coast, or perched on a tree or fishing stake overlooking the sea.

FOOD. Sea snakes and cuttlefish (Whitehead); beach refuse.

NEST AND EGGS. The nest is a large structure of sticks in a tree, usually on an island or on the coast overlooking the sea, but I saw one under construction in December in Brunei State on the edge of a forest about two miles from the sea (the birds were fired at on the nest and deserted).

[NOTE.—A protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

68. GREY-HEADED FISHING EAGLE

Ichthyophaga ichthyaetus (Horsfield) 1821

Widespread in S.E. Asia.

Resident in Borneo but not common; chiefly a bird of the middle and upper rivers, occasional on the coast.

DESCRIPTION. 26". Like the next species but considerably larger (wing c. 18" against 14–15") and has the basal two-thirds of the tail white. Young birds are brown, paler below with whitish streaks, and can be recognized in the hand by the long curved claws. Iris sand-yellow; cere dark horn, beak bluish at base, rest dark horn; feet dirty-white, claws black.

HABITS. Von Berchtold states that it spends most of the day on a large tree near the bank of the river, and sleeps there, alone. It feeds chiefly on fish; early in the morning the fish remain deep in the water, and only come to the surface later, so this bird seems to start hunting late, and to sleep late in consequence.

NEST AND EGGS. Bartlett found a nest on a tall casuarina tree at Buntal, on the coast near Kuching. He was informed that the egg is pure white.

RACE. *I. i. ichthyaetus.*

[NOTE.—A protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

69. LESSER FISHING EAGLE PLATE III, 7

Ichthyophaga nana (Blyth) 1842

Himalayas to Malaya, Sumatra, Borneo.

A not uncommon resident along the less disturbed rivers of the interior throughout Borneo. Also recorded from Mt. Ranay, Bunguran Island, at 1,000 feet.

DESCRIPTION. 19". See under preceding species. Iris very pale yellow ; lower mandible and nostrils light grey-blue, upper mandible dark brown, cere lighter ; feet grey, claws black.

HABITS. This is the smaller of the two eagles that are occasionally seen flying ahead of one's canoe in the upper reaches of rivers, perching now and again on a tree beside the bank.

FOOD. Fish.

NEST AND EGGS. Not described from Borneo.

RACE. *I. n. nana.*

70. CRESTED SERPENT EAGLE PLATE III, 8

Spilornis cheela Latham 1790

Widespread in S.E. Asia.

Resident throughout Borneo, where it is probably the commonest eagle.

DESCRIPTION. 19". In flight the wings appear very broad and rounded ; a narrow black border and a broad white band behind it running along the whole length of the hind-edge of the wing and across the tip of the tail make this bird easy to recognize when seen from below. Iris lemon-yellow, skin round eye darker yellow ; cere yellow, lower mandible and base of upper blue-grey, rest of upper mandible dark horn ; feet dull yellow, claws black. Iris of female darker yellow.

VOICE. Rather noisy, frequently uttering on the wing a plaintive whistling call of several notes, *kuk-kuk-kuk-kuk-queer-queer-queer*, the *kuks* forming a preparatory run up the scale.

HABITS. A forest bird.

FOOD. Whitehead writes of the montane race : " the crop of the specimen shot was full of snakes and lizards, and I noticed it frequently beating along the dried up beds of rivers, where it could easily obtain the various rock lizards on which it preys ". Also birds, mammals, frogs, millipedes, scorpions, locusts, etc.

NEST. In the Kelabit uplands Harrisson obtained specimens in near breeding condition in October–November ; at Niah, second brood eggs in June.

RACES. (*a*) *S. c. natunensis* Chasen 1934 in the Natunas ; (*b*) *S. c. kinabaluensis* Sclater 1919, larger (wing ♀ 400 mm.) with a black throat, is a montane form so far recorded only on Kinabalu (3,000 feet upwards) and Mt. Murud ; (*c*) *S. c. pallidus* Walden 1872, the common form of the lowlands and Kelabit uplands.

V. HARRIERS

Harriers are large, long-winged, long-tailed and long-legged hawks frequenting open country. Their flight is characteristic, often only a few feet from the ground or just skimming the padi fields ; several leisurely wing-beats are followed by a glide on stiff, half-raised wings, an open " V " in outline, with banking and turning at intervals ; at times they will rise in wide circles to a great height. When hunting they quarter the ground with much regularity and seize their prey by a sudden pounce (condensed from *Popular Handbook of British Birds*). Adult males are distinctive but are rarely seen in Borneo ; females and juveniles are confusing but specimens can be identified by the following keys :

KEYS TO THE HARRIERS

(Circus spp.)

GENERAL KEY

1.	Exposed bill over 29 mm.	*aeruginosus*
	Exposed bill under 29 mm.	2
2.	Second primary shorter than fifth	*cyaneus*
	Second primary longer than fifth	*melanoleucos*

KEY TO FEMALES

1.	Thighs plain white without streaks	*melanoleucos*
	Thighs white with streaks or spots	2
2.	Below tawny-buff streaked with brown	*cyaneus*
	Below creamy-buff, with pointed spots of rufous-brown	*spilonotus*

KEY TO JUVENILES

1.	Head whitish with narrow black streaks	*spilonotus*
	Head brown with slight fulvous streaks	2
2.	Upper tail-coverts white with narrow brown centres	*cyaneus*
	Upper tail-coverts rufous with darker streaks	*melanoleucos*

71. HEN HARRIER

Circus cyaneus (Linnaeus) 1766

Holarctic.

A stray in Borneo, where it has been seen by Harrisson on the Tambunan plains, North Borneo, and in the upper Trusan ; also possible sight records for the Kelabit uplands. No specimens have been obtained to date.

DESCRIPTION. See keys. The adult male is blue-grey with a large prominent white patch on the rump. Female and young are dark brown, also with white rump patch.

RACE. *C. c. cyaneus.*

72. MARSH HARRIER

Circus aeruginosus (Linnaeus) 1758 *Lang katak* (M)

Palaearctic.

Passage migrant and winter visitor to N. Borneo and Sarawak; not so far recorded from Indonesian Borneo. Everett described it as very abundant in the N.E. monsoon on the marshy plains in the vicinity of the Papar and Tampasuk rivers; further south in Sarawak it is a regular in the Kelabit uplands, and over padi fields or open grasslands in coastal districts.

DESCRIPTION. 18". A large heavy harrier, whose flight is much less buoyant than that of Pied Harrier. Kirke Swann (*Monograph of the Birds of Prey*) gives the following wing measurements for adults:

	cyaneus	*spilonotus*	*melanoleucos*
Males . .	335–360 mm.	385–425 mm.	340–365 mm.
Females . .	380–400 mm.	400–443 mm.	360–390 mm.

Much the commonest phase in our area is the immature bird, which is dark brown with buffish shoulders and head, and brown and white upper tail-coverts; the feathers having white or pale brown bars and margins. Adult male is blackish above, the nape and hind-neck streaked with white and the upper tail-coverts white with remains of ashy brown bars. Under-parts white, the throat and breast streaked with black. Iris ♂ bright yellow, ♀ brown; gape greenish; cere yellow, bill black with yellow at base; feet yellow, claws black.

HABITS. Those of the harriers.

FOOD. Young birds (nestling green pigeons, *Rallus striatus*, etc.), munias, rats, caterpillars, small padi-field fish.

RACE. *C. ae. spilonotus* Kaup 1847, breeds in Siberia and N. Asia (some authorities treat it as a separate species).

73. PIED HARRIER

Circus melanoleucus (Pennant) 1769

Breeds in E. Asia and winters in S.E. Asia.

In the Kelabit uplands this is by far the commonest of the three species of harrier found there in winter. Hose collected one in the Baram district, and several have been seen in the Miri-Lutong area (March 1957) and one over Paya Megok, 27th mile Serian Road (November–December 1957) (Harrisson and Medway).

DESCRIPTION. 15". See key. Adult male is unmistakeable, a

conspicuously pied bird appearing more white than black on the wing ; the wings are white with black tips and black patches near the body connected by a black patch across the back. Adult female has upper-parts brown, streaked on the head and coverts along the forearm with rufous and white ; upper tail-coverts white with rufous-brown markings along the shafts ; tail crossed by about five darker brown bars ; under-parts white heavily streaked with brown. Immature birds are dark brown above, with the upper tail-coverts white marked with brown ; dark brownish-rufous below (Deignan). Immature birds are difficult to distinguish in the field from immature Marsh Harrier, except by smaller size. (imm. ♂) cere yellow, beak black ; feet yellow, claws horn.

HABITS. Those of the harriers.

FOOD. Rats, mice and munias mainly—therefore very popular with upland rice farmers (Harrisson).

OSPREYS : Pandionidae

Ospreys or fish hawks are found in most parts of the world ; in the hand they can be recognized by the bare tarsus with small scales and the spikes or spicules covering the under surface of the toes and the large bosses at the base of the claws, an adaptation for holding slippery fish.

74. OSPREY

Pandion haliaetus (Linnaeus) 1758

Distribution world-wide.

A not uncommon winter visitor to our area, found equally on the coast and far up the main rivers of the interior. Recorded from the North Natunas.

DESCRIPTION. 20–23″. Constant association with water and the contrast of the dark brown upper-parts with the white under-parts and whitish head marked by a broad dark band through the eye suffice to identify the Osprey. The wings are long and narrow, the tail short, and the flight gull-like with plunges into the water.

VOICE. Ordinary note is a short, shrill musical whistle repeated a number of times, tending to drop in pitch towards the end of the sequence.

HABITS. When fishing it flies 30–100 feet above the surface with

alternate flapping and gliding ; on sighting a fish it generally hovers for a short time with legs dropped and then plunges with half-closed wings, throwing up a shower of spray and sometimes completely submerging for a second or two. On rising it shakes the water from its plumage with a convulsive quiver.

FOOD. In addition to fish, Delacour states that it eats snakes.

RACE. *P. h. haliaetus.*

[The Australian race *P. h. melvillensis* Matthews 1912 or if that race is not recognizable *P. h. cristatus* Vieillot 1816 with top of head white has been recorded in Malaya and Java and might be expected in Borneo, but there is no record to date.]

FALCONS : Falconidae

Falcons are slim, powerful hawks of small to medium size, recognizable by the strong rapid strokes of their long narrow wings ; they fly very swiftly, seldom soaring. There is a " tooth " on the upper mandible and a corresponding notch on the lower mandible, near the tip.

75. COMMON FALCONET PHOTO PLATE 25

Microhierax caerulescens (Linnaeus) 1758 *Pipit punguk* (M) ; *entegaleh* (I)

Widespread in S.E. Asia.

A common resident in the lowlands of S. Borneo and Sarawak, but in N. Borneo it is replaced by the next species.

DESCRIPTION. 6". This tiny falcon has prominent black and white head markings ; crown and a band through the eye black, forehead, eyebrow, cheeks and breast white. Upper-parts and tail black, remaining under-parts rufous except for the thighs, which are black in the Malaysian race. Iris dark brown ; cere and beak black ; feet black.

HABITS. Rather conspicuous from its habit of sitting on dead trees around padi clearings or along the banks of rivers, whence it sallies forth at intervals like a flycatcher to seize insects or chase small birds. Bold and aggressive.

FOOD. Small birds, dragonflies and other insects, spiders.

NEST. It uses the deserted nest-hole of a woodpecker or barbet in which to lay its eggs.

RACES. *M. c. horsfieldi* (Lesson) 1843.

76. WHITE-FRONTED FALCONET

Microhierax latifrons Sharpe 1879

Confined to Borneo, where it reaches Darvel Bay on the east coast, and Lawas on the west.

DESCRIPTION. The same size as the last species, but differs in having the entire front half of the head white, by having white spots on the tail-feathers, and by having the abdomen washed palely with buff rather than with rufous. Immatures and possibly some adults have the forehead and cheeks rich buff.

HABITS. Those of the last species.

NEST. Not described from Borneo.

RACE. Reasons for not treating this bird as a race of the preceding species are given in the Checklist.

77. PEREGRINE FALCON

Falco peregrinus Gmelin 1788* *Rajawali* (M)

Distribution world-wide.

In our area represented by a rare resident race which Hose discovered breeding on Mt. Dulit, and which has also been collected in the Lawas district (skin in British Museum) and at sea level 4½ miles from Kuching (skin in Sarawak Museum); and by a winter visitor which may be seen anywhere in Borneo but prefers the coast.

DESCRIPTION. 14–19", the female larger than the male. On the wing it is a compact robust-looking bird with long sharply-pointed wings, medium-length rather tapering tail, and very characteristic flight, swift and direct with a few rapid winnowing beats alternating with long glides on extended wings.

VOICE. A shrill chattering *kek-kek-kek-kek*.

HABITS. Of the winter visitor Banks wrote: "Though commonest both as adult and immature during the N.E. monsoon, they may be seen almost any month of the year . . . the sea-shore is their usual haunt and certain rocky headlands always seem to have them, but odd ones occur inland". On one occasion I saw one stoop at and strike a Fish Owl that suddenly appeared in broad daylight and was flying through the casuarina trees lining the Kuala Belait beach; feathers flew from the Owl's back, but it flew on, quite unperturbed, to disappear into a tree further along the beach.

NEST. Hose found it breeding on a cliff high up on Mt. Dulit two years in succession. Other possible nesting sites are on the cliffs of

* See L. B. Holthuis and G. C. A. Junge in *Ardea* 1958: 168–9.

Kinabalu, where Whitehead saw a Peregrine at 8,000 feet, and on Mt. Batu Lawi, where Harrisson saw a Peregrine on the inaccessible pinnacle; in neither case was the bird proved to be of the resident race.

RACES. (*a*) *F. P. japonensis* Gmelin 1788 from N. Asia has a light patch on the ear-coverts which separates a broad black moustache from the black crown, and the under-parts are light with few bars; (*b*) *F. P. ernesti* Sharpe 1894 of Borneo, the Philippines, and the Papuan region is much darker, with blackish sides of the head and with breast and abdomen densely covered with narrow black bars. Young birds of both races are heavily streaked below with black, but those of *ernesti* are browner.

78. ORIENTAL or HORSFIELD'S HOBBY

Falco severus Horsfield 1821

India to the Philippines and S.W. Pacific.

Rare vagrant in Borneo, known only from two specimens collected by Fischer at Muara Tewe and by Everett on Kinabalu.

DESCRIPTION. 10". This small falcon has upper-parts and sides of head black, upper throat buff-white, remaining under-parts chestnut; young birds are heavily streaked with black on breast and belly.

RACE. *F. s. severus.*

79. COMMON KESTREL

Falco tinnunculus Linnaeus 1758

Palaearctic.

Occasional visitor to N. Borneo and Brunei. It has been collected twice on Labuan, and Whitehead observed it on the extensive Tampasuk plains near Kota Belud. I saw one at Horseshoe Crescent, Brunei Town, 3–11 February 1957, and Harrisson one at Satang Island, March 1959.

DESCRIPTION. 13–14", female larger than male. Habitual hovering is the most distinctive feature of Kestrel, and the pointed reddish wings prevent confusion with other hawks. Female is duller and has no blue-grey on head and tail. Young birds are rufous above, heavily barred with black; paler and more streaked below.

HABITS. A bird of open country.

RACE. *F. t. iaponensis* Ticehurst 1929, breeds in Japan and East-central Asia.

80. SPOTTED KESTREL

Falco moluccensis (Bonaparte) 1850

Java to Moluccas.

A stray in S. Borneo, where one specimen (now in the Leiden Museum) was collected by Schwaner over a century ago.

DESCRIPTION. Size of Common Kestrel, but yellowish-red entirely spotted and streaked with black, except the rump and tail, which are grey barred with black.

RACE. *F. m. javensis* Mayr 1941.

MEGAPODES: Megapodiidae

The megapodes, or incubator birds as they are sometimes called, are a curious family of game birds with their headquarters in the Australo-Papuan region; they are represented in our area by only one island species.

81. MEGAPODE PLATE IV, 1

Megapodius freycinet Gaimard 1823

Nicobars to New Hebrides, on small islands.

In our area known on Labuan and its satellites, and on Tiga, Mangalum, Mantanani, Balambangan, Banggi, Malawali, and ? Maratua. Its only known breeding area on the *mainland* of Borneo is in coastal jungle not far from Sandakan. Whitehead described it as very plentiful on most of the small islands round the coast of Borneo, but its numbers may have diminished since then.

DESCRIPTION. 14". Dark birds, grey on head and under-parts, olive-brown on upper-parts, Tail short, feet abnormally large and strong. Sides of head and throat almost bare.

VOICE. "Their note is a most doleful *mow*, exactly like a cat in distress, and is heard many times towards evening, adding to the melancholy of the forest" (Whitehead).

HABITS. Whitehead observed that they never seem to frequent the country more than a few hundred yards inland, but prefer the loose sandy soil close to the sea. Old birds escape from danger by running, but young ones squat till you are close and then take wing like a quail.

FOOD. Berries, worms, grubs, snails (Delacour).

NEST. The megapode is remarkable for its strange nesting habits; for a full summary see Frith (1956). The female lays her eggs deep in a great heap of sand and decaying vegetation scratched up, by the male bird only, near the sea. The eggs remain in this giant incubator, untended by the parents, for about forty days, when the chicks hatch and burrow their way out; they are at once independent

of their parents, and fend entirely for themselves. A number of authors, including Motley and Dillwyn (1855 : 32–35), Whitehead, Hose, Ryves, and Harrisson have described the process in detail. Whitehead's account is here quoted :

" Their nest is a most wonderful structure, and is no doubt built by the labour of several pairs of birds. A Sulu boy caught seven or eight birds on one heap. The largest nest I have seen was thirty-four paces round and five and a half feet high, and the heap must have contained many cartloads of earth, sticks, and stones, and yet the ground was apparently untouched. How such a heap is brought together is a mystery ; but it is no doubt the gradual work of many birds for several years, for the birds, if not molested, use the same heap many seasons. The eggs are buried so deep that with our small implements (a coconut shell) we found it impossible to get at them. The eggs are often placed amongst the roots of a tree and this makes them very difficult to get at. A good many green leaves are plucked and placed in the hole, and amongst these the egg is laid. The leaves would ferment and so assist in hatching the eggs, which are of a pale salmon-colour with a chalky surface, which is easily chipped off."

The turkey-sized eggs (c/2–3), enormous (78×47 mm.) for the size of the bird, are often dug out by humans, pigs and monitor lizards. Motley tells us that on Labuan the Malays used to set up lines of low fences through the jungle, with trapped openings at intervals, to catch the parent birds. It is remarkable that any manage to survive. In our area eggs have been taken in January, June and August.

RACE. *M. f. cumingi* Dillwyn 1851.

QUAIL, PARTRIDGES AND PHEASANTS : Phasianidae

This family is of world-wide distribution, but is best developed in S.E. Asia, believed to be the home of the ancestors of all domestic chickens. We have only one quail, but a number of pheasants and partridges, including several fine species such as Bulwer's Pheasant and the Crimson-headed Wood Partridge found nowhere else in the world. In temperate regions the members of the family are known as gamebirds, the shooting of which while flying is a widespread and popular sport ; in our area, however, they provide no sport in that

sense, being birds of the dense jungle (except for the grassland Quail) ; though seldom shot, except perhaps when roosting, they are frequently trapped and afford a welcome addition to the native diet. Like the domestic chicken, they live on the ground, searching for seeds, berries, grubs, insects, etc., and roost upstairs.

82. BLUE-BREASTED BUTTON QUAIL or PAINTED QUAIL

PLATE VII, 1

Coturnix chinensis (Linnaeus) 1766

Puyoh, pipitkan (M) ; *empitu* (I) ; from the call.

Africa to Australia.

A common resident throughout Borneo in grasslands.

DESCRIPTION. 5". A plump short-tailed bird, best identified by its habit of exploding at your feet and flying straight with rapidly whirring wings for a short distance before dropping back into cover. Iris ♂ chestnut-red ♀ dark brown ; upper mandible black, lower dark blue ; feet ♂ yellow ♀ pale orange, claws pale horn.

VOICE. The three-note call, *pip-it-kan*, reminds me in cadence of the call of the Long-eared Nightjar, and in fact for a long time I attributed this note in my Brunei garden to a bulbul or starling trying to imitate the call of the nightjar. There is sometimes an introductory note, *pip, pip-it-kan*, and the last note always drops in pitch and is shorter.

HABITS. This is essentially a bird of padi fields and grass-covered slopes, and I have observed it from sea-level in Brunei to 4,000 feet on the *lalang*-covered slopes of Kinabalu. In Brunei from the vantage point of my dining-room window ten feet off the ground, I used to watch them creeping like mice through the grass below, looking most spruce and dapper.

FOOD. Grass seeds, termites. One had sixty-four rice grains in its crop (Harrisson).

NEST. " These birds nest in *lalang*-grass plains, and lay five or six dark olive-green eggs, which are speckled all over with black and dark-brown spots " (Whitehead, who found eggs in mid-February and other months). A female with three newly hatched chicks was seen near Kuching on 22 November. Eggs 25 × 19 mm. (Sharpe).

RACES. (*a*) *C. c. lineata* (Scopoli) 1786 in N. Borneo ; (*b*) *C. c. caerulescens* (Hachisuka) 1926 in Sarawak and S. Borneo.

83. LONG-BILLED PARTRIDGE PLATE IV, 2

Rhizothera longirostris (Temminck) 1807

Kangking (M) ; *entukar* (I)

Throughout Malaysia.

In our area represented by a rare montane race, known only from Mt. Dulit and Mt. Batu Song above 3,000 feet ; and a scarce lowland race known only from the Barito drainage in S. Borneo and from S.W. Sarawak, where a number have been collected (including one within a mile of Kuching).

DESCRIPTION. 12". Long curved black bill and strong yellowish legs distinctive. Iris light brown.

VOICE. Its cry is commonly heard in the Kuching district in the morning and evening and is a shrill whistle, something like *kanking, kanking.*

HABITS. It keeps chiefly to the ground, but will often alight on a tree. According to Banks it favours limestone hills.

NEST AND EGGS. Described by Coomans de Ruiter (1948).

RACES. (*a*) *R. l. longirostris*, in the lowlands ; (*b*) *R. l. dulitensis* Ogilvie-Grant 1895, greyer, montane.

84. FERRUGINOUS WOOD PARTRIDGE PLATE IV, 4

Caloperdix oculea (Temminck) 1815

Malaya, Sumatra, Borneo.

Montane resident, ranging from the Kelabit uplands to the Usun Apau Plateau and Mt. Dulit ; one of the few montane species unknown round Mt. Kinabalu.

DESCRIPTION. 9". Distinguish from rather similar Red-breasted Tree Partridge by greenish legs with one spur in the male, as against pinkish legs without spurs in both sexes ; crown dark chestnut as against black with some brown ; mantle black and white as against olive-brown with black barring. Iris dark olive-brown ; bill black ; feet greenish-olive.

VOICE. Male calls with a run up the scale, accelerating, repeated eight or nine times, breaking into *E-terang* repeated two to four times, with variant *E-terang/E*. Female replies with a long series of more whistled and faster notes up the scale, up to twenty at a time (Harrisson).

HABITS. In the Kelabit uplands it frequents chiefly tall forest on hillsides, but also the dry sandy forest of the valley bottoms.

FOOD. Beetles, berries, grasses, seeds.

NEST AND EGGS. Kelabits say the nest of this and the next species is domed, with a hole at the side an inch or so off the ground. Eggs (c/8–10) are laid in December and January (Harrisson).

RACE. *C. o. borneensis* Ogilvie-Grant 1892.

85. RED-BREASTED TREE PARTRIDGE PLATE IV, 3

Arborophila hyperythra (Sharpe) 1879

Confined to Borneo.

A montane species ranging from Mt. Kinabalu along the spinal chain to the Usun Apau Plateau and the upper Kayan; the most widely distributed partridge throughout the Kelabit uplands.

DESCRIPTION. 11". Crown plain black with brown spots; a broad grey line from eye to nape; upper-parts olive-brown barred with black; chin and throat rufous, breast more cinnamon; abdomen whitish; a broad band of black feathers with large white spots along sides of body from wing joint. Iris grey, turning brown after death; skin round eye dark red; throat skin red but not distensible; bill black; feet salmon-pink, claws dull.

VOICE. A sharp whistle, not unlike the call of the hen Argus Pheasant (Banks). A loud clear clean whistling and a prolonged series of low booming calls (Harrisson). One kept in a cage uttered a soft sweet far-away-sounding bubbling musical call with barely open bill; a louder longer clean fluty warbling was frequent; also a repeated single rising note *kuwar*, about twelve at a time, rapidly (Harrisson).

HABITS. Found in all types of habitat, but chiefly on river flats in old or secondary forest; though called a "tree partridge" it is rarely seen in trees, except when it roosts in low bushes a few feet off the ground.

FOOD. Acorns, seeds, fruits, grubs, termites, beetles, crickets, ants.

NEST. See under preceding species.

RACES. (*a*) *A. h. hyperythra* in Sarawak up to the N. Borneo border; (*b*) *A. h. erythrophrys* (Sharpe) 1890, with eyebrow and sides of head more richly coloured, on Mt. Kinabalu. Some authorities regard these as races of *A. orientalis* (Horsfield) 1821 of Java.

86. CHESTNUT-BREASTED TREE PARTRIDGE PLATE IV, 6

Arborophila charltoni (Eyton) 1845

Malaya, N. Sumatra, N. Borneo, Tonkin.

Resident, but confined to the lowlands of N. Borneo from Kudat round to Mt. Magdalena ; locally within these limits it is common, as in the forests at the head of Sandakan harbour.

DESCRIPTION. 11". Identify by white chin and upper throat, spotted black and white eyebrows, sides of neck, and lower throat, and wide chestnut collar on the breast.

VOICE. It utters a melodious clearly-whistled bar of several notes and the call is almost invariably answered from another point (Chasen).

HABITS. Primary forest in the lowlands.

NEST AND EGGS. Not described from Borneo.

RACE. *A. c. graydoni* (Sharpe and Chubb) 1909.

87. BLACK WOOD PARTRIDGE PLATE IV, 5

Melanoperdix nigra (Vigors) 1829 *Pipit hantu* (M)

Malaya, Sumatra, Borneo.

Resident but confined to the lowlands of S. and W. Borneo, where it is not uncommon. The Baram district is the furthest north so far recorded. It has been collected within four miles of Kuching.

DESCRIPTION. 10". Sexes differ. Thick bill (black in the male, brown in the female) and coloration distinctive. Iris dark brown ; feet pale blue, claws pale horn.

HABITS. Primary forest in the lowlands.

NEST AND EGGS. Described by Coomans de Ruiter (1948).

RACE. *M. n. borneensis* Rothschild 1917.

88. CRESTED GREEN WOOD PARTRIDGE PLATE V, 1

Rollulus rouloul (Scopoli) 1786 *Siol* (M) ; *sengayan* (I)

Throughout Malaysia.

A common resident throughout the lowland forests of Borneo, ascending locally to 3,500 feet.

DESCRIPTION. 10". Sexes differ. Iris red, bare skin round and behind eye red ; bill ♂ base of lower mandible and a band along edge of upper mandible near gape red, rest of bill black, ♀ all black ; feet red, claws horn.

VOICE. A rather shrill plaintive whistle (Banks).

HABITS. Usually seen running about the forest floor in family parties, which scatter noisily in all directions when alarmed. "Occasionally they get up with a whirr on the edge of a river or stream and go roaring strongly across to pitch on the other bank and run off with a swift continuous rush" (Banks). "Especially favours bamboo groves and places where there have been clearings within old forest; for instance, at a place where there was very long ago a house at 4,000 feet under Mt. Murud on the Indonesian side, there are still fruit trees, grass and bamboo clumps and a pool; here one can be certain always to find 7 to 15 of these birds, as any Kelabit knows and I have confirmed on many visits" (Harrisson).

FOOD. Includes large fruits, seeds, large black beetles, and wood ants (Harrisson).

NEST AND EGGS. An egg collected by Low in Lumbidan is described by Sharpe as being of a dull yellowish-white colour, 39×32 mm. See also Coomans de Ruiter (1946).

89. CRIMSON-HEADED WOOD PARTRIDGE PLATE V, 2

Haematortyx sanguiniceps Sharpe 1879

Confined to Borneo, where it is quite a common montane species probably ranging throughout the mountains of Borneo.

DESCRIPTION. 10". Sexes differ. Two spurs in the male. This handsome and distinctive bird is unmistakable.

VOICE. A high clucking harsh *kak-kak-kak, ok-ak-ok, krak-krak.*

HABITS. Its particular ecological niche is the leached out sandy forest of the valley bottoms, and it has a habit of running along paths ahead of travellers, looking round at you and often keeping to the path, that makes them absurdly easy to shoot. It also occurs in primary forest, but with not nearly the same density. It is readily caught in snare lines but is almost impossible to keep alive, unlike most of the family (Harrisson).

FOOD. Berries and insects. In the same habitat individual birds often taken entirely with berries or entirely insect food, but seldom mixed (Harrisson).

NEST AND EGGS. In the Kelabit uplands Harrisson found that eight or nine eggs are laid in a rather definitely shaped nest of dry leaves, raised on a tussock of grass or lichen in *kerangas* forest, which is often liable to flooding. Eggs very like those of a hawk, curiously smeared umber colour on coffee-milk background, darkest

and thickest at rounded top end. 44×? mm. Earliest egg date 12 January.

90. CRESTLESS FIREBACK PHEASANT PLATE IV, 7

Lophura erythrophthalma (Raffles) 1822

Singgir (M) ; *sempidan* (I)

Malaya, Sumatra, Borneo.

A lowland resident confined to S. and S.W. Borneo and Sarawak as far north as the Baram district ; unlike the next species it is not found above 3,000 feet.

DESCRIPTION. 19″. A smaller bird than the next species, and distinguished by absence of crest and by having the facial wattles red instead of blue. Female is entirely black. Iris dark brown ; face feathers red ; nostrils dark brown, rest of beak dirty-white ; feet bluish-grey, claws pale horn. One spur in each sex (in ♀ c. 10 mm.)

HABITS. Those of the next species. See Beebe, "Monograph" II : 109–112.

NEST AND EGGS. Described by Coomans de Ruiter (1946).

RACE. *L. e. pyronota* (G. R. Gray) 1841.

91. CRESTED FIREBACK PHEASANT PLATE IV, 8

Lophura ignita (Shaw and Nodder) 1797 *Sempidan* (I)

Malaya, Sumatra, Borneo, Banka.

A common resident in the lowland forests, excluding peat-swamp forest. throughout Borneo ; the only pheasant in the Kelabit uplands.

DESCRIPTION. 22″. See under preceding species. The name is derived from the fiery-red lower back and rump of the cock. ♂ has a single long spur, ♀ a rudimentary one (2 mm.). Iris scarlet, skin round eye vivid blue ; bill greenish ; legs dirty-white with coral-red dapples, or very pale pink tinge, or legs with pale green tinge and distinctly pink feet.

VOICE. An enquiring croak followed by a shrill whistle or chirp (Banks) ; a subdued *woonk-k* (whirr), *woonk-k* (whirr), a vocal and wing challenge (Beebe) ; when alarmed both males and females have a peculiar sharp note *chukun, chukun* . . . the males also continually make a whirring sound with their wings (Davison).

HABITS. These birds frequent the thick forests in parties of five

or six, usually with only one cock in the party ; they never come into the open but confine themselves to forests (Davison). A ground bird and a very swift runner, occasionally taking short very noisy fussy flights across streams (Banks). It has a habit of seeking food on or about rotten logs, with only its buff-white tail showing (Harrisson). See also Beebe, "Monograph" II : 129–142.

FOOD. Berries, tender leaves, and insects and grubs of all kinds ; they are very fond of scratching about after the manner of domestic poultry and dusting themselves (Davison).

NEST AND EGGS. Eggs sent by Low from the Mengalong River are described by Sharpe as a uniform creamy-buff in colour, 51 × 39 mm. Delacour (1951) states that the normal clutch is 4 to 8 eggs, and the incubation period 24 days. See Coomans de Ruiter (1946).

RACES. (*a*) *L. i. ignita*, in S. Borneo ; (*b*) *L. i. nobilis* (Sclater) 1863, in the north. The difference is one of size only.

92. BULWER'S PHEASANT PLATE V, 3

Lophura bulweri (Sharpe) 1874 *Bekia* (I)

Confined to Borneo, where it is a submontane species of old forest, local and patchy in its distribution but still very common in the extensive undisturbed forests of the interior, for example on the Usun Apau Plateau. The Kelabits regard it as a visitor only to the Kelabit uplands and say it comes in with the wild pig. Though not recorded on the west coast north of the Lawas district border, on the east coast of N. Borneo it has been obtained up the Kinabatangan River. Southwards it extends to the upper Kapuas and the upper Mahakam. Banks observed it at 4,500 feet on Mt. Mulu.

DESCRIPTION. ♂ 31", ♀ 20". Adult male is unmistakable ; immature male is duller, with a short dark chestnut tail. The female has blue facial skin like the preceding species, but has crimson not white legs, no crest or spur, and is considerably smaller. Iris scarlet ; wattles bright cobalt-blue tipped black, forming two very long lobes when males display ; skin round eye bright cobalt-blue ; beak horn, lower mandible paler ; feet scarlet, claws pale horn.

VOICE. Writing of aviary birds, Heinroth states : "When frightened, especially when its enclosure was intruded upon, the cock bird uttered a soft monotonous *gack* ; at the height of the pairing season it emitted a shrill piercing cry, but otherwise was silent, having no call-note or crowing sound". Ibans claim that it has a distinctive note *bek kiaa* which I have been unable to verify. Beebe ("Monograph" II: 184–196) gives a long account of his adventures

in search of this pheasant in the Kapit district, and paints a verbal picture of the sort of country in which they live. He mentions the covey call, a penetrating rather metallic *kook kook* uttered by both sexes, and a sharp nervous *kak kak* of suspicion.

HABITS. This wonderful species was discovered in 1874, and has been much sought after by zoos and aviculturists. It is a bird of primary forest, and like the Argus Pheasant it comes down to water twice daily to drink. " The actions of this bird are entirely Fowl-like and it is much more like a Junglefowl in its ways than a Pheasant. It skulks along through the jungle, carrying its tail in a curve like a fowl " (Hose).

Heinroth noted that " the outer six or seven pairs of tail-feathers have the tip devoid of barbs and look as though they have been worn down ; however, they are like this from the beginning, so that ' they come into the world worn '. I would class them as scraping feathers, for during pairing they are pressed against the ground as the bird moves forward and produce a rustling sound among the leaves. Beebe noticed that in the wild state dry leaves were actually impaled on these feathers ".

The cock's magnificent display was studied by Heinroth and described in his article in the *Journal für Ornithologie* 1938, 86, with a coloured plate. In display the sky-blue lobes are inflated by the injection of blood ; the beak is then invisible, the blue being relieved only by the ruby-red of the eye, which is particularly noticeable owing to the red ring surrounding it. " When displaying the cock struts slowly about, and stands still with a jerk when the hen bird comes close up to him. It is then that the head lobes attain their maximum inflation."

For further notes see also Delacour 1951 : 179–183.

FOOD. Consists equally of insects and fruit.

NEST AND EGGS. Nest and incubation period unknown. Clutch probably five, the egg being oval, pale pinkish-cream, 51×40 mm. (Delacour).

93. MALAYSIAN PEACOCK-PHEASANT

Polyplectron malacense (Scopoli) 1786 PLATE VI, 1

Malaya, Sumatra, Borneo.

A lowland resident, but extremely rare ; recorded only from Muaratewe and Balikpapan Bay in S. Borneo, " central Sarawak well up toward the Dutch border" (Beebe, "Monograph", IV: 88–91, somewhere in the upper Rajang), and Paitan in N. Borneo.

DESCRIPTION. Length ♂ 17", ♀ 15". The ocelli or brightly coloured spots on the tail are metallic green in the male and metallic blue in the female ; no

other bird in our area has metallic ocelli (the Argus Pheasant has non-metallic ocelli on the wing feathers, not on the tail). Two spurs on the leg of the cock, none on the hen. The cock is a very handsome bird ; crown and nape covered with disintegrated feathers of pepper and salt colour throwing off green reflections at some angles ; similar but longer feathers forming a mane on the nape, with metallic purple reflections ; a large area of metallic feathers on the sides of the breast, with green or purple reflections according to the angle of view. In both sexes the pale chin and throat are conspicuous. Female has metallic purple and black ocelli on mantle and wings.

HABITS. Not described from Borneo. They are shy birds of dense forest, very difficult to see, but the call is a harsh repeated quack which attracts attention.

NEST. Unknown.

RACE. *P. m. schleiermacheri* Brüggemann 1877.

94. GREAT ARGUS PHEASANT PLATE VI, 2

Argusianus argus (Linnaeus) 1766 *Kuang* (M) ; *ruai* (I)

Malaya, Sumatra, Borneo.

A common resident throughout the lowland forests of Borneo, excluding flat or swampy jungle, and goes up to 3,000 ft. on the western side of the Tama Abo range, but is absent from the Kelabit uplands. Decreasing in numbers.

DESCRIPTION. Unmistakable. ♂ up to 66″ (tail up to 48″) ; ♀ 24″. Iris red ; skin of head and neck blue ; beak very pale yellow, round nostrils black ; feet red, claws horn ; no spurs in either sex.

VOICE. The loud cry of the Argus Pheasant is one of the ornithological features of the Bornean jungle, and as soon as you get away from the flat steamy swamps of the coastal districts into the foothills you can count upon hearing it, except in heavily populated or extensively cleared areas. It has been described by a number of authors. Spenser St. John (not an ornithologist) writes : " In the deep silence one is startled by the thrice-repeated *tu-wau* in a clear sonorous tone, and that is the crow of the cock. The cry of the hen is similar but more quickly repeated ; both are very pleasing to hear ". Davison notes :

" The call of the cock sounds like *how-how*, repeated ten or a dozen times, and is uttered at short intervals when the bird is in its clearing, one commencing and others in the neighbourhood answering. The report of a gun will set every male within hearing calling, and on the least alarm or excitement, such as a troop of monkeys passing overhead, they call. The call of the female is quite distinct, sounding like *how-owoo, how-owoo*, the last syllable much prolonged, repeated ten to a dozen times, but getting more and more rapid until it ends

in a series of *owoo's* run together. The call of both male and female can be heard to an immense distance ; that of the former especially can be heard at a distance of a mile or more. Both sexes have also a note of alarm, a short, sharp, hoarse bark."

HABITS. Both Davison and Beebe ("Monograph" IV: 133–156) have studied this bird in the jungle and written long accounts of its habits.

" They live quite solitarily, both males and females ; every male has his own dancing room, of which he is excessively proud. . . . Each male chooses some open, level spot—sometimes down in a dark gloomy ravine, entirely surrounded and shut in by dense cane-brakes and rank vegetation—sometimes on the top of a hill where the jungle is comparatively open—from which he clears all the dead leaves and weeds, for a space of six or eight yards square until nothing but the bare clean earth remains, and thereafter he keeps this place scrupulously clean, removing carefully every dead leaf or twig that may happen to fall on it from the trees above.

" These cleared spaces are undoubtedly used as dancing grounds but personally I have never seen a bird dancing in them, but have always found the proprietor either seated quietly in, or moving backwards and forwards slowly about them, calling at short intervals. Except in the morning and evening when they roam about to feed and drink, the males are always to be found at home, and they roost at night on some tree quite close by " (Davison).

Beebe discovered two points of interest about these dancing grounds. He found a tree seedling one inch in diameter from which the bird had pecked away the bark in a ring round the base ; as the bird would be unable to remove a tree of this size by uprooting it, and as it is difficult to find in natural forest an area large enough for a dancing floor without at least one or two seedlings of this size growing on it, he thought that the bird adopted this method of killing the tree so that it would eventually rot and fall down. The other point was that each dancing ground had a well-defined escape alley through the forest, down which the bird could beat a hasty retreat if alarmed.

Davison goes on to describe how difficult the birds are to approach and observe, and yet how easy to snare on the dancing grounds ; an obvious method is to ring the area with a low fence, leaving three or four openings over which nooses are suspended. I have seen a female caught in this type of snare, the fence being laid along a ridge in the forest and not round a dancing ground.

The cock's display has been observed in zoos. An account in

English from observations made in the London Zoo is given by D. Seth-Smith (*Proc. Zoo. Soc. London*, 1925 : 323–325) and a fuller account with drawings in German is given by Bierens de Haan (*Biol. Zentralblatt* 1926, 46 :428–435). The latter account is summarised by Armstrong (*Bird Display* : 222) as follows :

The dancing arena is about six yards across. Display consists of three phases ; first, a period of excitement during which the tail sweeps the ground while the pheasant fidgets with twigs and pebbles about the hen ; then, when she stands still, he erects his ocellated plumes and confronts her with a great vertical, concave fan. In the third phase he bows rhythymically to her.

" The males are not at all quarrelsome, and apparently never interfere with each other, though they will answer each other's calls. The female, like the male, lives quite solitarily, but she has no cleared space, and wanders about the forest apparently without any fixed residence. The birds never live in pairs, the females only visiting the male in his parlour for a short time " (Davison).

Food. " The food consists chiefly of fallen fruit, which they swallow whole . . . but they also eat ants, slugs, and insects of various kinds. These birds all come down to the water to drink about 10 or 11 a.m. after they have fed " (Davison).

According to Beebe, ants predominate in its food, including fire ants (*semut api*), but *not termites* (the main item of animal diet for other tropical pheasants) ; but it also eats leaves, nuts and seeds.

Nest and Eggs. Two eggs sent by Low from the Mengalong River are described as creamy or yellowish-white in colour, with minute grain-like dots all over the eggs, 66×47 mm. See Coomans de Ruiter (1946).

Race. *A. a. grayi* (Elliott) 1865.

RAILS, MOORHENS, GALLINULES, COOTS : Rallidae

An almost cosmopolitan family. The rails and crakes are skulking marsh birds, hiding in reeds and long grass and seldom venturing out into the open except in the early mornings or late evenings. They walk well with long strides, but in an ungainly fashion with a jerk of the head and a twitch of the tail at each step ; when disturbed they run fast into the nearest cover with the head and tail depressed, and fly with reluctance, the long-toed legs hanging down

PLATE V

Page

CRESTED GREEN WOOD PARTRIDGE (♂, ♀) 168
Rollulus rouloul (bottom left)

CRIMSON-HEADED WOOD PARTRIDGE (♂, ♀) 169
Haematortyx sanguiniceps (bottom right)

BULWER'S PHEASANT (♂, ♀) 171
Lophura bulweri (top)

conspicuously. The gallinules, moorhens, and coots are all rare birds in Borneo or with a very restricted distribution. The downy young of all species are black.

KEY TO RAILS AND CRAKES

1.	Very small (6–7″)	2
	Larger	4
2.	Mantle plain	*P. fusca*
	Mantle streaked	3
3.	Blackish stripe through eye; a white stripe above and below	*Poliolimnas*
	Sides of head greyish or brownish; flanks barred	*P. pusilla*
4.	Belly and flanks plain	*Gallicrex* (♂ ad.)
	Belly and flanks coarsely barred	5
5.	Mantle plain olive-brown	6
	Mantle streaked	8
6.	Top of head ashy-brown contrasting with rufous sides of head	*P. paykulli*
	Entire head rufous, darker on crown and nape	7
7.	Upper side of wings plain like mantle	[*R. curvirostroides*]
	Upper side of wings barred with buffy-white	*R. fasciata*
8.	Mantle without white; under-parts sandy with dark crossbars	*Gallicrex* (♀ and imm.)
	Mantle with white bars; throat pale grey	*R. striatus*

95. SLATY-BREASTED RAIL PLATE VII, 2

Rallus striatus Linnaeus 1766

Widespread in S.E. Asia.

A common resident throughout Borneo in freshwater swamps and wet padi fields.

DESCRIPTION. 9″. Distinguish from the two banded crakes, which also have white barring on the wings and flanks, by having white bars on the mantle and back as well, and by the slate-grey breast. Iris reddish-brown; shield, ridge of upper mandible, and terminal half of lower mandible horn, rest pink; feet grey with pink tinge anteriorly, claws horn.

VOICE. Like the loud croak of a frog (Motley); a sharp *terrik* (Delacour).

HABITS. Lives in rank grass. In the irrigated padi fields of the Kelabit uplands numbers are caught in nooses set for rats.

FOOD. Insects.

NEST AND EGGS. The nest is a simple platform of rice blades or dead grass placed about a foot from the ground at the base of the rice plants or grass stems. Eggs creamy-white to pinkish-buff in ground-colour, blotched and spotted with reddish, 34×27 mm. (Sharpe). Bartlett saw young ones three or four days old in Kuching on 1 October, whereas in the Kelabit uplands it breeds from December to February.

RACE. *R. s. striatus*.

95a. WATER RAIL

Rallus aquaticus Linnaeus 1758

Europe and Asia.

Rare vagrant to Borneo, where the only specimen to date, a female in first winter plumage, was collected on Talang Talang Island on 20 December 1956.

DESCRIPTION. 10". Long bill (culmen 37 mm.); upper-parts olive-brown heavily marked with dark brown; chin and upper throat white shading to olive-brown on lower throat. Under-parts olive-brown marked with dark brown and some white, centre of breast and abdomen buff; under tail-coverts black with broad rufous tips and narrow white subtips.

RACE. *R. a. indicus* Blyth 1849, breeds in E. Siberia.

96. MALAYSIAN BANDED CRAKE PLATE VII, 6

Rallina fasciata (Raffles) 1822

Malaysia, Burma, Assam.

Resident and passage migrant in Borneo. Specimens have been collected in most parts of Borneo and in the South Natunas; most of the population is probably resident, but may be augmented by visitors in winter.

DESCRIPTION. 7½". For differences from Chinese Banded Crake see under that species. Bold black-and-white barring of the belly contrasts with gentle chestnut-brown of breast. Skins fade rapidly. Iris red; eyelids, gape, and skin under bill crimson; bill black, horn, or crimson; feet dark red, or red at joints only remainder pale horn, claws pale horn or black.

HABITS. Little known in Borneo.

97. BAILLON'S CRAKE PLATE VII, 4

Porzana pusilla (Pallas) 1776

Widespread in the Old World.

A migrant and a resident race in our area. The former is known from two specimens only, collected at Bintulu and Cape Sirik, but may be a regular winter visitor which has been overlooked. The resident race is known from one specimen only, collected at Tenggarong on the lower Mahakam River, but it may prove to be widespread in the extensive lake area of the Mahakam.

DESCRIPTION. 6″. This tiny crake has the upper-parts a warm brown with dark and white streaks on back and wing-coverts; chin and breast brown, centre of throat white; flanks and under tail-coverts boldly barred blackish and white. Outer web of first primary white. Iris light brown; bill greenish-yellow, tip of upper mandible darker; feet greenish-horn, claws horn.

HABITS AND NEST. Not described from Borneo.

RACES. (*a*) *P. p. pusilla*, breeding in central and northern Asia; (*b*) *P. p. mira* Riley 1938 more rufous above, resident (also in Malaya and Sumatra).

98. RUDDY CRAKE PLATE VII, 5

Porzana fusca (Linnaeus) 1766

Widespread in S.E. Asia from India to Celebes.

Over a century ago it was collected by Schwaner in S. Borneo (skin in Leiden Museum) and there is no subsequent record. Its status in our area is uncertain.

DESCRIPTION. 6½″. Upper-parts dark olive-brown, mask and under-parts rufous; bright red legs conspicuous in flight.

HABITS AND NEST. Not described from Borneo.

RACE. *P. f. fusca*.

99. CHINESE BANDED CRAKE PLATE VII, 3

Porzana paykulli (Ljungh) 1813

Breeds in N.E. Asia and winters in S.E. Asia.

Occasional visitor to Borneo. Two have been collected not far from Kuching, and nine around Bario, Kelabit uplands.

DESCRIPTION. 8″. Distinguish from Malay Banded Crake by ashy-brown top of head and mantle contrasting with rufous sides of head, and larger size (mid-toe with claw over 40 mm.).

HABITS. In our area a bird of wet padi fields and grasslands.

FOOD. Longicorn and other beetles, insects, rush and other seeds.

100. GREY-BELLIED CRAKE PLATE VII, 7

Poliolimnas cinereus (Vieillot) 1819

Malaya to central Polynesia.

Resident, probably throughout Borneo in suitable localities.

DESCRIPTION. 7″. See key. The only *small* rail with white under-

parts contrasting with its apparent field coloration of uniformly olive-brown back, wings and tail (Cairns). Iris and skin around eye crimson ; upper mandible horn, lower pale yellow ; feet greenish-yellow, claws horn.

VOICE. " In the non-breeding season its presence may only be known by its high-pitched thin reedy piping, which has a ventriloquial quality and seems to arise from different localities simultaneously. In the breeding season males are so obsessed by nuptial instincts that they call day and night, and their thin urgent vocal renderings are a feature of the rice plains " (Cairns, writing of Penang).

HABITS. Found in wet padi fields, swamps, *lalang* grass, reeds. Like most rails, a great skulker and very timid.

FOOD. Caterpillars, grasshoppers, grass seeds.

NEST AND EGGS. Grabowsky collected eggs on the Bangkau Lake on 25 April. For an interesting account of nesting and other habits see article by Cairns in *Malayan Nature Journal* 1953 : 173–175.

RACE. *P. c. cinereus.*

101. WHITE-BREASTED WATERHEN PLATE VII, 8

Amaurornis phoenicurus (Pennant) 1769

Kruak (M) ; *engkruak padi* (I).

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo, excluding the forests. Also found in the Kelabit uplands, and in the South Natunas.

DESCRIPTION. 10". White forehead, eyebrows and under-parts distinctive. Iris reddish-brown, gape blue-green ; upper mandible black or green with red spot at base, lower green ; feet dull olive or horn.

VOICE. An exceedingly noisy bird in the breeding season and remarkable for its weird calls, which consist of a series of grunts, croaks, and chuckles, followed by a monotonous *kru-ak, kru-ak, kru-ak-a-wak-wak,* from which it derives its local names.

HABITS. It is found in wet padi fields, grassy swamps, vegetation round reservoirs, and similar sites. It comes out into the open far more than other rails, and is often seen far from water ; I have seen two birds fighting a duel in the middle of the motor road leading out of Kuching, and their squashed remains are often seen on such roads. It may be seen clambering about in bushes or even some way up trees.

FOOD. Small fish, grasshoppers, insects, padi and grass seeds.

NEST AND EGGS. The nest is usually built in a bush, occasionally on water. Eggs may be laid in almost any month of the year. Gibson-Hill describes eggs (c/4–5) taken in January and July in N. Borneo as " blunt egg-shaped, sometimes almost a regular oval. Surface smooth. Ground-colour ranging from off-white to light buff, speckled or blotched, usually fairly thickly, with pale violet-grey and auburn or raw umber ". 39×29 mm.

RACE. *A. p. javanicus* (Horsfield) 1821.

102. WATERCOCK PLATE VII, 9

Gallicrex cinerea (Gmelin) 1789

Ranges from N. China and Korea to S.E. Asia and Philippines, but is only a winter visitor in the southern part of its range *i.e.* Malaya south of Penang (Gibson-Hill 1949 : 57), Java, Borneo, Celebes.

An occasional and sporadic visitor to Borneo, south to Bandjarmasin where Motley recorded it. Banks noted that it " occurs in spasms in Sarawak and is said to be more often seen on the Pontianak side ; six or seven were seen or obtained in 1927. I have seen one as late as 6 June, which hardly suggests it is only a migrant ". There is no proof of breeding in Borneo however. Harrisson collected one at 3,500 feet in the Kelabit uplands.

DESCRIPTION. 13". In eclipse plumage, as illustrated, " it is a large khaki buff-coloured bird, rising awkwardly with long neck outstretched and legs hanging down, sometimes alighting on a tree " (Banks). Iris brown ; upper mandible horn, lower paler ; feet greenish, claws horn.

HABITS. No information, except that it frequents marshy places.

NEST AND EGGS. For interesting notes on its nesting and other habits in Penang see article by Cairns, *Malayan Nature Journal* 1941 : 120–124.

103. BLACK MOORHEN

Gallinula tenebrosa Gould 1846

Australia, New Guinea, Moluccas, Lesser Sundas, S. Borneo. In our area known only from the Bangkau Lake in S.E. Borneo.

DESCRIPTION. Distinguish from next species by absence of white streaks on flanks and by red feet.

HABITS. Those of the moorhens.

NEST. Grabowsky found a nest with four eggs on the Bangkau Lake on 25 April.

RACE. *G. t. frontata* Wallace 1863.

104. COMMON MOORHEN

Gallinula chloropus (Linnaeus) 1758

Distribution world-wide.

Resident on the Bangkau Lake in S. Borneo. Rare vagrant elsewhere; Sarawak Museum has two specimens (immature) collected in November at Bintulu and on Satang Island, which are unlikely to have come from S. Borneo against the prevailing wind, and may have come down from the mainland of Asia.

DESCRIPTION. 12". In all plumages the white under tail-coverts with a black contrasting patch in the centre are diagnostic. In immature birds the frontal shield is reduced to insignificance and white streaks on flanks hardly noticeable; general colour rich olive-brown above, paler below. Lower mandible and tip of upper pale green, shield and nostrils green; feet green.

HABITS. No information from Borneo.

NEST AND EGGS. The Bangkau Lake is the only known breeding haunt, where Grabowsky found a nest with eggs on 25 April.

RACE. *G. c. orientalis* Horsfield 1821.

105. PURPLE COOT or GALLINULE

Porphyrio porphyrio (Linnaeus) 1758

From Africa and S. Europe across S. Asia to Australia and beyond.

Resident in S. Borneo only. It is known by specimens from Pleihari, Bandjarmasin, Bangkau Lake and the lower Mahakam (? lake area).

DESCRIPTION. 13". An unmistakable bird with a powerful red bill and shield, light blue head and under-parts and white vent. Long red legs and feet.

HABITS. Not described from Borneo. Probably confined to the reed beds and long grass round lakes.

NEST. Grabowsky found a nest with eggs on 25 April, on the Bangkau Lake.

RACE. *P. p. indicus* Horsfield 1821.

105a. COOT

Fulica atra Linnaeus 1758

Widespread in Europe and Asia. In winter recorded from Java, Sumatra, and Borneo but not Malaya.

P. F. Burgess (*in litt.*) shot one out of eight seen on a pool near Kota Belud in January 1959, the first record for Borneo (identified from a clear photograph of the dead bird and a detailed description).

DESCRIPTION. 15". General colour slaty-black. Adults distinguished by conspicuous white bill and frontal shield. Legs dark greenish, toes half-webbed.

HABITS. Normally gregarious in winter on lakes and ponds. Flies with reluctance, pattering along the surface when taking off, preferring to swim into reeds or similar cover on the margin of the lake.

RACE. *F.a. atra.*

JACANAS: Jacanidae

Jacanas are remarkable for their very long toes and claws, a feature that enables them to walk about on the floating leaves of aquatic plants. The females are nearly twice as large as the males, and the roles of the sexes in rearing the young are said to be reversed. Authorities differ as to whether they should be classified with the shorebirds, or with the rails. In our area they are represented by two species known only from S.E. Borneo.

106. PHEASANT-TAILED JACANA

Hydrophasianus chirurgus (Scopoli) 1786

Widespread in S.E. Asia.

Resident in the Barito drainage of S.E. Borneo, where it has been recorded from the Bangkau Lake and from the environs of Bandjarmasin.

DESCRIPTION. In winter plumage the upper-parts are dark brown, under-parts and outer tail-feathers white. There is a white eyebrow, and a black line from each eye down the sides of the throat to a chocolate patch on the breast. In breeding plumage very different, with white wings and long black pheasant-like tail; head and throat white, hind-neck yellow.

HABITS. Frequents the edges of lakes.

NEST. Not described from Borneo. The nest is a floating mass of vegetation and the eggs are a deep bronze colour.

107. COMB-CRESTED JACANA or LOTUS BIRD

Irediparra gallinacea (Temminck) 1828

Australia, New Guinea, Moluccas, S. Borneo.

Known only from the Bangkau Lake, where Grabowsky found it common.

DESCRIPTION. 9″. Brownish above with some black markings; throat white bordered by pale orange dividing it from black breast band; remaining under-parts white. Comb-like wattle on forehead red; bill red at base, tipped black.

HABITS. "Moves briskly over floating vegetation, supported by its greatly elongated toes. A rather shrill rattling or piping call. Frequents swamps, lakes, and lagoons" (Condon and McGill).

NEST. Grabowsky found a nest with eggs on 25 April.

RACE. *I. g. gallinacea*.

WADERS

Borneo is visited in winter by large numbers of Palaearctic waders. They breed in northern or eastern or central Asia and winter in southern Asia or Malaysia or even further south in the Moluccas or

northern Australia. Only one wader (Malay Plover) is known to breed in our area. The rest sweep down in August and September, some remaining with us through the winter, others passing on farther south. They are walking and running birds of small to medium size, often with long legs, and they are essentially birds of open country. Nearly all of them are more or less closely associated with water and wet places; some prefer the open beaches and mudflats of the coast and islands; others (Common Sandpiper, Little Ringed Plover) are birds of the rivers; others again (Wood Sandpiper, Snipe) prefer marshes and wet padi fields; a few (Grey and Golden Plovers, Snipe) may be found on dry ground where there is short grass. They are mostly birds of rapid flight with quick wing-action, the wings being usually rather pointed and appearing angled in flight because they are not extended to the full. The legs are extended beneath the tail in flight.

There are two main types: the round-headed, short-billed plover type (family Charadriidae) and the longer-billed curlew, sandpiper, and stint type (family Scolopacidae).

The summer and winter plumages of waders often differ conspicuously. The time of moulting being very erratic, adults in nearly complete winter and nearly complete summer plumages may be seen together, and, as the juveniles are often more or less distinct from either, field identification of some species is often rather puzzling. Coloured plates do not help very much, the most important field characters being the pattern of the wings, rump and tail in flight and the call-notes. A number of excellent inexpensive guides have been published in English, among which may be mentioned *The Popular Handbook of British Birds* and *A Field Guide to the Birds of Britain and Europe*.

Most waders are gregarious outside the breeding season, and some species are characteristic birds of the seashore, especially of the extensive mudflats that exist along some stretches of the Bornean coast. They have certain mannerisms in common; the account given in the *Popular Handbook of British Birds* is here summarised. The normal carriage of the body is horizontal and the neck is generally more or less withdrawn, but when nervous or particularly alert a more slanting pose of the body is adopted and the neck is more stretched up. The typical attitude of rest is with the bill tucked into the wing-feathers, either while the bird is standing or prone on the ground. Frequently they rest on one leg with the other drawn up into the feathers of the abdomen. A typical and graceful pose is with a leg stretched out rather to one side and the wing of the same side

PLATE VI

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MALAYSIAN PEACOCK-PHEASANT (♂, ♀) 172
Polyplectron malacense schleiermacheri (bottom)

GREAT ARGUS PHEASANT (♂, ♀) 173
Argusianus argus grayi (top)

extended over it, and another graceful habit common to many species is that of holding the extended wings almost vertically above the back for a moment on alighting.

Many waders when suspicious jerk the head and body sharply up and down at short intervals; when feeding there is often a regular up and down movement of the tail, and also a bobbing up and down motion of the head which occurs independently.

PAINTED SNIPE: Rostratulidae

108. PAINTED SNIPE

Rostratula benghalensis (Linnaeus) 1758

Africa, Asia, Australia.

Once collected in S. Borneo by Croockewit.

DESCRIPTION. 10". Sexes differ, the female being larger and more brightly coloured than the male. Female has a prominent white eye ring, crown dark with a buff band down the centre, sides of head and throat chestnut, under-parts white; male has pale buff eye ring, grey sides of head and throat, barred back and wings, under-parts white. Bill slender and long, but not pitted at the end as in true snipes. Rises with dangling legs like a rail.

RACE. *R. b. benghalensis.*

PLOVERS: Charadriidae *

The plovers occurring in our area are waders with short stout bills and noticeably thick heads. Only one species is a resident, the others coming down in winter from various parts of Asia.

109. GREY PLOVER PLATE C, 1

Pluvialis squatarola (Linnaeus) 1758

Palaearctic.

Common passage migrant and winter visitor to the coast of Borneo, including grassy areas a few miles from the sea.

DESCRIPTION. 12". Adults in winter have the upper-parts

* See paper by BOCK, W. J., 1958. A generic review of the plovers. *Bull. Comp. Zoo.* Harvard 118, 2: 27-97.

brownish-grey, and much more uniform than any plumage of the Golden Plover. Early arrivals and odd birds before departure may show partial breeding plumage with black face and under-parts, and black, grey, and white upper-parts. Immature birds have upper-parts spangled and tinged with yellowish, but in flight the conspicuous black axillaries, whitish rump and tail, and whitish wing-bar distinguish Grey Plover at all ages. On the ground it is noticeably larger than Golden Plover.

VOICE. " Ordinary flight-note is not unlike Golden Plover's, but is higher pitched and typically trisyllabic, *tlee-oo-ee* " (*Popular Handbook of British Birds*).

HABITS. Usually in small flocks, on lawns or tidal mudflats.

110. AMERICAN GOLDEN PLOVER PLATE C, 2

Pluvialis dominica P. L. S. Müller 1776

E. Palaearctic and Nearctic.

Common passage migrant and winter visitor to the coast and interior of Borneo. Bartlett noted them on the Museum lawn up to 15 June, probably first year birds spending the summer here.

DESCRIPTION. 9½". Distinguish from Grey Plover by smaller size, dark instead of whitish rump and tail, and by smoky-grey instead of black axillaries. Feathers of upper-parts are edged with yellowish, but this colour is not easy to see. On arrival and before departure birds may show partial breeding plumage, with blackish throat and under-parts in varying density (as in Grey Plover), prominent light eyebrow which extends well behind eye, and brighter gold mottling on upper-parts.

VOICE. The note is *queedle* or *kl-ee-ker* (*Popular Handbook of British Birds*).

HABITS. On the coast this is one of the first waders to arrive, in August and early September ; its numbers decrease in November, but some stay through the winter (a flock of fifty birds or so usually winter in the Government residential area of Tanjong Lobang, Miri, where they are not molested). In the Kelabit uplands it is a regular visitor, but not in flocks, usually not arriving till September after the Wood Sandpipers and Long-toed Stints. It likes short grass (lawns, cattle grounds, golf links, airports, etc.).

RACE. *P. d. fulva* Gmelin 1789, breeds in N. Siberia.

PLATE VII

Page

1*a*. PAINTED QUAIL (♂) 165
Coturnix chinensis lineata.

1*b*. PAINTED QUAIL (♀) 165
Coturnix chinensis lineata.

2. SLATY-BREASTED RAIL 177
Rallus striatus striatus.

3. CHINESE BANDED CRAKE 179
Porzana paykulli.

4. BAILLON'S CRAKE 179
Porzana pusilla mira.

5. RUDDY CRAKE 179
Porzana fusca fusca.

6. MALAYSIAN BANDED CRAKE 178
Rallina fasciata.

7. GREY-BELLIED CRAKE 179
Poliolimnas cinereus.

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9. WATERCOCK (Winter) 181
Gallicrex cinerea.

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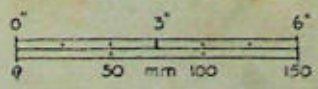

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111. LITTLE RINGED PLOVER

Charadrius dubius Scopoli 1786

Palaearctic and Oriental.

Passage migrant and winter visitor ; may be met with anywhere in Borneo.

DESCRIPTION. 6". Adult has distinctive head pattern of black band across crown, black band through eye, and black band across breast. In eclipse plumage and in immature birds head is brownish and band across breast is brown and interrupted in centre. Absence of any white wing-bar and distinctive note are good field characters in flight, flesh-coloured legs when settled. Bill black.

VOICE. Musical double note in flight.

HABITS. Prefers sandy or gravelly river banks and airports. Early date 22 August at Santubong. Random counts at sunset on Brunei airport, published elsewhere, between 20 October and 12 January showed 24 to well over 100 birds on the bitumen every evening except one when only 8 were seen (Smythies). I have seen a bird at Anduki "pattering" on wet sand—standing on one leg and with the other leg held almost horizontally beating a rapid tattoo with the foot on the surface of the sand. This action did not seem to be connected with feeding. For an interesting note on pattering and puddling observed in a number of species, including Little Ringed and Kentish Plovers, see Meinertzhagen 1954 : 477.

RACES. *C. d. curonicus* Gmelin 1789. This race is in eclipse plumage when in our area, whereas the other two races discussed below apparently do not have an eclipse plumage (Deignan, *in litt.*). It breeds from the Baltic to Japan, and south to the Mediterranean and Egypt to Kashmir (Meinertzhagen 1954).

The races of this species may be separated as follows : (*vide Am. Mus. Novitates* 1417 : 26–29) :

WING	BILL (measured from beginning of frontal feathering)	RACE
110–113 mm.	13·2–14·2 per cent. of wing	*d. dubius*
105–113 mm.	10·9–12·6 per cent. of wing	*d. jerdoni*
109–121 mm.	10·6–12·5 per cent. of wing	*d. curonicus*

d. dubius differs from *d. curonicus* as follows : The adult has the yellow eye wattle very broad and conspicuous, and the base of the mandible extensively yellow ; outermost tail-feather either pure white or with a rather small and faded-out grey-brown spot or bar, not a pronounced blackish bar as in *d. curonicus*. The young bird is also quite different. White area on forehead much more restricted and well defined ; breast band blackish not brownish ; general colour much less brownish.

d. jerdoni (Legge 1880) has the eye wattle and base of lower mandible as in *d. dubius* but the outer tail-feather as in *d. curonicus* (Deignan, *in litt.*).

d. dubius is the resident race of the Philippines, Celebes, and New Guinea; if a resident form is discovered in Borneo it is more likely to belong to this race than to *d. jerdoni*, which is listed by Chasen and by Mayr for Borneo, and ranges from India to Indo-China and Sumatra.

112. KENTISH PLOVER

Charadrius alexandrinus Linnaeus 1758

Palaearctic and Oriental.

Passage migrant and winter visitor to the coast of Sarawak and N. Borneo; presumably reaches Indonesian Borneo, but no record thence.

DESCRIPTION. 6½". In the field the blackish, not flesh-coloured legs and in flight narrow white wing-bar and different note are best characters to distinguish from Little Ringed Plover. In the hand it will be seen that shafts of all primaries are white, whereas in Little Ringed Plover the shaft of the second (*i.e. first long*) primary only is white, remainder being brown.

VOICE. A thin *pick, pick, pick* note lacking musical quality of Little Ringed Plover's.

HABITS. Frequents airports in coastal districts and the shore. At Brunei airport random counts on same dates as Little Ringed Plover showed numbers varying from one to twenty-one, which usually kept to themselves on the same small patch of gravel; single birds, however, would mix with Little Ringed Plover. At Kuching Airport Governor Abell observed mixed flocks with Large Sand Plovers, one of each species being collected by a random shot into the flock on the wing. On the shore usually in mixed flocks (both in flight and when feeding) with the two Sand Plovers, the easiest field distinction from *C. peroni*, which does not mix with other species, (Medway). Late date 14 June (summer resident ?) at Santubong.

RACE. *C. d. nihonensis* Deignan 1941.

Meinertzhagen (1954 : 479) gives the following measurements:

C. a. dealbatus	culmen 16–21 mm. from feathering
C. a. alexandrinus	culmen 13–16 mm. from feathering

and states that *nihonensis* should not be named because it is intermediate in size, colour, and distribution between the above two races. He therefore reduces it to a synonym of *dealbatus*.

113. MALAY SAND PLOVER PLATE C, 3

Charadrius peroni Schlegel 1865

Malaysia.

Resident in pairs on sandy beaches of the Borneo coast and islands, but somewhat local. Thus Harrisson has yet to see one on the fine sand beaches of the Turtle Islands, in spite of months spent on these islands, and considers there must be some food factor limiting their distribution. Likewise absent from miles of sand beach on the Sarawak and Brunei coasts.

DESCRIPTION. 6". Sexes differ. The male has a narrow, often interrupted, pectoral band and the black patches on lores and ear-coverts are separated by the white of the throat; usually a rufous wash on crown and back. The female has the black parts of the male pale rufous. Distinguish from similar Kentish Plover by habit of not associating with other species, by smaller size (wing 4" or less) and by the black band on the hind neck of the male.

HABITS. It seems to prefer small bays of pure coralline sand, such as those in the S.W. corner of Sarawak round Cape Datu. It is always seen singly, in pairs, or in threes, and is often very tame (Harrisson).

NEST AND EGGS. Sharpe described eggs from Labuan as creamy-buff thickly scribbled over and blotched with blackish-brown or black, more especially at the larger end, with underlying scribblings of pale purplish-grey, 32×22 mm.

114. LESSER SAND PLOVER or MONGOLIAN DOTTEREL

Charadrius mongolus Pallas 1776

Breeds in central Asia and winters from Africa to S.E. Asia.

A common winter visitor to the coast and islands of Borneo. Non-breeding birds remain all through the summer.

DESCRIPTION. 7½". In non-breeding plumage the bird appears a rather nondescript brown, with whitish under-parts and a greyish patch on the sides of the neck, but no white collar on hind-neck; there is a brown eyestripe and a white wing-bar, neither very marked. In breeding plumage, traces of which may be assumed by birds before they leave in April or May, the crown and breast are brick-red. In winter plumge difficult to differentiate from next species in the field but in the hand length of bill is best feature:

Culmen from feathering 16–20 mm. . .	*mongolus*
Culmen from feathering 22–27 mm. . .	*leschenaulti*

PLATE C

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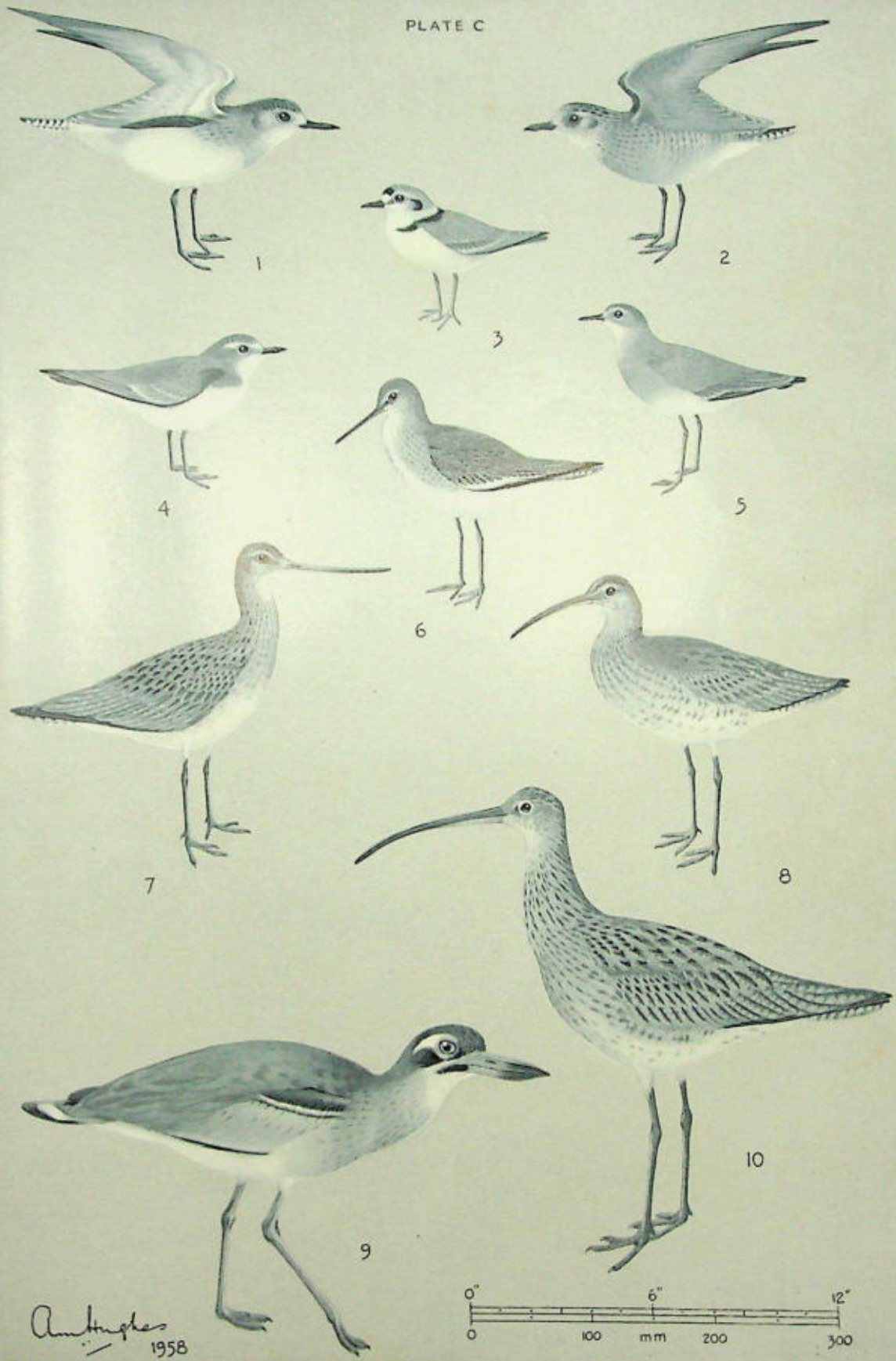
9.	REEF THICK-KNEE *Esacus magnirostris.*	213
10.	LONG-BILLED CURLEW *Numenius madagascariensis.*	196

PLATE C



VOICE. A distinctive chittering tern-like note is uttered in flight. " A clear penetrating *drrrriit* or sharp plaintive whistle " (Condon and McGill).

HABITS. This and the next species are easily the commonest waders on the shore and though preferring soft mud a few also frequent the long stretches of hard sandy beach so characteristic of much of the Brunei and Sarawak coast, and are usually the only waders to be seen on such beaches.

RACES. (*a*) *C. m. mongolus*, wing 131–141 mm., so far recorded only from Banggi and Balambangan Islands; (*b*) *C. m. atrifrons* Wagler 1829, wing 125–131 mm., the common form. Wing measurements from Hartert, *Vög. Pal. Fauna*, pp. 1542–43 (for *atrifrons* Meinertzhagen (1954 : 481) gives 118–128 mm.).

115. LARGE SAND PLOVER or LARGE SAND DOTTEREL

PLATE C, 4

Charadrius leschenaulti Lesson 1826

Breeds in Japan, Formosa, and Hainan, and is found in winter from E. Africa through S. Asia to Australia.

Common winter visitor to the coast and islands of Borneo. Non-breeding birds remain all through the summer, often in mixed flocks with the preceding species.

DESCRIPTION. 8½". In breeding plumage a beautiful foxy-red with a black line through the eye. In winter plumage inseparable from *C. mongolus* except by size, longer and stouter bill about half length of head being best guide; there is some overlap in wing measurements, Meinertzhagen (1954 : 482) giving 136–159 mm. rarely down to 132 mm.

VOICE. A musical *peeph*, not often uttered (Meinertzhagen). A melodious trill, louder than its near relatives (Condon and McGill).

HABITS. Probably the commoner of the two Sand Plovers, usually in large flocks (often mixed) on mud to small ones of half-a-dozen birds on hard sand. Large numbers have been seen at Kuching airport on passage (Abell).

RACE. *C. l. leschenaulti*, breeding from Kirghiz Steppes to Mongolia and Korea.

116. ORIENTAL DOTTEREL PLATE C, 5

Charadrius asiaticus Pallas 1773

Breeds from Mongolia to N. China. Winters from Malaysia to Australia.

The only plover regularly visiting the Kelabit uplands, where it occurs singly. Occasional on or near the coast (specimens from Labuan, Kuala Baram, Bintulu, Kuching, Tengah River near Kuching, and the N. Natuna Islands).

DESCRIPTION. 7½". White forehead, eyebrows, sides of face, chin and throat conspicuous. Upper-parts brown with an indistinct buff-white collar round the neck. Ear-coverts brownish. Under-parts white. In breeding plumage there is a broad chestnut band bordered with black across the breast.

HABITS. Generally a solitary bird, much shyer and wilder than the Sand Plovers and not gregarious as they are; in the Kelabit uplands it feeds in the irrigated rice fields among the padi, which is planted in October.

RACE. *C. a. veredus* Gould 1848.

SNIPES AND THEIR ALLIES: Scolopacidae

This family includes a large number of waders of all sizes, and for convenience is split up into four subfamilies.

CURLEWS, GODWITS, AND SANDPIPERS
(subfamily Tringinae)

The curlews and whimbrels are medium to large brown waders with downcurved bills (long to very long except in the Pygmy Curlew).

The godwits are medium in size and have very long straight or slightly upcurved bills.

The sandpipers are small to medium waders with straight bills of average length.

117. PYGMY CURLEW or LITTLE WHIMBREL

Numenius minutus Gould 1841

Breeds in E. Siberia and Mongolia and passes through China and Japan to winter in the Moluccas and Australia.

Its normal migration route is east of Borneo, but one was collected in Kuching on 5 October 1900.

DESCRIPTION. 13". Distinguish from Whimbrel by much smaller size, wing 7", bill 1·8".

VOICE. "A loud wailing *teo teo* or loud *whai-ut whai-ut*" (Condon and McGill).

118. WHIMBREL PLATE C, 8

Numenius phaeopus (Linnaeus) 1758

Holarctic.

Common winter visitor all round the coast. Non-breeding birds may spend the summer here, *e.g.* birds seen at Buntal 19 July (Medway) and 23–27 July (Gaun).

DESCRIPTION. 17". A miniature Curlew; when seen together the difference in size is obvious, but when seen alone the comparatively short bill (about half length of Curlew's), brown barring on the rump, and two broad dark streaks on crown divided by a narrow pale streak distinguish Whimbrel.

VOICE. Quite different from Curlew's, a call of seven to nine syllables with even emphasis throughout.

HABITS. It is a great lover of mangrove swamps and generally roosts on the larger trees at high tide or overnight; one particular group of tall trees in the mouth of the Sarawak River delta carries 20–40 birds all winter. When shifting its feeding grounds I have seen a flock of about fifteen birds flying high in perfect V formation in wide circles, one arm of the V longer than the other, with a leader out in front; this flock disappeared in the direction of Pulau Laki in the Bako National Park, and what were probably the same birds were seen the following morning on a hard sandy beach near that island.

FOOD. They feed partly on a species of sweet small crab which lives on the mangrove roots (Harrisson and Medway).

RACE. *N. p. variegatus* (Scopoli) 1786, which breeds in E. Siberia and winters throughout the Indo-Australian Archipelago.

[Some Sarawak specimens with much whiter lower back and rump have been compared with specimens of the nominate race lent by the British Museum, and seem close to that race, but Sims (*in litt.*) comments that the specimens of *variegatus* in the British Museum show considerable individual variation, and that the range of seasonal and individual variation requires investigation. This can only be done on adequate breeding material from different longitudes.]

119. COMMON CURLEW

Numenius arquata (Linnaeus) 1758 *Mantorek* (M)

Palaearctic.

Erratic winter visitor and passage migrant. Banks, writing in 1935, regarded it as a common visitor on the coast of Sarawak. From 1945 to 1956, however, there was not a single record, but in 1957

a few were seen in November and December at Bako, maximum 10 on 13 December (Medway), and on 9 June 1958 I saw one at Buntal.

DESCRIPTION. 23". For distinctions from Whimbrel see under that species. The pure white rump is noticeable in flight and distinguishes it from Long-billed Curlew.

VOICE. "The alarm note is a loud whistling *qu-oy*, the second syllable being higher pitched. The shrill *courlie* is also made on the wing" (Meinertzhagen).

HABITS. One of the shyest and most difficult to approach of the waders on the shore.

RACE. *N. a. orientalis* Brehm 1831.

120. LONG-BILLED or EASTERN CURLEW PLATE C, 10

Numenius madagascariensis (Linnaeus) 1766

Breeds in E. Siberia; winters from Malaysia to New Guinea and Australia.

Erratic passage migrant and winter visitor to the coast of Borneo. Banks (1935 a : 287) described this bird as swarming at Buntal and common at Paloh, and generally commoner than the preceding species. From 1945–56 there was no record, but three were seen in November 1957 at Bako (one collected) and two in December 1957 (Medway).

DESCRIPTION. Distinguished from Common Curlew by larger size, longer bill (culmen 173–183 mm. against 121–155 mm. according to Hachisuka), and brown instead of white lower back and rump. In the hand it will be seen that the axillaries are barred and not pure white.

VOICE. Loud wailing melancholy notes *courlie-courlie* or *ker-lee, ker-lee* (Condon and McGill).

HABITS. Those of Common Curlew. They sometimes mix.

121. BLACK-TAILED GODWIT

Limosa limosa (Linnaeus) 1758

Palaearctic.

Collected twice in our area, Pontianak in 1826 and Buntal in 1913. One lame and tame bird on Kuala Belait football field, 19 December 1953 (Smythies).

DESCRIPTION. 15–17". Long straight bill. "Easily distinguished from Bar-tailed Godwit by a broad white wing-bar and long legs projecting conspicuously beyond the tail; also, as the bird flies away, by its dark, not white

rump and pure white tail with broad terminal band of black" (*Popular Handbook of British Birds*).

RACE. *L. l. melanuroides* Gould 1846; breeds in E. Asia and winters from Malaysia to Australia.

122. BAR-TAILED GODWIT PLATE C, 7

Limosa lapponica (Linnaeus) 1758

Palaearctic.

Winter visitor and passage migrant to the coast. In some years one of the more numerous medium-sized waders at Buntal and Awat Awat (Banks). A few non-breeding birds may summer here, *e.g.* two at Buntal 26 July (Medway), and seventeen at Buntal on 9 June (Smythies).

DESCRIPTION. 14–15". Long bill often noticeably up-curved. Can only be confused with Black-tailed Godwit. Both wings and tail lack conspicuous pattern. In summer plumage the whole head, neck and under-parts are chestnut-red.

HABITS. Normally a solitary bird of mudflats.

RACE. *L. l. baueri* Naumann 1836; breeds in N.E. Siberia and Alaska, wintering from Malaysia to Australia, New Zealand and Samoa.

123. REDSHANK PLATE C, 6

Tringa totanus (Linnaeus) 1758

Palaearctic.

A common winter visitor to the coast of Borneo, occasional along rivers, and regular in the Kelabit uplands in small numbers. A few non-breeding birds remain throughout the summer, *e.g.* three seen at Santubong on 11 July and twenty-one on 19 July (Medway), and over fifty at Buntal on 9 June (Smythies).

DESCRIPTION. 11". The English name is derived from the orange-red legs (yellower in immature birds), which make this handsome medium-sized wader easy to identify. In flight the white rump and tail-coverts and pure white of posterior part of wing near body contrast with the dark brown of the rest of the wing. Bill orange at base.

VOICE. "Typical notes have a musical whistling quality. The commonest are a single *tuuu* and a triple *tu-hu-hu*, the second two notes rather lower than the first" (*Popular Handbook of British Birds*).

HABITS. A shy and restless bird. When alarmed it bobs

energetically, then springs into the air uttering its loud notes as a warning to all the other waders on the beach.

RACES. (*a*) *T. t. totanus*, recorded from the North Natuna Islands; (*b*) *T. t. eurhinus* (Oberholser) 1900 is the common form.

124. MARSH SANDPIPER

Tringa stagnatilis (Bechstein) 1803

Palaearctic, its winter range extending from Ceylon and Malaya through Malaysia to the Moluccas and Australia.

In Borneo it has not been observed during the present century. Schwaner collected one at Tabanio in S. Borneo, and the Sarawak Museum has a specimen from Buntal, 8 September 1896.

DESCRIPTION. 9". Resembles a small Greenshank, being greenshank-grey above, with lower back and rump white, and pure white below, but it is altogether slighter and more graceful than Greenshank with conspicuously slender bill and legs.

HABITS. Generally a bird of marshes and mudflats.

125. GREENSHANK

Tringa nebularia (Gunnerus) 1767

N. Palaearctic.

Four records for Borneo (Baram, Buntal, 2½ miles inland from Kuching, and N. Natunas).

DESCRIPTION. 12". Larger than Redshank with a longer blackish slightly upturned bill; in flight, rump tail and under-parts conspicuously white and there is no white on the wing; white on rump extends decreasingly up to centre of back. See also next species.

VOICE. "Usual note when flushed is a loud, clear *tew, tew, tew* lower-pitched than Redshank's note" (*Popular Handbook of British Birds*).

HABITS. Usually solitary in winter quarters, on ponds, sandy river margins, and coastal mudflats.

126. ARMSTRONG'S SANDPIPER or SPOTTED GREENSHANK

Tringa guttifer (Nordmann) 1835

The only known breeding area is in S. Sakhalin. A few winter in Burma, Malaya, and Philippines.

Twice collected in Borneo, at Buntal in February 1913 and at Sundar 21 November 1934.

DESCRIPTION. 11½". In size intermediate between Redshank and Greenshank and closely resembles the latter in appearance, but the legs are much shorter (2") and have a yellowish tinge.

HABITS. A very rare bird of which little is known.

127. GREEN SANDPIPER

Tringa ochropus Linnaeus 1758

Palaearctic. In winter reaching India and Burma but not Malaya ; rare in the Philippines.

Passage migrant and winter visitor to Borneo in small numbers. Occasionally seen on snipe-grounds (Abell) ; three have been seen at a small pool near Batu Lintang, Kuching, and one frequented a small pond in a Kuching garden for some weeks (Allen) ; other sight records include 18th mile Sandakan (Smythies), Seria (Harrisson). There is no record to date for Indonesian Borneo.

DESCRIPTION. 9½". Blackish wings contrasting in flight with pure white rump and abdomen and its solitary habits distinguish this from other sandpipers. Several narrow blackish bars across tail towards tip.

VOICE. Usual note when flushed is a full clear musical *tlooi*, *tlooi-tlooi*, or *klu-wit*, the first syllable frequently rather prolonged.

HABITS. Its habit of dropping in to feed along the margins of any pond or buffalo wallow, however small, is characteristic ; for this reason it may be found at small pools on the forest fringe where no other sandpiper would occur. When flushed it zigzags sharply in its flight at first, then mounts high or flies right away or circles in the sky like a snipe.

128. WOOD SANDPIPER PLATE D, 1

Tringa glareola Linnaeus 1758

N. Palaearctic.

Passage migrant and winter visitor to the coast and interior of Borneo. In the Kelabit uplands it arrives late August to early September, often in flocks of twenty-five or so, outnumbering all other waders by ten to one, and a few remain into the spring.

DESCRIPTION. 8". It has the same rapid twisting flight as the Green Sandpiper, but is slighter in build, with narrower wings, and is much paler in colour, more brown and less black, with the underside of the wings greyish and not blackish. On the ground the spotting of the upper-parts is much more conspicuous. In flight the feet show prominently behind the tail.

VOICE. Its trisyllabic note is milder, less liquid and challenging than that of the Green Sandpiper.

HABITS. It frequents grazing grounds, wet padi fields, and marshes rather than the coast ; in its choice of habitat it resembles the Snipe rather than other sandpipers.

FOOD. Includes soft insects, spiders.

129. COMMON SANDPIPER PLATE D, 2

Tringa hypoleucos Linnaeus 1758 *Kedidi* (M), from the call.

Palaearctic.

Abundant passage migrant and winter visitor. The earliest I have seen were four birds on Brunei Airport, 1 August, and the latest a solitary bird at Bintulu, 20 May. There are no June or July records, though a few first year birds may spend the summer here.

DESCRIPTION. 8". A small sandpiper with no white on the upper-parts other than a prominent white wing-bar, in flight it skims low over the surface of the water, progressing by means of two or three curiously stiff wing-beats with the wings moving through a very small arc, alternating with glides during which the wings are held motionless in a characteristically bowed position. Its flight compared with that of other sandpipers is slow and sedate unless it is seriously alarmed.

VOICE. A shrill note, *twee-dee-dee-dee*, is uttered on the wing, the second and subsequent notes perceptibly shorter and lower in pitch than the first.

HABITS. This is *the* wader of Bornean rivers ; in the tidal reaches it loves to sit on floating logs and driftwood ; further up it will be found, always solitary, running about on the bare mud or the sand-banks just above river level ; in the rocky headwaters it is still there, and in the Kelabit uplands it has been seen at 4,000 ft. It is also common on pools and reservoirs and on coastal mudflats, but it usually avoids bare open sandy beaches. I have seen as many as seven on a small piece of exposed sand in the old reservoir at Kuching.

On the subject of birds picking the teeth of crocodiles Beccari writes (p. 321) :

" When crocodiles lie thus with open jaws, small shore birds, especially waders of the sandpiper kind, which are always running about on the banks in search of food, enter the huge reptiles' mouths to capture any such small fry as may have sought refuge among the teeth or in the folds of the mucous membrane of the mouth or pharynx Indeed, if I remember right, I have witnessed the thing myself ; but now as I write I cannot feel quite sure that it was not one of many stories told me by my men."

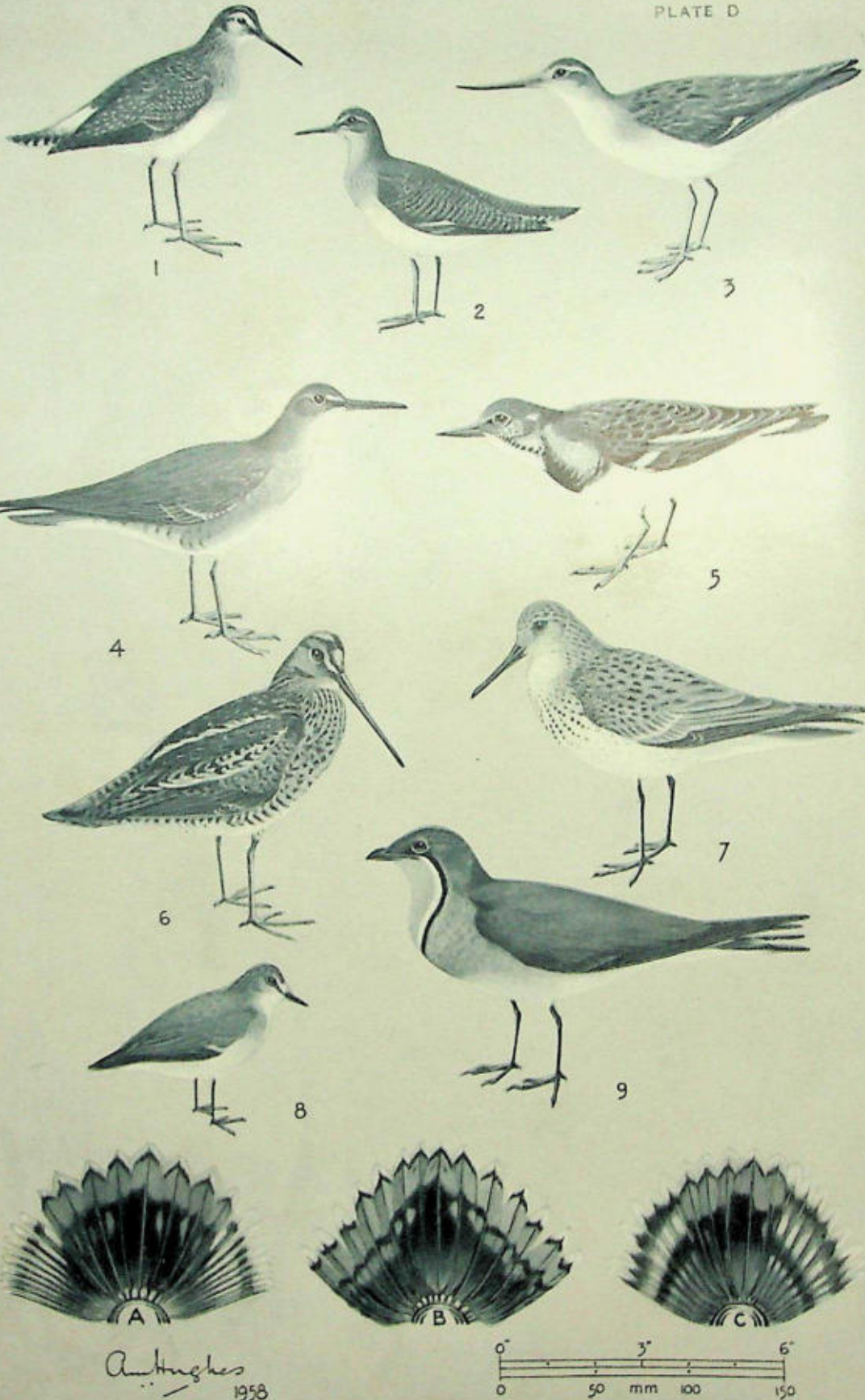

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PLATE D

Page

1. WOOD SANDPIPER 199
Tringa glareola.

2. COMMON SANDPIPER 200
Tringa hypoleucos.

3. TEREK SANDPIPER 202
Tringa terek.

4. GREY-RUMPED TATTLER 202
Heteroscelus incanus brevipes.

5. TURNSTONE 203
Arenaria interpres.

6. PINTAIL SNIPE 204
Capella stenura.

7. ASIATIC or GREATER KNOT 208
Calidris tenuirostris.

8. RED-NECKED STINT 208
Calidris ruficollis.

9. COLLARED PRATINCOLE 213
Glareola pratincola maldivarum.

Snipe Tails

A. PINTAIL SNIPE 204
Capella stenura.

B. FANTAIL SNIPE 207
Capella gallinago.

C. SWINHOE'S SNIPE 206
Capella megala.

The Common Sandpiper is the only one that runs about the banks of rivers, and it would be interesting to have confirmation of the above story.

RACE. *T. h. hypoleucos.*

130. TEREK SANDPIPER PLATE D, 3

Tringa terek Latham 1790

N. Palaearctic. Winters from Africa and India to Australia and New Guinea.

Common on the Bornean coast in winter, but confined to mudflats. Early date 9 August. On 9 June 1958 I saw over fifty at Buntal.

DESCRIPTION. 9". The long sharply upturned black bill with some yellow at the base, and the orange legs, are distinctive. There is no white on the upper-parts, which are greenshank-grey except for a white trailing edge to the wing near the body (seen in flight); under-parts all white. On the wing it resembles a small Redshank.

VOICE. A trilling note.

HABITS. Usually seen in mixed flocks with other waders (especially plovers) on the mudflats; in flight, however, it keeps separate.

131. GREY-RUMPED TATTLER PLATE D, 4

Heteroscelus incanus (Gmelin) 1789

Breeds in Alaska and E. Siberia, wintering in the Pacific.

Passage migrant and winter visitor, not uncommon on the Bornean coast.

DESCRIPTION. 10". Easily recognised by plain uniform dark grey upper-parts and yellow legs.

VOICE. " Frequently calls in flight, a reedy *troo-eet troo-eet*, also *ter-wee, ter-wee* " (Condon and McGill).

HABITS. It has no strict habitat selection (in this differing from most of our migratory waders), frequenting mudflats, rocks, coral sand. It is a very restless bird, constantly moving in a fast low run with tail up, which is distinctive long before other characters can be discerned. Nearly always alone, even when there are many waders about (Harrisson).

RACE. *H.i. brevipes* (Vieillot) 1816.

TURNSTONES (subfamily Arenariinae).

132. TURNSTONE PLATE D, 5

Arenaria interpres (Linnaeus) 1758

N. Holarctic, breeding in the arctic tundras.

Passage migrant and winter visitor to the coast of Borneo in fair numbers. Some non-breeding birds remain throughout the summer, *e.g.* four seen on fishing stakes at Buntal on 24 July, confirming Meinertzhagen's observation in Arabia (1954 : 491).

DESCRIPTION. 9". In winter orange legs (yellowish in immature birds), brown upper-parts (in flight strikingly pied with broad black subterminal band and white base of tail prominent, as also wing-bar), and white under-parts with dark brown cheeks and breast. Summer plumage (partly assumed in April) very different and most handsome with rich chestnut and black upper-parts, giving a tortoiseshell appearance, white top of head, and black breast. Short pointed conical black bill.

VOICE. The ordinary note of birds flushed on shore is a metallic note, which reminds me of a typewriter.

HABITS. It keeps strictly to the coast, where it is usually seen in small flocks near the tide-line. It is also very fond of settling densely packed on fishing stakes (*kilong* and *inggian*), and on one occasion fifteen were shot accidentally at Buntal with one cartridge (Harrisson). Roosts at night on the rocks several hundred yards from shore at Cape Po (Medway). Harrisson notes it as one of the very few migratory waders that visit the Turtle Islands occasionally, but then always one to three only. I have watched them feeding on soft mud opposite Buntal with Little Stints and Sand Plovers ; I have also seen it (in western Ireland) performing the trick whence it derives its name, getting its head down behind seaweed or a pebble on the beach and shoving it along for a few inches, just like a little bulldozer.

SNIPES AND WOODCOCKS (subfamily Scolopacinae)

The bill is specially adapted for probing in mud, being long, slender, and very sensitive, with the tip slightly swollen and provided with nerves. The eye is placed so far back in the head that the bird can see directly behind it without turning its head.

133. RED-BREASTED SNIPE or DOWITCHER

Limnodromus griseus (Gmelin) 1789

E. Palaearctic and Nearctic.

Five skins (Awat Awat, and two each from Buntal and Pontianak).

DESCRIPTION. 10". A pale eyestripe and a white trailing edge on each wing with a very narrow white wing-bar just above it. " The only bird of open shores with an extremely long snipe-like bill and showing in flight a narrow pure white patch in the centre of the dark back ; the upper tail-coverts and tail are barred dark brown and white, appearing brownish at a distance " (*Popular Handbook of British Birds*).

VOICE. " Flight-note is a whistle *do-wit-cher*, the last syllable often doubled or trebled, and one or more syllables may be omitted " (*Popular Handbook of British Birds*).

HABITS. A bird of the mudflats.

KEY TO THE FOUR SNIPES OF EASTERN ASIA

PLATE D

It is not easy to distinguish these species in the field. In the hand an examination of the tail will usually establish the identity of a specimen ; unfortunately young birds of the year may lack full sets of feathers, and without considerable experience it is sometimes difficult to be sure of the identity of a moulting bird.

	Capella
1. Tail of about 26 feathers, of which the middle 10 are broad and the remainder true pin feathers, stiff, narrow, and almost wire-like	*stenura*
2. Tail of about 20 feathers, of which the middle 8 are broad and the remainder much narrower, but never less than 5 mm. wide whereas in *stenura* they are wire-like and less than half this width ; wing under 150 mm.	*megala*
3. Tail of 12 to 18, usually 14, broad feathers	*gallinago*
4. Tail of 16 to 18 feathers, but outermost feather 4 to 6 mm. wide, about half as wide as in *gallinago* ; wing over 152 mm.	[*hardwicki*]

NOTE 1. *C. hardwicki* (Gray) 1831 Tasmania (*Zool. Misc.* p. 16) is the Japanese Snipe, breeding in Japan and wintering in eastern Australia and Tasmania; nothing is known of its migration routes apart from single specimens collected on passage in Formosa and New Guinea. It could stray to Borneo.

2. For the last word on the controversy over the correct generic name, *Capella* versus *Gallinago*, see note by Alexander Wetmore in *Ibis* 1958:125–127.

134. PINTAIL SNIPE PLATE D, 6

Capella stenura (Bonaparte) 1830

Breeds in Siberia and winters in S. Asia, Sumatra, Java, and Borneo but not further east.

PLATE VIII

PLATE VIII

Page

1. BLACK-HEADED GULL (Winter) 215
   Larus ridibundus.

2. WHITE-WINGED BLACK TERN (Winter) 216
   Chlidonias leucoptera.

3. WHISKERED TERN (Winter) 217
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6. BRIDLED TERN 220
   Sterna anaetheta.

7. LITTLE TERN (Winter) 221
   Sterna albifrons sinensis.

8. SOOTY TERN (Winter) 222
   Sterna fuscata.

9. LESSER CRESTED TERN (Winter) 223
   Sterna bengalensis.

10. GREATER CRESTED TERN 222
    Sterna bergii cristata.

The commonest species of snipe in W. Borneo and the Kelabit uplands, but in N. and E. Borneo it is outnumbered by Swinhoe's Snipe. Early date 3 September, late date 13 April.

DESCRIPTION. 10½". "Characterised by very long, straight bill and longitudinal striped effect of dark, richly patterned upper-parts. Most often seen as it rises from marsh or pool with a harsh note and zigzags rapidly for a few yards before going clear away" (*Popular Handbook of British Birds*).

VOICE. The alarm-note as it rises is *scap-scap* or *pench*, pronounced sharply with a nasal twang. All three species of snipe utter this kind of note, but experts claim to be able to distinguish between them; no other wader has a note in the least resembling it.

HABITS. The Pintail Snipe has a less highly specialized bill than the Fantail and feeds less on worms, more on insects and molluscs; consequently, though often found in company with the Fantail in padi fields it is more typically a bird of grazing grounds and grass-lands where the ground is not so soft. Occasionally in mangrove swamps, on sandy seashores, or springs in fairly open jungle. On passage it can be surprisingly tame and confiding; once in Sibu and once in Kuala Belait I happened to look out of the Forest Office window and was surprised to see a snipe (believed to be of this species) feeding on the grass within six feet of me.

FOOD. Harrisson has examined about 100 stomachs in the Kelabit uplands and the food consisted entirely of worms, swallowed whole.

135. SWINHOE'S SNIPE

Capella megala (Swinhoe) 1861

Breeds in E. Siberia and N. China, wintering in the Philippines, Celebes, Moluccas, and New Guinea, a few going farther west to Malaya and Burma.

In W. Borneo it occurs irregularly and in small numbers, averaging one to every forty Pintail, but in N. Borneo it is probably the commonest species.

DESCRIPTION. See key. Experts can distinguish it in the field by the fact that it rises slowly and flies in a more slovenly manner than the other two species.

HABITS. In choice of habitat it seems to follow the Fantail rather than the Pintail. Whitehead described it as swarming on the Tampassuk plains (near Kota Belud) in December when under water.

136. FANTAIL SNIPE

Capella gallinago (Linnaeus) 1758

Distribution almost world-wide. It is common on the mainland of the continent of S. Asia in winter, and a few birds make their way farther south over the Philippines to W. Borneo, where it is nothing like so numerous as the Pintail ; it occurs in spasms, in some years none being obtained.

DESCRIPTION. See key. This is the species well-known in W. Europe. Experts claim to be able to distinguish it on the wing from the Pintail by its quicker flight and by a slight difference in the note.

HABITS. For voice see under Pintail Snipe. It is found where soft mud and water are combined with cover, but it is a fussy bird and will only be found where the water level is level with, or just below, the surface of the soil ; flooded and dried out padi fields are alike avoided. During the heat of the day it rests in thick cover on the edge of the feeding ground. It is always reluctant to leave its chosen spot, and often drops back to it as soon as the coast is clear, meanwhile flying round in wide circles at a great height and calling occasionally.

STINT-SANDPIPERS (subfamily Calidrinae)

Except for the two knots, which are of medium size, this subfamily comprises the small short-billed waders ; they are all rare in Malaysia except for the Red-necked and Long-toed Stints.

137. EUROPEAN or LESSER KNOT

Calidris canutus (Linnaeus) 1758

N. Holarctic.

Once collected in the North Natuna Islands.

DESCRIPTION. 10". A thick-set short-legged wader. " In flight in winter plumage, it is a grey bird with an inconspicuous wing-bar, rump and tail paler than back, tail of uniform appearance, not dark in the centre and white at the sides like Sanderling " (*Popular Handbook of British Birds*). Bill rather short, blackish.

RACE. *C. c. canutus*. Winters in the Black Sea and Mediterranean areas, straggling to S.E. Asia and Australia.

138. ASIATIC or GREATER KNOT PLATE XLIX, 7

Calidris tenuirostris (Horsfield) 1821

Breeds from Central Siberia to Japan. Winters in S.E. Asia, New Guinea and Australia.

Passage migrant and winter visitor to the Bornean coast. Banks (1935) described it as abundant in suitable localities, such as Awat Awat and Buntal, but since 1940 its numbers appear to have decreased and it is nowadays not at all common. Some non-breeding birds may remain throughout the year, *e.g.* specimens collected 26 and 27 July at Buntal, and about twenty-five seen there by me on 9 June.

DESCRIPTION. 11″. A larger bird than the Lesser Knot, with a longer bill (39–47 mm. against 30–37 mm.), longer wing (c. 172 mm. against 152 mm.), white upper tail-coverts, and no chestnut on the under-parts in breeding plumage.

139. SANDERLING

Calidris alba (Pallas) 1764 (= *Crocethia alba*)

N. Holarctic.

Birds reaching Malaysia and Australia in winter are probably from breeding grounds in N. Siberia.

Four records for Borneo ; three from the previous century (two from Baram and one from N. Borneo) ; one on 8 January 1957 at Kuala Lundu, flying in a mixed flock of Sand Plovers (Medway).

DESCRIPTION. 8″. In winter appears whiter than any other wader, with a prominent white wing-bar ; tail shows dark down the centre, white at the sides. In the hand at once identified by lack of a hind toe.

140. RED-NECKED STINT PLATE D, 8

Calidris ruficollis (Pallas) 1776

N. Palaearctic.

Passage migrant and winter visitor to Borneo, abundant on the coast, not recorded inland.

DESCRIPTION. 6″. This stint, and the two that follow, can only be distinguished in the field with practice. They are all tiny waders, about the size of sparrows, found in flocks by water. This species is a grey-brown bird with smaller darker mottlings above, white below ; a little white shows near the base of the tail when alighting but not near the tip. In breeding plumage it has rufous cheeks, throat and neck.

VOICE. A whistling *week-week-week* never monosyllabic (Meinertzhagen).

HABITS. A bird of the seashore only, in flocks up to sixty birds on the tidal mudflats. Though at times they run about with great activity in search of food on the surface, the typical gait is a brisk walk with short, mincing steps. When excited or uneasy they bob with a backward jerk of the head and a depression of the hinder end of the body, but much less freely and conspicuously than in the larger waders like the Redshank. The flight is swift with regular quick wing-beats, the birds wheeling and swerving in a characteristic fashion.

FOOD. Much of their food is obtained on recently uncovered flats, which they search methodically for small burrowing organisms by tapping or probing with the bill, or they pick up minute molluscs etc. from the surface.

[Gladkov shows (*J. Orn.* 1957, 98 : 195–203) that *C. ruficollis* and *C. minuta* are good species, not races of the same species as they have usually been treated in the past.]

141. LONG-TOED STINT

Calidris minutilla (Vieillot) 1819

Holarctic.

Passage migrant and winter visitor to Borneo, but not on the coast. In the Kelabit uplands it arrives soon after the Wood Sandpipers and stays till the rice is thick in the fields, a few lingering on to 30 Nov.

DESCRIPTION. 6". Olive or greenish legs diagnostic. Dark appearance with black markings on the upper-parts giving a tortoise-shell appearance, grey on the neck and breast, and absence of white on the tail are distinctive features. The middle toe, including the claw, measures 23–26 mm. and distinguishes the species in the hand.

HABITS. Usually seen in flocks and prefers padi fields or marshes. Although in Burma (Smythies) and in New Zealand (D. H. Brathwaite, *in litt.*) it has been observed on the same spot as *ruficollis*, on saline mud, this is probably exceptional due to *minutilla* passing through the habitat of *ruficollis*. Extensive collecting and observations in Borneo confirm an emphatic separation between the two species in habitat preference (Harrisson, 1957 : 115).

RACE. *C. m. subminuta* (Middendorff) 1853 ; breeds in E. Siberia

and in winter passes through China and Japan to S.E. Asia, Malaysia, Celebes, and N. Australia

142. TEMMINCK'S STINT

Calidris temminckii (Leisler) 1812

N. Palaearctic.

In winter to Africa and S. Asia; rare in Malaysia and not reaching Java or Sumatra.

Two (Pagatten in S.E. Borneo, and Kuala Punang in Lawas district).

DESCRIPTION. 6". Distinguished by uniform grey upper-parts, white outer tail-feathers, and more or less grey breast. In breeding plumage the feathers of the upper-parts have black centres, giving a mottled appearance.

HABITS. "Note when flushed is a high-pitched, trilling titter, almost cricket-like, never at all like the monosyllabic *tit, tit, tit*, which is the common note of the Little Stint" (*Popular Handbook of British Birds*). In some ways a miniature of the Common Sandpiper, but the flight is erratic and twisting with a fluttering bat-like action. It is primarily a freshwater bird, but may be found in tidal creeks.

143. CURLEW-STINT or CURLEW-SANDPIPER

Calidris ferrugineus Pontoppidan 1763 (=*C. testacea* Pallas)

Breeds in N. Siberia. Winters in Africa, S. Asia, through Malaysia to Australia and New Zealand.

Passage migrant and winter visitor to all parts of Borneo on the coast. Early date 27 August; late date 9 June (Smythies).

DESCRIPTION. 7½". Black bill bent down near the tip distinguishes it from all except Dunlin; bill is longer, finer, and more curved than Dunlin's, but conspicuously longer legs and white upper tail-coverts are safer guides. General colour in winter grey above and white below.

VOICE. A twittering call or a rather sharp single note is uttered in flight.

HABITS. A bird of the mudflats.

[SHARP-TAILED SANDPIPER, *Calidris acuminata* (Horsfield) 1821 has not been recorded from our area. It breeds in N.E. Siberia and Alaska and winters in Australia, but straggles westwards to Java and India. It is therefore a probable for Borneo.

8½". Differs from Little Stint in larger size, rufous wash on crown, rufous-brown tinge of upper-parts in all plumages, dull yellowish-green legs, and greyish breast.]

[DUNLIN, *Calidris alpina* (Linnaeus) 1758 is a possible for Borneo. In the field in winter plumage closely resembles Broad-billed Sandpiper, which see.]

144. BROAD-BILLED SANDPIPER

Limicola falcinellus (Pontoppidan) 1763

Palaearctic.

Two skins—Cape Po 3 October 1953 (not 30 October as printed in Checklist) and Buntal 7 October 1957.

DESCRIPTION. 6½". In winter plumage indistinguishable from Dunlin in the field except by posture (does not assume the hunched back of Dunlin) (Meinertzhagen). In the hand recognise by smaller wing (102–112 mm. against 116–123 mm.) and by black-brown as against mottled brown shoulder to wing.

HABITS. Those of Little Stint. The long stout bill is usually held vertically as the bird moves over the mud.

RACE. *L. f. sibirica* Dresser.

145. RUFF and REEVE

Philomachus pugnax (Linnaeus) 1758

Palaearctic.

Winters in S. Africa and S. Asia, but only a straggler in Malaysia.

One was collected on Labuan by Lemprière. One skin (undated) in Sarawak Museum. Harrisson saw one on Bako beach, 7 September 1956.

DESCRIPTION. ♂ 12", ♀ 10". The male bird is called a Ruff after the remarkable ruff of feathers he assumes in the breeding season ; the female is called a Reeve. In winter plumage it lacks outstanding features. " A medium-sized wader with shorter bill and rather shorter legs than Redshank, showing only a narrow white wing-bar when it flies, and an oval white patch on each side of the dark central area of the tail is a good character at all ages " (*Popular Handbook of British Birds*). At rest its upright stance and short bill are noticeable.

STILTS : Recurvirostridae

146. BLACK-WINGED STILT

Himantopus himantopus (Linnaeus) 1758

Distribution almost world-wide. Known only from S. Borneo, where it was collected by Schwaner, and later by Grabowsky on the Bangkau Lake, where its status is uncertain.

DESCRIPTION. " Its enormously long pink legs, straight black bill and boldly contrasted black and white plumage make Stilt quite unmistakable " (*Popular*

Handbook of British Birds). In flight the legs extend about 7 inches beyond the tail, and the wings are black on both surfaces.

HABITS. A bird of lakes and marshes.

RACE. *H. h. leucocephalus* Gould 1837 ; this form breeds in Australia and visits the Philippines and parts of the Malay Archipelago.

PHALAROPES : Phalaropodidae

147. RED-NECKED PHALAROPE

Phalaropus lobatus (Linnaeus) 1758

N. Holarctic.

Almost world-wide in winter. According to Meinertzhagen (*Ibis* 1925 : 325–344) large numbers winter at sea off Ceram and Amboina, and between New Guinea and the Bismarck Archipelago. Admiral Lambe, on passage from Bali to Darwin in H.M.S. *Alert* 16–17 November 1954, encountered many flocks of twenty or so birds—mostly going east—in the area Bali, Lombok, Komodo, and only lost them when south of Flores (*in litt.*).

Autumn passage migrant (October and early November only) over and round Borneo ; there is no evidence of any return migration, which takes place in April through Celebes and the Philippines. At Bario, Kelabit uplands, Harrisson describes it as a regular passage migrant, 2 October–8 November ; it is well known to the Kelabits there, who easily shoot them with blowpipes in the padi fields. There is a big preponderence of females in the parties of two to twelve that float and flitter among the young rice plants. It has also been collected in the upper Baram, at Peleben on the Kayan River, and at 2,500 feet on Mt. Dulit (for details see Checklist). On 8 October 1954 large flocks were seen resting on the sea off the Sarawak coast all the way from Kuching to Niah, and off Labuan on the night of 3 October three birds tried to land on M.V. *Perlis* when the ship was lit up by arc lights on deck (Harrisson). On 9 October 1958 one was feeding round small pools of rain water on the grass *padang* in the centre of Brunei Town (Smythies).

DESCRIPTION. 6½″. A tame little grey wader, usually seen swimming on river, pond, or sea. A blackish patch round the eye and a very conspicuous white wing-bar. The red neck indicated by its English name appears in breeding plumage only, and is not likely to be seen in Borneo.

HABITS. On passage it seems to frequent almost any water habitat, from the open sea to large rivers, tiny rocky brooks, and wet padi fields in the uplands.

FOOD. In Kelabit uplands, soft insects and caterpillars.

STONE PLOVERS: Burhinidae

148. REEF THICK-KNEE or GREAT STONE CURLEW

PLATE C, 9

Esacus magnirostris (Vieillot) 1818

Ranges from the Andaman Islands and Burma to parts of Malaysia and east to the Solomons, and south to N. Australia.

A rare bird of sandy bays in N. Borneo and the N. Bornean Islands; also two skins from Sarawak (Mukah and Kuala Baram) and one sight record (Sibu town in April 1936, Spurway).

DESCRIPTION. 20". Powerful bill, and conspicuous black and white markings on head and wings diagnostic.

VOICE. A mournful *wee-loo* call, harsh in tone (Condon and McGill). The call is an eerie double syllable, unique and unmistakable (Cairns).

HABITS. Usually solitary or in pairs, occasionally in a small party, on reefs and sandy beaches. When alarmed the body is bobbed and the tail depressed vertically.

FOOD. " I once saw one of these plovers hunting the large sand crabs which abound at low water on the coasts. These crabs have wonderful power of dodging, stopping dead, and then running at full speed in the opposite direction; so it took the plover some long time before it could deal the crab a blow with its powerful beak " (Whitehead).

RACE. *E.m. magnirostris*.

PRATINCOLES: Glareolidae

149. COLLARED PRATINCOLE

PLATE D, 9

Glareola pratincola (Linnaeus) 1766

Mediterranean, Africa, E. Asia.

Winter visitor and passage migrant to Borneo. In the Kelabit uplands a regular but scarce visitor September to November; elsewhere erratic but not uncommon, chiefly September to April, but Harrisson saw one at Kuching Airport on 2 June, and Governor Abell saw it on the upper Ai River, above Simanggang, at the end of July.

DESCRIPTION. 9". A striking long-winged brownish bird with (in adults) a distinctive black line separating throat from breast, from eye to eye. In flight the rich rufous axillaries are conspicuous, and the shape and action of the bird suggest a huge brown swallow, with sickle wings strongly curved back and a deeply forked tail, white at the base and the rest black. On the ground its upright, almost tip-toe stance is noticeable. Iris brown; bill red at gape, rest black; feet dark grey.

VOICE. It rises with a soft plover-like note *to-wheet, to-wheet* (Davison).

HABITS. Habitually frequents airports; also grazing grounds and wet padi fields.

FOOD. Grasshoppers, large beetles and other insects, small fish.

RACE. *G. p. maldivarum* Forster 1795.

150. LONG-LEGGED PRATINCOLE

Glareola isabella Vieillot 1816

Australia, reaching Java and Borneo in the southern winter.

Collected by Schwaner in S. Borneo. In 1951 flocks were seen on several occasions round Kuching, and a specimen collected on 30 September.

DESCRIPTION. Distinguished from preceding species by deep chestnut flanks, and by longer legs (tarsus 1¾" against 1¼"). The black line round the throat is wanting, but this is not a safe guide because in immature Collared Pratincole the black line is ill-defined.

HABITS. Similar to those of Collared Pratincole.

GULLS AND TERNS: Laridae

Those accustomed to the vast numbers of gulls along the coasts of temperate regions will be disappointed in the scarcity of bird life on a tropical coast. Of all the forty-four species of gull in the world, only one is found on the coast of Borneo, and then only as a rare winter visitor.

The terns are better represented. They are dainty graceful birds and their beautifully modelled lines and airy buoyant flight combined with the delicate tints of their plumage place them very high in the bird-watcher's affections. Although terns are conspicuous along rivers in the subtropics, on the Ganges or Irrawaddy for example, only one species (the White-winged Black Tern) occurs along Bornean rivers, and even that one is seldom seen. The various species are easy

to recognise in breeding plumage, but at other times they lose most of their distinctive features and identification in the field becomes much more difficult. The sexes are always alike and the young usually resemble the winter plumage of the adults, but have the upper-parts mottled with brown. The tail is forked, in some species deeply and in others less so, except in the noddies, which have a wedge-shaped tail with a notch at the end. The Malay name for terns is *tara-tara*.

151. BLACK-HEADED GULL PLATE VIII, 1

Larus ridibundus Linnaeus 1766

Breeds from the British Isles and W. Europe to Turkestan east to Mongolia and Ussuriland. In winter on the coasts of Europe, N. Africa, and Asia south to India, China, Japan and the Philippines. Reaches the Singapore Straits in very small numbers.

A winter visitor to N. Borneo and the Sarawak coast; first reported in 1950, it has since been noted as a regular winter visitor to Sandakan Harbour in small numbers and has also been seen at Kudat, Labuan, and the Turtle Islands. Late date 19 May 1955, when Harrisson saw eight birds (including two in full summer plumage) eight miles west of Satang Island.

DESCRIPTION. 15–17″. In winter plumage adult is white with black-tipped wings and a black spot behind the eye. Bill and legs red (which distinguish it from Gull-billed Tern). The young bird is mottled with brown; according to Alexander the bill is yellowish with a black tip and the feet are dull reddish-yellow. In flight distinguish from terns of similar size by rounded and not forked tail.

HABITS. In Britain as much an inland as a coastal bird, but so far in our area it is purely maritime, favouring harbours. It does not follow ships as a rule.

KEY TO THE TERNS

1.	Tail almost square, the difference between the shortest and longest feathers less than one fifth total tail length	2
	Tail very distinctly forked	3
2.	Wing 7·7–8·6″. Tail 2·5–3·1″	*C. leucoptera*
	Wing 8·5–9·8″. Tail 3·1–4·5″	*C. hybrida*
3.	Tarsus longer than middle toe and claw . . .	*Gelochelidon*
	Tarsus shorter than middle toe and claw . . .	4
4.	Very dark above; outer tail-feathers extremely long .	5
	Pearly-grey above; outer tail-feathers shorter . .	6
5.	Wing 9·6–10·8″	*S. anaetheta*
	Wing 11·0–11·7″	*S. fuscata*

6.	Bill large and coarse ; a nuchal crest ; wing over 11″	7
	Bill slender ; head not markedly crested ; wing under 11″	8
	Bill relatively stout ; wing under 8″	*S. albifrons*
7.	Bill orange	*S. bengalensis*
	Bill yellow with broad black tip	*S. zimmermanni*
	Bill greenish-yellow	*S. bergii*
8.	Larger ; wing not under 9·8″	*S. hirundo*
	Smaller ; wing not over 9″	9
9.	Crown mainly black	*S. dougalli*
	Crown mainly white	*S. sumatrana*

152. WHITE-WINGED BLACK TERN PLATE VIII, 2

Chlidonias leucoptera (Temminck) 1815

"Central and S. Europe and central Asia to China ; in winter to Africa, S. Asia and Australia" (Alexander).

Passage migrant and winter visitor to the coast and interior of Borneo. The only tern ascending far up the rivers, reaching the Kelabit uplands where it is a regular visitor from October to December. Early date 17 August at Talang Talang Island (Harrisson) ; late date 10 May off Cape Po, two birds of which one was in full breeding plumage (Smythies).

DESCRIPTION. 9″. See key. In breeding plumage white tail contrasts with black under-parts including under surface of wings and dark upper-parts. Adults in winter are probably not distinguishable in the field from Whiskered Tern. Immature birds have the white rump more definite, contrasting conspicuously with the mottled brown back and mantle. Iris dark ; gape reddish ; bill black ; feet red or blackish-pink.

VOICE. A rather loud rattling or churring note.

HABITS. Birds feeding execute a graceful vertical sweep *upwards* before dropping to the surface of the water. The following account is condensed from Harrisson's notes.

In Borneo it is found in almost every possible habitat. At Bario its local Kelabit name is *Ut Bario*, the Wind Bird—they believe that to see it settle is a bad omen, for in fact it does not settle in its short diurnal passage flight. I have also seen it far up the rocky Trusan River, at 1,500 feet, as well as 200 miles up the Baram River. Nearer the coast it has been seen over the Kuching wharf (tidal) and race course (rain pools), the delta of the Sarawak River, and over the lagoon at Brunei (all winter records). Out at sea, it is regularly found off the small Turtle Islands, where there was a large party of twenty or so ranging over the sea from 24 to 26 September 1956. All

birds have been winter visitors in the pale winter plumage. They quarter the sea off shore, swooping and skimming, with wide turns, picking food off the surface, not diving ; tail often opened, appears short and slightly forked.

FOOD. The Turtle Island birds were picking water spiders (*Gerridae*) off the surface. In the Sarawak River birds have been seen on floating logs, feeding on beetles and other insects. One specimen collected on the shore at Bako (7 October 1956) was sitting on the sand with six little Terns, but whereas the latter had crops full of small fish, the White-winged Black Tern had eaten one small red crab. An inland specimen from Bario had fed on dragonflies. It is probably this mainly insectivorous diet that allows it to cover such a range of habitats, unlike other equatorial migrants of the *Laridae* which depend principally on fish (Harrisson).

153. WHISKERED TERN PLATE VIII, 3

Chlidonias hybrida (Pallas) 1811

Temperate parts of Europe, Africa, S. Asia, and Australia.

Scarce winter visitor to Borneo. It has been collected in S. Borneo (Schwaner), Pontianak, and Sarawak (Beccari). The two skins from Kuala Baram (Checklist p. 617) prove on examination to be *C. leucoptera*, and the one from Kuching no longer exists and its identity is therefore doubtful. However one was collected at Santubong on 26 October 1956. Another, with black belly, was seen at Batu Lintang, Kuching, on 27 September 1956 (Allen). This species is a marsh tern like the last, and said to occupy much the same habitat, but so far in Borneo it has not been recorded farther from the sea than Kuching.

DESCRIPTION. 10". See key. Slightly larger than White-winged Black Tern, but adults are apparently indistinguishable in the field in winter plumage. Iris dark ; bill black ; feet blackish-orange.

FOOD. Fish.

RACE. *C. h. javanica* (Horsfield) 1821.

154. GULL-BILLED TERN PLATE VIII, 4

Gelochelidon nilotica (Gmelin) 1789

Distribution almost world-wide. Where the nearest breeding station may be is uncertain, but it is common in suitable localities

round the coast as a passage migrant and winter visitor, mostly between 6 September and 13 April.

I have, however, seen several at Kuala Trusan on 26 June 1957, and a dozen (several black-capped) at Buntal on 9 June 1958.

DESCRIPTION. 13". See key. The stout black bill, black legs, and short moderately forked tail, combined with rather stout gull-like build, separate it from other terns. In breeding plumage it has a full black cap (I have seen it so on 1 April at the mouth of the Lupar River) but in winter plumage the head is mostly white except for a dark patch behind the eye. First winter birds resemble the adult, but with crown and under-parts tinged buff and some brown mottling on the back, and the feet are reddish-brown. One female in the Sarawak Museum had iris grey-brown ; bill black except for orange-red base of lower mandible ; feet blackish.

VOICE. " Common notes are *ka-huk, ka-huk, tirruck-tirruck*, and a harsh *kaahk* " (*Popular Handbook of British Birds*).

HABITS. In Borneo it is typically a tern of the big river estuaries, such as the Kuching River, Lupar River, Trusan River, etc., and it may go some little way up the rivers, *e.g.* to Pending on the Kuching River, but not beyond tidal water. Sometimes it will follow a launch for miles, hunting for food in its wake, and at other times I have seen them fly past a launch and ignore it completely. Its feeding habits resemble those of gulls rather than terns ; it flies along twenty to thirty feet above the water, from time to time dropping down (not diving) to pick something off the surface.

FOOD. Sardine-like fish. I have watched birds at Buntal flying to and fro over the *sand*, taking small crabs.

RACE. *G. n. affinis* (Horsfield) 1821.

155. COMMON TERN

Sterna hirundo Linnaeus 1758

Distribution world-wide. In winter through Malaysia to Australia.

Rare passage migrant, twice collected (Pangkalan Empat on the upper Sarawak River 15 September 1935 and Malano Bay near Cape Dato 7 January 1953).

DESCRIPTION. 13–15". See key. " In winter plumage adults and first-year birds have the forehead and front of crown white, the latter part more or less streaked blackish, under-parts pure white, a blackish mark on the front of the wing in the shoulder region, and bill more black than in summer " (*Popular Handbook of British Birds*). Iris brown ; bill black ; feet dark orange, claws horn.

RACE. *S. h. longipennis* (Nordmann) 1835, breeds in N.E. Asia.

156. ROSEATE TERN

Sterna dougalli Montagu 1813

Distribution world-wide. Frequents the South China Sea, Sulu Sea, and Java Sea, and there are breeding colonies in Green Island Bay on the east coast of Palawan and on blue water islets off the east coast of Malaya.

In Borneo known only from the Pelong Rocks off Brunei Bluff, where a breeding colony was discovered in 1958 on 30 June (Smythies), and from Cape Datu, where Harrisson saw a few on 30 July 1958.

DESCRIPTION. 14–15". See key. In breeding plumage the bright red feet, bill black with a varying amount of red at the base (rarely all black or all red), and the long pure white outer tail-feathers are diagnostic. Black cap; on some birds a beautiful faint rosy flush may be seen on the breast, especially if the bird is standing on rock. Seen side by side with the Black-naped Tern it appears slightly larger.

VOICE. The birds on the Pelong Rocks sounded similar to those on the Farne Islands halfway round the world, the two characteristic notes being a harsh *aaak* and (when two birds are quarrelling) an angry chattering *kekekekek*.

HABITS. The flight is buoyant and beautiful, and it plunges fiercely at the water on sighting fish, but does not dive to attack human beings near its nest like Arctic Tern.

FOOD. The birds on the Pelong Rocks were feeding exclusively on small silvery sprats one to two inches long.

NEST AND EGGS. Unlike the Black-naped Tern it makes a definite nest of a few grass stems, etc., in the fringe of vegetation. The eggs (c/2) are olive-brown in colour with blackish or purple-black blotches, broader than the Black-naped Tern's and quite distinct in colour. All three species of tern breeding on the Pelong Rocks seem to nest amicably together. One egg proved quite fresh on 30 June.

RACE. *S. d. bangsi* Mathews 1912.

PLATE VIII, 5 **157. BLACK-NAPED TERN** PHOTO PLATE 26

Sterna sumatrana Raffles 1822

Tropical Indian and Pacific Oceans.

Resident and locally common on the coast, with a considerable non-breeding population in summer. Disappears during the north-east monsoon (October–March).

DESCRIPTION. 12". See key. Distinguished by pale grey and white plumage, black crescent on nape, and long forked tail. Bill and feet black.

VOICE. A short sharp high call *tsii-chee-chi-chip*, never longer than this, and alarm call *chit-chit-chit-rer* (Harrisson).

HABITS. Purely a coastal species. It feeds usually on the landward side of Tokong Ara, up to the beaches (especially in late summer). The flight is short and choppy, considerably slower than the Brown-winged Tern. It goes at the water as if it meant to kill, half diving and swooping to pick up fast off the surface (Harrisson).

FOOD. It likes finer food than the Brown-winged Tern, small fry and cephalopods, and the Santubong people do not make pets of it for this reason (Harrisson).

NEST AND EGGS. In 1958 there were not less than fifty distinct breeding rocks between Cape Datu and Cape Po, in which area the number of breeding sites and of breeding birds has increased greatly in the last two or three years. The principal colonies were on Tokong Ara (thirty-five pairs), Pulau Dato off Serabang Bay (twenty pairs), and on rocks close to Sibu Laut and Cape Sipang (a few pairs) (Harrisson). The colony on Tokong Ara is an old one, but the others were started in 1957 or 1958, and it seems possible that the breeding population is increasing under protection. In 1958 also ten to twelve pairs were breeding on the Pelong Rocks (Smythies). The eggs (c/2) are laid on bare rock with no attempt at a nest, and are pale grey or stone in ground-colour with blotches and marks of grey and brown. Sea snakes often eat the eggs. The young birds lie perfectly still on the bare rock and are then extremely hard to see, but once disturbed they flap downhill towards the sea (Harrisson).

RACE. *S. s. sumatrana.*

[NOTE.—This is a protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

158. BRIDLED or BROWN-WINGED TERN PLATE VIII, 6

Sterna anaetheta Scopoli 1786

All tropical and subtropical seas.

Resident. There is little on record about this species in our area except that it breeds on Tokong Ara and the Pelong Rocks (see under preceding species) and has been collected at Pontianak and in the Natunas. After the breeding season it lives far out to sea, though it is not fully oceanic, but during the north-east monsoon a few are

blown into the coast in bad weather, *e.g.* two seen at Santubong on 12 January 1954 (Harrisson). On 9 September 1958 I saw about 100 birds, singly, sitting on flotsam about twenty miles off the coast midway between Cape Po and Kuala Rajang.

DESCRIPTION. 14–15". The white stripes leading back from the forehead over each eye are supposed to resemble a horse's bridle, hence the name. Dusky upper-parts and white under-parts distinguish it from all except the Sooty Tern, which is larger and darker, and lacks the white stripe behind the eye. Young birds differ from young Sooty Tern in whitish under-parts and in behaviour. Iris dark brown ; bill and feet black.

VOICE. A guttural jangly note *gurr-grr-kr-kurr* ; alarm *kee-errr-krrr*, like the noise made by a Pekinese dog (Harrisson). A quiet musical note (Smythies).

HABITS. Prefers blue water for its fishing (Gibson-Hill). It feeds on the seaward side of Tokong Ara. The flight is easy and slow with long strokes. It loves to swoop and glide, especially in pairs. When feeding it scoops at the water, wings beating in a half-hover and tail freely used ; it never dives (Harrisson). The Malays of Santubong take young birds from Tokong Ara and tame them as free-flying pets, sometimes painting the belly with bright magenta dye.

FOOD. Large and small brown flying ants, large and small black ants, beetles, small fish (Harrisson).

NEST AND EGGS. Less than twenty-five pairs breed on Tokong Ara, and five pairs on the Pelong Rocks (in 1958). The single egg is always laid in vegetation above the rock line, and was sometimes taken by Malays for food. The birds usually arrive on Tokong Ara towards the end of April, a few days ahead of the Black-naped Terns, and the first chicks appear between the end of May and the middle of June (Harrisson).

RACE. *S. a. anaethela.*

[NOTE.—This is a protected bird in Sarawak under the Wild Life Protection Ordinance 1957.]

159. LITTLE TERN PLATE VIII, 7

Sterna albifrons Pallas 1764

Distribution almost world-wide. Nearest known breeding colonies are on the E. coast of Malaya.

Occasional round the coast of Borneo, chiefly June–September. I have seen four birds at Buntal on 6 June, and Medway noted a

large flock there in summer plumage on 23 July, but no breeding colony has yet been found in our area.

DESCRIPTION. 9–10". See key. Adult is distinguished from Common and Roseate Terns by smaller size, narrower-looking wing, yellow bill with black tip, and yellow legs. Iris very dark brown. Juvenile has bill and legs much duller.

HABITS. A tern of sandy seashores and beaches. It has not been recorded up the rivers of Borneo, although it is a common Irrawaddy tern in Burma.

FOOD. Very small fish.

RACE. *S. a. sinensis* Gmelin 1789.

160. SOOTY TERN PLATE VIII, 8

Sterna fuscata Linnaeus 1766

All tropical and subtropical seas.

There is no specimen from Bornean waters, but Worcester found it breeding in large numbers on the Meander Reef, Sulu Sea, and Von Pelzeln records one collected at sea about 100 miles west of the Karimata Islands. Harrisson saw one in Bako bay, 27 September 1956.

DESCRIPTION. 16". See key. " A broad white band on the forehead ending above the eyes ; crown, nape, and a stripe from bill to eye black ; upper-parts dark brownish-black ; outer web of very long outer tail-feathers white ; throat and breast white ; abdomen and under tail-coverts greyish-white ; bill and feet black " (Alexander). Young birds have the upper-parts sooty-brown, and under-parts brown.

RACE. *S. f. nubilosa* Sparrman 1788.

161. GREATER CRESTED TERN PLATE VIII, 9

Sterna bergii Lichtenstein 1823

Widespread along the coasts from E. Africa to China and W. Pacific, south to Tasmania. Nearest breeding colony on Meander Reef, Sulu Sea.

Common in winter round the coast of Borneo. On 30 July 1958 Harrisson saw about sixty birds round Cape Datu and suspected them of breeding round the corner in Indonesian waters.

DESCRIPTION. 17–21". The largest tern on our coast, distinguished from the Lesser Crested Terns by larger size, darker colour, and greenish-yellow bill. In winter the crown of the adult is mainly white. Iris black ; feet black, soles lemon-yellow. The young bird has the mantle mottled brown and white, the tail dark grey tipped white.

VOICE. *Chew*, a single fairly loud and clear note, uttered in flight, perhaps only near the breeding colony ? (Harrisson).

HABITS. Its distinctive habit is that of sitting on driftwood, often far out to sea, and it is the only tern seen regularly more than two miles from land (Harrisson). It is often seen sitting on fishing stakes or isolated posts such as channel marks in shallow muddy estuaries.

FOOD. Fish including climbing perch, crabs.

RACES. (*a*) *S. b. cristata* Stephens 1826, is the common form; (*b*) *S. b. halodrama* (Oberholser) 1915, is a smaller and paler form to which Chasen referred one skin from Baram (now in Raffles Museum).

161a. CHINESE LESSER CRESTED TERN

Sterna zimmermanni Reichenow 1903, Shantung, China (*Orn. Monat.* 1903, 11 : 82)

Coast of China, north to Shantung, breeding place unknown; in winter to Thailand (three skins), Philippines (once), and Borneo (twice).

Sarawak Museum has one skin collected at Buntal in 1890; another collected there in February 1913 has disappeared.

DESCRIPTION. Differs from next species in having the tip of both mandibles black, 21–23 mm.

162. LESSER CRESTED TERN PLATE VIII, 10

Sterna bengalensis Lesson 1831

Ranges from the Mediterranean and Red Sea through the Indian Ocean and Bay of Bengal to Malaysia and Australia. Not Philippines. The nearest known breeding colony seems to be in India (Alexander).

It is probably a regular visitor in small numbers at all times of year. Known dates are January, April, May (Harrisson), June (off Kuala Trusan, Smythies), September (Harrisson), December (Medway), and a specimen was taken by Harrisson off Talang Talang Island on 26 September 1956. Apart from Santubong Bay and Kuala Trusan it has been seen along the coast of North Borneo from Kudat to Tawau. This suggests an unknown breeding colony somewhere in the Sulu or South China Seas.

DESCRIPTION. 14". Brilliant orange-yellow bill and conspicuously more slender build distinguish it from the Greater Crested Tern in the field. Wing 271–321 mm. (Grant and Praed). The young bird has a blackish bar along the wing shoulder and sooty-black outer tail-feathers (Grant and Praed). In breeding plumage the forehead is black, not white as in Greater Crested Tern, as well as crown and nape.

PLATE IX

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1*a*. LARGE GREEN PIGEON (♂) 227
Treron capellei magnirostris.

1*b*. LARGE GREEN PIGEON (♀). 227
Treron capellei magnirostris.

2*a*. THICK-BILLED GREEN PIGEON (♂) 227
Treron curvirostra curvirostra.

2*b*. THICK-BILLED GREEN PIGEON (♀) 227
Treron curvirostra curvirostra.

3*a*. CINNAMON-HEADED GREEN PIGEON (♂) 228
Treron fulvicollis baramensis.

3*b*. CINNAMON-HEADED GREEN PIGEON (♀) . . . 228
Treron fulvicollis baramensis.

4*a*. LITTLE GREEN PIGEON (♂) 229
Treron olax olax.

4*b*. LITTLE GREEN PIGEON (♀) 229
Treron olax olax.

5*a*. PINK-NECKED GREEN PIGEON (♂) 229
Treron vernans griseicapilla.

5*b*. PINK-NECKED GREEN PIGEON (♀) 229
Treron vernans griseicapilla.

1a
1b
2a
2b
3a
3b
4a
4b
5a
5b
0
3"
6"
0
50 mm 100
150

HABITS. It likes blue water some distance offshore away from estuaries and sandy beaches best. As compared with Greater Crested Tern it is more active, lighter winged, and faster flying, and is not regularly seen sitting on driftwood.

RACE. *S. b. bengalensis.*

163. COMMON NODDY PHOTO PLATE 27

Anous stolidus (Linnaeus) 1758

Widespread in tropical seas. The nearest breeding colonies are on Barren Island, on the Tambelan Islands, on a number of islands in the Sulu Sea, and on the Paracel Islands. Strays appear along the west coast of Borneo during the N.E. monsoon (late date 9 March 1957 at Talang Talang Island) ; there is no record for the coast of Indonesian Borneo, but it is to be expected there, at least on the west side.

DESCRIPTION. 14–16″. Wing 10·2–11·5″. See key. A dark brown bird with whitish cap and incomplete white eyering. I have examined specimens of this and the White-capped Noddy that could only be determined with certainty on wing measurement ; identification in the field must be dubious unless the two are seen together, or unless they are breeding, the Common Noddy being a ground nester whereas the White-capped Noddy is a tree nester. Iris dark ; gape yellow ; bill black ; feet dark brown.

HABITS. Noddies are oceanic birds, only frequenting land regularly during the breeding season ; their flight is in appearance much slower and more lethargic than that of a tern, they wheel about more lazily and seldom hover and plunge.

NEST. Thousands breed on Barren Island, where they may be seen from ships on the Kuching–Singapore run at the right time of year (May–November, Gibson-Hill 1956 : 188–191).

RACE. *A. s. pileatus* (Scopoli) 1786.

164. WHITE-CAPPED NODDY PHOTO PLATE 27

Anous minutus Boie 1844

Tropical Atlantic and Pacific Oceans. The nearest breeding colonies are on Cavilli Island in the Sulu Sea and on Kebatu Island (31 miles south of Billiton). Gibson-Hill (1956 : 189) suggests as possible breeding sites : Pengibu, eight miles W-N-W. of Barren Island, or one of the other small densely wooded islands on the edge of the Tambelan group, S.E. of Barren Island.

Strays have been taken twice on our coast (Lawas River and Labuan). Outside the limits of our area Dr. Hendrickson, sailing past Barren Island as a passenger on the *Rajah Brooke*, accomplished the remarkable feat of catching a bird on the wing as it flew past the ship (*Sarawak Gazette*, November 1952). Unexpectedly it proved to be this species and not *stolidus*, and this prompted Gibson-Hill to write his interesting review of what is known about the birds of Barren Island.

DESCRIPTION. 13–14″. Wing 8·3–9·7″. See under *stolidus*.

HABITS. It nests on trees, and therefore cannot nest on Barren Island, which is bare rock.

RACE. *A. m. worcesteri* (McGregor) 1911.

PIGEONS AND DOVES: Columbidae

This family is found all over the world, and some members of it are well-known birds in Borneo. The domestic pigeon, *burong achang*, is commonly seen in Malay kampongs, while everyone is familiar with the *punai* (green pigeons) and the *pergam* (imperial pigeons). They all feed chiefly on fruits and berries, or on seeds; build flimsy nests of sticks; and lay one or two white eggs, which both sexes incubate. The family contains a large number of species, and for convenience is broken up into five subfamilies.

I. GREEN PIGEONS (subfamily Treroninae)

Green pigeons are found in Africa, Asia, east to the Philippines and Japan, south-east to Malaysia and Celebes. They thrive in Borneo, flying about in large flocks most of the year in search of the wild fruits, figs in particular, on which they live; everyone is familiar with the beautiful whistling calls and swift dashing flight of the *punai*, a name usually applied indiscriminately to the five different species in our area, which are not at all easy to distinguish from each other when feeding high up among the tree-tops. The fact that no naturalist has yet attempted to describe the call-notes of each species or to say how they may be distinguished from each other underlines our abysmal ignorance about even our common birds.

Opportunities for "sport", in the European sense, with a 12-bore shotgun are very limited in Borneo; in most parts of S.E. Asia it is afforded by wild duck, junglefowl, partridge, or snipe; here, however, wild duck are great rarities, junglefowl and partridge are absent, and snipe are by no means abundant. *Punai* shooting is the one department in which Borneo excels; it calls for neither exertion nor organization on behalf of the sportsmen, who merely have to line a road or clearing over which *punai* habitually pass in their evening flights. Most Borneans, however, suffer from chronic protein deficiency and prefer to get as much protein as possible per cartridge by stalking the birds feeding or roosting in a tree.

KEY TO THE GREEN PIGEONS *Treron*

1. Large (14) . . . . . *capellei*
   Moderate (8–10) 2
2. Smaller (8) . . . . . *olax*
   Larger (9–10) 3
3. Mantle reddish 4
   Mantle green 5
4. Crown cinnamon . . . . . *fulvicollis* ♂
   Crown grey . . . . . *curvirostra* ♂
5. Breast pink and orange . . . . . *vernans* ♂
   Breast green 6
6. Crown green . . . . . *vernans* ♀
   Crown grey 7
7. Upperparts greyish-green . . . . . *fulvicollis* ♀
   Upperparts yellowish-green . . . . . *curvirostra* ♀

165. LARGE GREEN PIGEON PLATE IX, 1

Treron capellei (Temminck) 1823 *Bedidi* (M)

Throughout Malaysia.

Resident but sparingly distributed throughout Borneo, and scarce in most areas in comparison with the smaller green pigeons.

DESCRIPTION. 14". See key. Sexes differ. The male has the breast orange and the under tail-coverts dark cinnamon-red, whereas the female has the upper breast yellowish and the under tail-coverts pale greyish-cinnamon.

VOICE. " The gurgling note when feeding and calling is certainly reminiscent of the Pink-necked Green Pigeon " (Banks).

HABITS. Prefers primary forest. " Flits about in ones and twos, and, though a flock may feed together, individuals seem to come and go independantly, and the massed flights characteristic of some species are rare here " (Banks).

NEST AND EGGS. Not recorded from Borneo.

RACE. *T.c. magnirostris* Swainson 1844.

166. THICK-BILLED GREEN PIGEON PLATE IX, 2

Treron curvirostra (Gmelin) 1789 *Punai tunggal* (M)

Widespread in S.E. Asia.

Resident throughout Borneo and common in some areas. Motley described it as the commonest green pigeon in the Bandjarmasin area, and in the Kelabit uplands it is common in secondary forest.

DESCRIPTION. 9". See key. Sexes differ, the mantle being maroon in the male and green in the female. In the hand the thick curved bill with the hard plate reaching the feathers of the forehead is the best character. Iris inner ring brown, outer straw-yellow, naked skin round eye green ; base of bill crimson, rest greenish with some yellow ; legs carmine or coral.

VOICE. Frequently utters undove-like calls of loud throaty notes (Harrisson).

HABITS. A noisy pigeon, making itself conspicuous by its manner of banging about in the branches as it moves about in considerable flocks quite low down in secondary forest (Harrisson).

FOOD. Mainly eats *hard* fruit, less often figs and berries (Harrisson).

NEST AND EGGS. In the Kelabit uplands it breeds in the secondary jungle, November to February.

RACES. (*a*) *T.c. curvirostra* ; (*b*) *T.c. erimaca* Oberholser 1924, if recognizable, is the form on Banggi and Balambangan Islands.

167. CINNAMON-HEADED GREEN PIGEON PLATE IX, 3

Treron fulvicollis (Wagler) 1827 *Punai tengar* (M)

Malaya, Sumatra, Borneo.

Although there are records from most parts of Borneo, it is rare and local in comparison with the other green pigeons and is chiefly, but not exclusively, a bird of the mangrove forests ; a few have been collected in the interior, on Mt. Dulit for example and far up the Kapuas river.

DESCRIPTION. 10". See key. Sexes differ. The male is most distinctive with the whole head, mantle, and under tail-coverts cinnamon. The female is best distinguished in the hand from the female Thick-billed and Pink-necked Green Pigeons by the lack of any cinnamon on the under tail-coverts, which are buffy-white with dark green markings, and by the olive-green central tail-feathers. Iris yellow, eyelid red, bill green, the base red ; feet red.

HABITS AND NEST. Nothing on record for our area.

RACES. (*a*) *T.f. oberholseri* Chasen 1934, in the Natunas ; (*b*) *T.f. fulvicollis* in S. Borneo and S. Sarawak to about the Rajang-Baram watershed ; (*c*) *T.f. baramensis* Meyer 1891, darker and redder, in N. Sarawak, N. Borneo and the N. Borneo Islands.

168. LITTLE GREEN PIGEON PLATE IX, 4

Treron olax (Temminck) 1823 *Punai kawan* (M)

Throughout Malaysia.

Resident and locally common throughout Borneo, and has been recorded in the North Natuna Islands. It seems to prefer submontane localities.

DESCRIPTION. 8½". See key. Sexes differ, the male having the back and wing-coverts maroon whereas in the female they are dull greyish-green; the thighs and under tail-coverts are dark cinnamon in the male, very pale cinnamon in the female. Iris white, eyering pale lemon; bill pale blue at base, cere green, rest yellowish; feet light red, claws horn.

HABITS. According to Banks: "They flight in much the same way as the Pink-necked Green Pigeon, but are not so numerous and the individuals are more spaced out in the flocks."

NEST AND EGGS. Not recorded in our area.

RACE. *T.o. olax.*

169. PINK-NECKED GREEN PIGEON PLATE IX, 5

Treron vernans (Linnaeus) 1771 *Punai siol* (M)

Widespread in S.E. Asia.

Resident throughout Borneo in the lowlands, and in most localities the commonest and most abundant green pigeon; it is also found in the Kelabit uplands.

DESCRIPTION. 9". See key. Sexes differ. Male is distinctive with grey head, vinous-pink collar and orange patch on breast. Female is best distinguished from females of other species in the hand by the central tail-feathers, which are grey, sub-tipped black, and narrowly tipped grey; there is some cinnamon on the under tail-coverts. Iris inner ring cobalt, outer mauve; cere greenish-yellow, rest of bill very pale horn, almost white; feet coral-red, claws horn.

VOICE. The call of the female is *Oh-tu-tu-tu* (Harrisson).

HABITS. The well-known flights of these birds are described by Banks as follows: "In the evenings . . . these little birds flight in enormous numbers towards certain trees, mainly for the purpose of roosting but occasionally for feeding. . . . The regularity of the flights is astonishing, at the same time evening after evening, lasting as much as a couple of months while feeding is good. Similarly almost to the month and over the same line or within a quarter of a

mile, year after year, these flights go on, to my knowledge now in undiminished numbers for six years in spite of being shot and netted."

FOOD. Especially eats tips of shrubs and shoots ; also soft fruit and berries (Harrisson).

NEST AND EGGS. Harrisson describes it as a regular breeding bird of the secondary jungle and dry sandy stunted forest of the Kelabit uplands. Medway found it nesting in a coconut palm at Kuala Niah. Motley and Dillwyn describe the nest as flat, formed merely of a few loose sticks, and the eggs as white. About 28×22 mm. (Whitehead).

RACES. (*a*) *T.v. adina* (Oberholser) 1917, in the Natunas ; (*b*) *T.v. purpurea* (Gmelin) 1789, on the Maratuas and in S.E. Borneo ; (*c*) *T.v. griseicapilla* Schlegel 1863, darker than (*b*), elsewhere.

II. FRUIT PIGEONS (subfamily Ptilinopinae)

Fruit Pigeons are a South Pacific group of birds. They extend westwards to Malaysia, and only two species occur in our area. They differ considerably from the green pigeons, in anatomy, pattern, and habits, but resemble them in feeding on fruit and berries.

170. JAMBU FRUIT PIGEON PLATE X, 1

Ptilinopus jambu (Gmelin) 1789 *Punai jambu* (M)

Malaya, Sumatra, Borneo, Billiton, Banka.

Resident and widely distributed in Borneo, but local and (as in Malaya) it moves about locally to a marked degree ; thus Whitehead found it on Labuan in June only, and Harrisson found that in the Kelabit uplands there was a large influx of local migrants in winter. Motley found it plentiful only in the immediate neighbourhood of Bandjarmasin. Iris light brown, skin round eye white ; bill orange-yellow ; feet red, claws horn.

DESCRIPTION. 10". Sexes differ. The male with crimson-pink crown and sides of head is unmistakable. The female might be confused with a green pigeon, but the dark crimson forehead and chin and white lower belly are distinctive. Immature birds are like the female but duller.

VOICE. According to Robinson, the note is a low soft *coo*, seldom uttered.

HABITS. It is shy and retiring, not social like the green pigeons, and hence easily overlooked. Adams usually found it on the ground in dense jungle, feeding on fruit knocked off by monkeys or hornbills.

FOOD. Berries exclusively (Harrisson).

NEST AND EGGS. Harrisson found it breeding in the Kelabit uplands, November to February.

171. BLACK-NAPED FRUIT PIGEON PLATE X, 2

Ptilinopus melanocephalus (Pennant) 1769

Java to Philippines, Celebes, and Moluccas.

Resident on the Maratuas, and on the North Bornean islands of Banggi and Balambangan. There are no records from the mainland of Borneo.

DESCRIPTION. 9". Sexes differ. The male is unmistakable with golden-yellow chin, throat, lower belly and vent, and carmine-red under tail-coverts. The female is entirely green, except for some pale yellow on belly and vent. and a crimson wash on the under tail-coverts.

HABITS. Not recorded from Borneo.

NEST AND EGGS. Not recorded from Borneo.

RACE. *P.m. bangueyensis* (Meyer) 1891.

III. IMPERIAL PIGEONS (subfamily Duculinae)

These are large fruit-eating pigeons, essentially arboreal in habits and rarely found on the ground ; they extend from India to Australia and the South Pacific. They make a flimsy nest of sticks like the green pigeons, but lay only one egg.

172. GREEN IMPERIAL PIGEON PLATE X, 3

Ducula aenea (Linnaeus) 1766 *Emperegam* (I), *pergam* (M)

Widespread in S.E. Asia from India to the Lesser Sundas.

Resident and common throughout our area in the lowlands, but it does not appear in the Kelabit uplands nor overlap the range of the Mountain Imperial Pigeon. It favours mangrove and nipah swamps and primary forest.

DESCRIPTION. 16". The *pergam* is too well known to Borneans to need description. Iris red, eyelids red ; base of bill plum on top, rest of bill grey-green or slate ; feet dark red, claws dark.

VOICE. The call is a lovely deep coo, *click-hroooo*, somewhat like a cow mooing in the distance, and produced with the head lowered and pressed into the puffed-out breast. Another very characteristic call is a sort of cooing chuckle of five or six notes.

HABITS. According to Banks : " It appears to be a bird of solitary habits except when pairing or in family parties and very rarely to

my mind flights in the flocks as other pigeons are accustomed to do. In the early morning as the mist rises they may be seen making their way leisurely across river with a slow-flapping round-winged almost owl-like flight, but when disturbed or in a hurry they have a more typical wood pigeon flight, the wings don't look at all round, the beats are clear-cut, with a barely perceptible pause at the conclusion of the down stroke. In the evening the flight is of this more direct type and they move to their feeding or roosting grounds—or at any rate start to—before the smaller *punai*, nor do they have any particular direction, often moving in the opposite direction to their smaller brethren."

They will, however, persist in holding to a chosen line of flight with the greatest tenacity. Up the Belait River, within easy paddling distance of Kuala Belait, there is a small patch of stunted mangrove forest, which is a well-known *pergam* " shoot " ; from just after dawn to about nine o'clock the birds come in ones and twos, flying from up-river in the direction of the sea, always over this little patch of forest, where four or five guns usually lie in wait ; although this has been going on for a number of years, their numbers do not seem to diminish nor will they abandon their chosen line.

The nuptial flight is striking, and is described by Banks :

" A single bird flying along normally would give two or three vigorous beats and shoot vertically up into the air as much as two yards, hang poised with flexible wings, neck stretched upwards and tail to earth for an appreciable and ecstatic moment, as if it might fall over backwards ; a sharp turn to the horizontal and a swift downward rush completed the movement, normal flight being resumed. Solitary birds and one of a pair used to perform, but not both."

FOOD. Predominantly small berries (Harrisson).

NEST AND EGGS. Gibson-Hill describes eggs (c/1) taken at Kota Belud in January as regular ovals in shape, white in colour, the surface smooth and slightly glossy, 48×34 mm.

RACES. (*a*) *D.a. palawanensis* (Blasius) 1888, is the form on Banggi Island ; (*b*) *D. a. polia* (Oberholser) 1917, over the rest of our area, including the Natunas and Karimatas.

173. PICKERING'S IMPERIAL PIGEON PLATE X, 4

Ducula pickeringi (Cassin) 1854

An island species of the Sulu Archipelago, and of Talaut Island north-east of Celebes.

Resident on the Maratuas and on the North Bornean islands of Mangsi,

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PLATE X

Page

1*a*. JAMBU FRUIT PIGEON (♂) 230
Ptilinopus jambu

1*b*. JAMBU FRUIT PIGEON (♀) 230
Ptilinopus jambu

2*a*. BLACK-NAPED FRUIT PIGEON (♂) 231
Ptilinopus melanocephalus bangueyensis.

2*b*. BLACK-NAPED FRUIT PIGEON (♀) 231
Ptilinopus melanocephalus bangueyensis.

3. GREEN IMPERIAL PIGEON 231
Ducula aenea polia.

4. PICKERING'S IMPERIAL PIGEON 232
Ducula pickeringi

5. PIED IMPERIAL PIGEON 234
Ducula bicolor.

6. MOUNTAIN IMPERIAL PIGEON 235
Ducula badia badia.

7. METALLIC WOOD PIGEON 236
Columba vitiensis griseogularis.

8. GREY WOOD PIGEON 236
Columba argentina.

9. NICOBAR PIGEON 241
Caloenas nicobarica nicobarica.

Mantanani, and Mangalum (where Kloss found it very common in 1928).

DESCRIPTION. 16". Like the preceding species but smaller, with mantle bronze-grey instead of glossy green, and with no chestnut on the under tail-coverts. Iris crimson ; bill lead-grey, base darker.

HABITS AND NEST. Not described from our area.

174. PIED IMPERIAL PIGEON PLATE X, 5

Ducula bicolor (Scopoli) 1786 *Burong rawa* (M)

(According to Motley and Dillwyn, *rawa-rawa* was the name of cream-coloured woollen cloth made in China, and fetching a high price in Borneo in the 1850s.)

On islands from the Bay of Bengal to New Guinea.

Without carrying out a census on all the islands of the Bornean province it is impossible to define the distribution with accuracy. Motley found it common on Labuan Island in 1855, and it probably still breeds on some of its satellites (some were seen apparently breeding on the Pelong Rocks off Brunei Bluff in 1954). Whitehead found it in hundreds on Pulau Tiga. From the deck of the *M.V. Marudu* I have seen a large flock winging its way out at dusk to Mangalum Island. It is resident in the Natunas and Karimatas, and on the Turtle Islands in Santubong Bay.

DESCRIPTION. 14". Unmistakable. Iris black, bill and feet brown.

VOICE. The note is a glorified chuckle, something like that of the Large Green Pigeon (Banks).

HABITS. Whitehead, writing of Pulau Tiga, says: "These pigeons swarmed in the tops of the fruit-bearing trees, where they were continually fighting and driving one another about. . . . It frequents small islands off the coast of Borneo and may be met with at sea during its migrations in search of food. The quantity of pigeons on small islands is to be accounted for by the absence of monkeys."

Flocks have a habit of flying across from their island home to an unfrequented part of the coastal mainland. Thus Bartlett reported that they occasionally appeared in mangrove forest at Santubong and Buntal. Harrisson described them at Cape Datu: "There it feeds in high trees during the early hours of the morning and late afternoon but is generally quiet during the day. Flights return to the islands very fast and in formation, usually about 200 feet over the sea, at dusk. Such a flight is one of the most beautiful sights to be seen in Borneo." He notes that on return to Talang Talang Island from the mainland they are very active at dusk, flying about

or sitting conspicuously in trees, diving into coconut palms, etc. The reason for all this activity is obscure.

In flight it always seems at ease, almost idling, wing-beats about 180 to the minute, sometimes slower or faster but never a fast-beating pigeon ; when alone, the flight is polished and graceful, several beats followed by a swoop or bank, very fast ; it lunges and plunges through the air, shoots and twirls, not in play but always in short flights or at the end of a long one—quite unlike any other wild pigeon (Harrisson).

Food. Mainly fruits of the nutmeg family, Myristicaceae.

Nest and Eggs. Shelford states that the nest and eggs of this species are similar to those of *C. argentina*, except that the egg of the latter appears to be somewhat larger and of a more chalky texture. Both species were nesting on Burong Island in 1899 (Annual Report of the Sarawak Museum for 1900). On Labuan Motley and Dillwyn found it nesting in high trees, but on Talang Talang Island they prefer coconut palms (Harrisson). Eggs measure about 48×36 mm.

[Note.—This beautiful bird is protected in Sarawak under the Wild Life Protection Ordinance 1957.]

[Harrisson considers its behaviour to be so different from that of other species of *Ducula* as to warrant a separate genus, in which case it would be known as *Myristicivora bicolor*.]

175. MOUNTAIN IMPERIAL PIGEON PLATE X, 6

Ducula badia (Raffles) 1822 *Pergam bukit* (M)

Widespread in S.E. Asia.

A montane resident throughout the mountain ranges of Borneo. It occasionally strays down to the lowlands. Thus Hose reported it in the lowlands of Baram district, and in the last few years odd ones have been shot within two miles of Kuala Belait, flighting with Green Imperial Pigeons over mangrove forest in the early morning, far from its normal habitat (Mr. Runagall of the *Borneo Bulletin* kindly sent me photographs and feathers, which were confirmed at the Sarawak Museum as undoubtedly of this species).

Description. 17". Distinguish from the Green Imperial Pigeon by different note and by the dark chestnut-maroon mantle, blackish-brown primaries, and tail black with terminal third grey. Iris white or red ; bill crimson, tip pale horn ; feet crimson, claws pale horn.

Voice. The call is distinctive, *click-whroom-whroom* ; the preliminary *click* is only audible at close range, but the *whroom-whroom* is a melodious booming call that resounds across the mountain valleys.

HABITS. A shyer, remoter bird than the Green Imperial Pigeon, usually seen high overhead, and usually solitary outside the breeding season (Harrisson).

FOOD. Prefers large fruit, but will take small berries (Harrisson).

NEST AND EGGS. Eggs (c/1) taken in February and March in North Borneo are described by Gibson-Hill as very like those of *D. aenea* but slightly smaller, 43×32 mm.

RACE. *D.b. badia*.

IV. WOOD PIGEONS (subfamily Columbinae)

The Wood Pigeon of the British Isles is one of the best known members of this subfamily, which has a world-wide distribution. In our area, however, it is represented by two little-known species that are found only on small islands. They differ from imperial pigeons in being not so heavy in build, and in habitually feeding on the ground.

176. METALLIC WOOD PIGEON PLATE X, 7

Columba vitiensis Quoy & Gaimard 1830

Japan to the Lesser Sundas, Australia, and W. Pacific.

Resident on Tiga and Mantanani Islands, and on the Maratuas.

DESCRIPTION. 17″. The upperparts are mottled black and metallic green, the underparts washed with metallic green and purple, except for the pale grey face and throat.

HABITS. Not recorded from Borneo.

NEST AND EGGS. Not recorded from Borneo.

RACE. *C.v. griseogularis* (Walden & Layard) 1872.

177. GREY WOOD PIGEON PLATE X, 8

Columba argentina Bonaparte 1854 *Rawa kelabu* (M)

On the smaller islands of Malaysia.

One specimen was collected at Pontianak in 1826, but it has not since been recorded anywhere in Indonesian Borneo. It is resident on the Karimatas and North Natunas, and formerly bred on Burong Island off the mouth of the Lupar River but has not been seen there since 1899.

DESCRIPTION. 14″. A pale grey bird with white upper tail-coverts and white basal half of tail contrasting with black terminal half of tail and black primaries. (♂) iris red ; bill red or brown ; feet grey ; (♀) iris black ; bill black ; feet black.

HABITS. According to Delacour it is often seen in company with the Pied Imperial Pigeon, and has similar habits.

NEST AND EGGS. Large numbers of this species and of the Pied Imperial Pigeon were breeding on Burong Island in 1899. According to Shelford, the

nest and eggs of the two species are very alike, but the egg of *C. argentina* appears to be constantly somewhat larger and of a more chalky texture than that of *D. bicolor*.

V. DOVES (subfamily Streptopelinae)

Apart from the *tekukur* or Spotted-necked Dove in the lowlands and the Cuckoo-Doves in the hills, this subfamily is poorly represented in our area. Doves are found in most parts of the world, and are ground-feeding pigeons which usually lay two eggs.

178. RED CUCKOO-DOVE PLATE XI, 1

Macropygia phasianella (Temminck) 1821. *Tawau* (M); *imbok buau* (I)

Malaysia to Australia.

Resident but sparingly distributed through Borneo; typically a submontane species, but locally at least it is found in the lowlands. In the Kelabit uplands it is common.

DESCRIPTION. 12", including a long tail of 7". Sexes differ. Distinguish from Little Cuckoo-Dove by considerably larger size, breast purplish-brown with inconspicuous black barring as compared with buff or brown heavily marked with black, abdomen purplish brown not buff-brown, and different voice. The female is darker and duller than the male and lacks the rich lilac reflections on the sides of the neck which is black barred with cinnamon. Iris red with whitish inner ring, eye skin bluish; bill dark brown above fleshy below; feet dull red, claws horn.

VOICE. The bird calls with a mournful *tok-wao, tok-wao*, repeated several times with a moderate interval between (Ripley & Rabor).

HABITS. In the Kelabit uplands it prefers primary forest and is never seen to come out into the upland rice fields like the next species (Harrisson).

FOOD. Almost entirely small berries (Harrisson).

NEST AND EGGS. "On 13 January I found two nests, one of this species and the other of *M. ruficeps*. Both these doves were nesting amongst some bracken fern only a few feet from the ground; the plumage of the birds is so easily mistaken for the dry fern that the protection afforded by the coloration is perfect. The nest was composed of a few dead twigs, and contained one white egg nearly hatched" (Whitehead).

RACE. *M.p. borneensis* Robinson & Kloss 1921.

179. LITTLE CUCKOO-DOVE PLATE XI, 2

Macropygia ruficeps (Temminck) 1835 *Imbok gunong* (I)

Widespread in S.E. Asia.

Widespread in Borneo as a submontane resident. Immense numbers live in the uplands of the Kelabit, Murut, and Dusun country along the fringes of the primary forest and descend on the open rice fields when the grain is ripe. On Kinabalu, Whitehead found them ranging from 1,000 feet up to 8,000 feet.

DESCRIPTION. 11". Sexes differ. Can only be confused with the Red Cuckoo-Dove (*q.v.*). The female lacks the green and lilac reflections on the nape and the white markings on the breast. Iris greyish-white or bluish-white ; ♂ bill flesh at base, dark at tip ; feet coral-red ; ♀ bill black ; feet dull reddish-purple, claws light horn.

VOICE. The call-note is *croo-wuck, croo-wuck, croo-wuck* . . . repeated very rapidly, about 30 times in 15 seconds, then a pause of about 5 seconds, and then repetition. The *croo* is only audible at close quarters, and all that can be heard from a distance of 50 yards or more is *wuck, wuck, wuck*. . . . The booming of the Mountain Imperial Pigeon and the call of this little dove are among the most obvious and distinctive sounds of the mountain slopes.

FOOD. Especially favours very small hard berries and seeds ; also padi grains in season (Harrisson).

NEST AND EGGS. Gibson-Hill describes eggs (c/1) collected in February and March at Kiau on Kinabalu as regular ovals in shape, surface smooth and very slightly glossy, colour white or a light ivory-yellow, 28×20 mm.

RACE. *M.r. nana* Stresemann 1913.

180. BARRED GROUND DOVE PLATE XI, 3

Geopelia striata (Linnaeus) 1766 *Ketitir* (M)

Malaysia to Australia.

Examples of this species collected or seen in our area are almost certainly descendants of birds released by natives in the past ; it is commonly kept as a cage bird throughout Malaysia. Odd birds have been collected in S. Borneo, and at Kuching, Mukah, Muara Island, and Lawas River ; also in the Natunas.

DESCRIPTION. 7", including a long tail of 4". Small size and black barring on the mantle, wings, and back distinguish it. Iris white, skin in front of eye and below it pale green ; bill greyish-blue ; feet bluish-purple, claws pale horn.

VOICE. According to Robinson, the note is *kok-kurr-kurr*, softly repeated several times.

HABITS. Frequents open country and sandy seashores.
NEST AND EGGS. Not recorded in our area.
RACE. *G.s. striata.*

181. JAVANESE TURTLE DOVE PLATE XI, 4

Streptopelia bitorquata (Temminck) 1811

Java, Bali, Lesser Sundas, Palawan, Philippines. Also in Sumatra and Borneo as an introduced species.

It was collected by Pryer in Sandakan district many years ago, but there is no subsequent record of it in our area.

DESCRIPTION. 12". Distinguish from the common Spotted-necked Dove by the nuchal collar, which is plain black and not spotted.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *S.b. dussumieri* (Temminck) 1823

182. SPOTTED-NECKED DOVE PLATE XI, 5

Streptopelia chinensis (Scopoli) 1786 *Tekukur* (M)

Widespread in S.E. Asia.

A common resident throughout Borneo wherever padi is grown. It is much in evidence cleaning up the fallen grains after the harvest, and is also a familiar bird of towns such as Kuching. It has not been recorded on any of the island groups, other than the North Bornean islands.

DESCRIPTION. 11". The black-and-white spotted cape is the distinctive feature of this dove. Iris orange or yellow-ochre; bill black; feet coral-red, claws black.

VOICE. The Leppo Tau branch of the Kenyahs call it *Leppo Tau*, because that is how it sounds to them. Others call it *tekukur* or *tukorkor*.

HABITS. This bird is easy to observe owing to its habit of walking about on roads and paths; when disturbed it rises almost vertically into the air for a few feet, with a great fluster and clapping of wings, and then flies away swiftly with quick wing-beats and the tail partly spread; it usually flies up to a tree, but may settle again on the ground, and its action when flying or settling is curiously stiff. The display flight consists of a flight straight up into the air, followed by a glide downwards with the wings and tail stiffly spread.

FOOD. Normally padi or grass seeds; once a hornet (Harrisson).

NEST AND EGGS. These doves nest throughout the year, but in the Kelabit uplands most nests are found from September to March in low bushes in the open. Egg pure white, 28×21 mm.

RACE. *S.c. tigrina* (Temminck) 1811.

PLATE XI

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1*a*. RED CUCKOO-DOVE (♂) 237
Macropygia phasianella borneensis.

1*b*. RED CUCKOO-DOVE (♀) 237
Macropygia phasianella borneensis.

2*a*. LITTLE CUCKOO-DOVE (♂) 238
Macropygia ruficeps nana.

2*b*. LITTLE CUCKOO-DOVE (♀) 238
Macropygia ruficeps nana.

3. BARRED GROUND DOVE 238
Geopelia striata striata.

4. JAVANESE TURTLE DOVE 239
Streptopelia bitorquata dussumieri.

5. SPOTTED-NECKED DOVE 239
Streptopelia chinensis tigrina.

6*a*. EMERALD DOVE (♂) 241
Chalcophaps indica indica.

6*b*. EMERALD DOVE (♀) 241
Chalcophaps indica indica.

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183. EMERALD DOVE PLATE XI, 6

Chalcophaps indica (Linnaeus) 1758 *Embok tanah* (M, I)

Widespread in S.E. Asia, extending to Australia and the W. Pacific.

Resident, and reasonably common throughout Borneo, in the lowlands and uplands, but subject to local migrations, the evidence for which is summarized in the Checklist.

DESCRIPTION. 9". Sexes differ slightly, the female being duller and browner, and lacking white on the shoulders. Young birds are barred brown and rufous on the under-parts. Iris very dark brown ; bill orange ; feet almost purple, claws horn.

VOICE. The note is a very deep low coo. It sounds like the word *oo* very much prolonged, and slowly uttered with a booming sound (Davison).

HABITS. Usually seen singly, flashing through the forest not far above the ground or across a stream not far above the surface. It is a shy ground bird of primary and secondary forest. By imitating the booming note of the birds with the help of an instrument made of bamboo (figures in Sharpe 1879c : 347) the natives of North Borneo trap large numbers when they are migrating in April. On the Turtle Islands it is always in coconuts, and often on the beach where it feeds on tiny flies (Harrisson).

FOOD. Fruit, insects, ants, flies.

NEST AND EGGS. A specimen in the Sarawak Museum was taken with nest and eggs on 22 January 1892 at the 10th mile, Penrissen Road ; Bartlett described the eggs as creamy-white. Harrisson saw a fledgling in a cage on 15 December, at Kampong Segu 21st mile Penrissen Road.

RACE. *C.i. indica.*

184. NICOBAR PIGEON PLATE X, 9

Caloenas nicobarica (Linnaeus) 1758

On small islands from the Nicobars to Christmas Island and New Guinea.

It has been recorded on a number of islands round the coast of Borneo : St. Barbe Island, Labuan and its satellites, Tiga Island, Mantanani Island, Sipadan Island (east of Cowie Harbour), and the Maratuas.

DESCRIPTION. 14". An unmistakable bird with its cape of long pointed feathers, beautiful plumage of metallic purples and green, powdered with grey on the head, neck and breast when fresh, and very short white tail. Its appearance when seen on the ground is most un-pigeon-like, as it keeps its head high and its tail low ; when in flight or when perched on a tree it looks like a typical *pergam* in shape but with a shorter tail (E. F. Allen).

VOICE. The note is described as a deep croak, seldom uttered.

HABITS. It frequents the ground, feeding on fallen fruit, but perches readily on trees. Though a heavy bird it migrates from island to island in search of food, traversing great distances (Whitehead). In flight it always keeps below the forest canopy (E. F. Allen).

NEST AND EGGS. Not described from our area.

RACE. *C.n. nicobarica.*

PARROTS: Psittacidae

This well-known family is poorly represented in Borneo. Further east in New Guinea and Australasia are found the handsome cockatoos and the beautiful budgerigars, but all the Bornean members of the family are predominantly green in colour, and only one of them —the Malay Lorikeet—can be described as common.

185. BLUE-NAPED PARROT PLATE XII, 4

Tanygnathus lucionensis (Linnaeus) 1766

Palawan and Philippines.

It is found on the Maratuas; also on Mantanani Island, where it was probably introduced by sailing craft from the Sulu Sea.

DESCRIPTION. 12". Large size and rounded tail distinguish it from the other parrots in our area.

HABITS. Not recorded from Borneo.

NEST AND EGGS. Not recorded from Borneo.

RACE. *T.l. lucionensis.*

186. LONG-TAILED PARAKEET PLATE XII, 1

Psittacula longicauda (Boddaert) 1783 *Bayan* (M, I)

Andamans, Nicobars, and throughout Malaysia.

Resident, but unevenly distributed in Borneo. In the Barito drainage round Bandjarmasin a century ago they flew about in enormous flocks, and hundreds were caught with bird-lime and sold for food; further up the Barito, in the Tumbang Hiang area, enormous flocks were again reported thirty years later. Nothing like this has been seen in Sarawak, Brunei, or North Borneo, where they have been reported from a few scattered localities in small numbers.

DESCRIPTION. Sexes differ. (♂) 16" (owing to the 10" long central tail-feathers). (♀) 10", with a short tail, differs in colour. (♂) iris pale yellow heavily flecked with dark green; upper mandible red, pale yellow at base, horn at tip, lower mandible dark; feet and

claws grey. (♀) iris white; beak dull purple, horn at tip; feet greenish, claws horn. In the field distinguished from the rarer *P. alexandri* by having sides of head pink instead of grey, and primaries blue instead of green.

HABITS. They attract attention by their loud and raucous cries, usually uttered on the wing as they hurtle through the air at a great pace in a compact flock, swerving gracefully to dodge trees and branches. They avoid primary forest and seem to prefer coastal districts, where they frequent padi clearings or the mangrove forests.

FOOD. Motley observed them feeding on the fruit of the *kapor* tree (*Dryobalanops* sp.) and on *Dillenia speciosa*.

NEST AND EGGS. Small nesting colonies have been observed near the coast not far from Seria (Smythies) and in the grounds of the old residency at Marudi. The eggs are laid in hollow trees.

RACES. (*a*) *P.l. defontainei* Chasen 1934, in the Natunas only; (*b*) *P.l. longicauda* elsewhere.

187. RED-BREASTED PARAKEET PLATE XII, 2

Psittacula alexandri (Linnaeus) 1758

Widespread in S.E. Asia.

In our area it has only been recorded from S. Borneo, where it was probably introduced from Java. Motley a century ago reported large flocks round Bandjarmasin, but they do not seem to have spread, and are not likely to be met with in Sarawak or further north.

DESCRIPTION. 12″, including a tail of 6″. Sexes almost the same, the female being only slightly duller than the male. Tail shorter than *P. longicauda*, and for other distinctions see under that species.

HABITS. Probably the same as those of *P. longicauda*.

NEST AND EGGS. Not recorded from Borneo.

RACE. *P.a. alexandri*.

188. LITTLE MALAY PARROT PLATE XII, 5

Psittinus cyanurus (Forster) 1795 *Muala* (M); *bayan keladan* (I)

Malaya, Sumatra, Borneo.

Resident in Indonesian Borneo and Sarawak, but rather rare everywhere, and not yet recorded from North Borneo (the most northerly specimen is one from the Limbang River).

DESCRIPTION. 7″. Sexes differ, the female having the head brownish-grey instead of light blue, the mantle green instead of mottled grey, and the rump green instead of blue. ♀ iris yellowish-

white ; feet greenish. ♂ upper mandible red, pale horn at tip, lower mandible dark.

HABITS AND NEST. Nothing recorded for our area.

RACE. *P.c. cyanurus.*

189. MALAY LORIKEET PLATE XII, 3

Loriculus galgulus (Linnaeus) 1758 *Tripas, kelit* (M) ; *entlit* (I).

Common throughout Malaysia, excluding Java and Bali.

The only member of the parrot family that is common throughout the lowlands of Borneo. Large numbers are caught with bird-lime and caged by the natives.

DESCRIPTION. 5". Sexes differ, the female lacking the scarlet breast patch and yellow rump. In flight the wings appear rather stumpy and triangular in shape, forming an outline that is a sure guide to identification. Iris brown, eyelid pale blue ; bill black ; feet brown or pale orange.

VOICE. A sharp note is sometimes uttered on the wing. This inconspicuous note has great carrying power and, coupled with the bird's acute sense of hearing, probably accounts for the fact that a decoy attracts so many others in a short time. They can detect the sound of an aircraft (and announce it with a sharp high screech) long before it becomes audible to human ears (Harrisson).

HABITS. Usually seen flying past the treetops singly or in pairs, with very fast-whirring wing-beats, and not in screeching mobs like the parakeets. When climbing, extraordinarily long alternate strides upwards are taken, up to six inches or more, the whole body swinging to enable this ; the beak is used as needed to aid in pulling up and the tail may be depressed as back support rather as in woodpeckers. When hanging the feet are together, the tail pressed against a branch, and the body arched far back so that the head is often to rear of the feet ; in this position the head can easily be swivelled in all directions and often is ; this position is always adopted for sleeping. On a big branch or flattish surface it makes quick, *short*, alternate jumping steps, *almost* a full hop, with the belly often touching ; the effect is rather comical and Chaplinesque (Harrisson).

FOOD. Has been collected feeding on durian flowers. Caged birds love honey and sweet food, such as sweet fruit, sugar cane or frangipani flowers, bananas, but also thrive on padi and dry seed or boiled rice. I know of no bird which eats more *delicately*, picking at each item with poised tongue and sensitive beak-work, constantly brush-

ing the sides of the beak and gape on a twig or leaf while feeding (Harrisson).

NEST AND EGGS. Eggs collected by Low on Labuan were described as dull white, stained a good deal with brown ; 18×15 mm.

RACE. *L.g. galgulus.*

CUCKOOS : Cuculidae

Because the European Cuckoo lays its eggs in the nests of other birds, it is often assumed that all cuckoos do so ; in fact of the four subfamilies into which the cuckoos are divided only the members of the first subfamily, the true cuckoos, are parasitic in this way.

I. TRUE CUCKOOS (subfamily Cuculinae)

Most of the true cuckoos live in tall trees and are rarely seen ; partly for this reason, and partly because a number of species resemble each other so closely, correct identification, even of specimens, is a matter of experience ; on the other hand they are noisy birds, and most of the species have a distinctive call-note or " song ", so that the ear is usually a more reliable guide to identity than the eye. They do not make nests of their own, but lay eggs in the nests of other birds ; after hatching, the young cuckoo throws all the other eggs out of the nest and becomes the sole occupant, whereupon it is fed by the foster-parents until fully grown. This sort of parasitism is rare among birds, but the true cuckoos are not unique in this ; the honeyguides, so far as their breeding habits are known, are also parasitic in much the same way.

These are long-winged cuckoos, grey or brownish above and barred or streaked below. Young birds are brown, barred with rufous above, and white, marked with brown, below ; a rare colour phase of the adult female is much like the juvenile plumage, but richer chestnut. The different species resemble each other so closely that even coloured illustrations are of little help ; their calls are distinctive, but some of the species that only winter here call little, if at all, while in Borneo. The following key will enable birds in the hand to be identified.

KEY TO THE TRUE CUCKOOS—genus *Cuculus*

1. Wing long and pointed, falcon-like. Secondaries in closed wing scarcely exceed half the length of the primaries . 2

	Wing shorter and more rounded. Secondaries in closed wing at least two-thirds the length of the primaries	5
2.	A broad subterminal black band to tail	*micropterus*
	No subterminal black band to tail	3
3.	Wing under 7 inches	*poliocephalus*
	Wing over 8 inches	4
4.	Edge of wing mottled brown and white	[*canorus*]
	Edge of wing white	*saturatus*
5.	A distinct dark cheek-band from eye	*vagans*
	No dark cheek-band	6
6.	Rufous tip to tail, wing under 8 inches	*fugax*
	No rufous tip to tail, wing over 8 inches	*sparverioides*

190. LARGE HAWK-CUCKOO

Cuculus sparverioides Vigors 1832

Widespread in S.E. Asia.

One form is a higher montane resident in Borneo, extending from Kinabalu along the spinal chain to the Usun Apau Plateau, and throughout this area it is a common bird of the mountain forests from about 3,000 feet upwards. The nominate race is a straggler in winter from the mainland of Asia ; it has been collected twice only, by Treacher and by Whitehead, on Labuan.

DESCRIPTION. 12". See key. Rufous chest and distinctive call are the best guides to the resident race. Iris orange shading out to buff, eyeskin lemon-yellow ; bill blackish above, green below ; feet lemon.

VOICE. The name " Brain-fever Bird " has been applied to several species of cuckoo (in Malaya usually to *Cacomantis merulinus*), but the only genuine one, which actually shouts *brain-fever* in a loud voice, is the Large Hawk-Cuckoo. If you stroll along the Kundasan to Bundu Tuhan track on the shoulder of Kinabalu during the breeding season you will hear it most distinctly in the old forest beside the track.

FOOD. Caterpillars, beetles, hemiptera, cockroaches, insects in general, berries. One at 4,000 feet in primary forest examined by Harrisson was gorged with caterpillars (9 a.m.) ; another, at 5,000 feet in moss forest, had eaten a 1½" lantern bug, a cockroach, two large hemipteran bugs, three big weevils, a caterpillar and some yellow tipped berries.

NEST AND EGGS. Not recorded in our area.

RACES. (*a*) *C.s. sparverioides* is the winter visitor ; (*b*) *C.s. bocki* Wardlaw Ramsay 1886 is the resident race.

191. MALAYAN HAWK-CUCKOO PLATE XIII, 1

Cuculus fugax Horsfield 1821

Widespread in S.E. Asia.

In Borneo we have one resident race and two others that visit us in winter from the mainland of Asia. The resident race is sparingly distributed in the lowlands, and has been collected as high as 5,300 feet in the Kelabit uplands; it is also found in the Karimatas.

DESCRIPTION. 11". The narrow rufous tip to the tail, as shown in the plate, and the heavy dark streaks on the breast, are diagnostic. Iris dirty white, skin round eye yellow, lower lid green; base of bill greenish-yellow; upper mandible black with pale tip, lower mandible greenish-yellow with some black; feet yellow, claws whitish.

VOICE. Imperfectly known. Motley's description fits the call of *C. micropterus* so perfectly that he may have mistaken the species. From Assam the call is described as *gee-whizz, gee-whizz* . . . repeated up to twenty times in a very sibilant and insistent manner.

FOOD. Berries, small butterflies; locustids, beetles (Harrisson).

NEST AND EGGS. Whitehead found it laying in the nest of the flycatcher *Culicicapa* on 29 April.

RACES. (*a*) *C.f. fugax* is the resident race; (*b*) *C.f. hyperythrus* Gould 1856 is an occasional visitor to N. and E. Borneo; (*c*) *C.f. nisicolor* Blyth 1843 has been collected on Kinabalu, in the Kelabit uplands, and once in S.E. Borneo. These races are not easily distinguished, see Mayr (1938).

192. LESSER HAWK-CUCKOO PLATE XIII, 3

Cuculus vagans S. Müller 1845 *Kangkok* (M)

Java and Borneo, visiting Malaya in winter.

Status in Borneo uncertain; there are a few scattered records from Sarawak and North Borneo, none from Indonesian Borneo (but in view of the fact that *C. fugax* and *C. vagans* were not differentiated until 1877, some of the old records of the former might possibly refer to the latter).

DESCRIPTION. 10". See key. Iris brown, skin round eye bright yellow; upper mandible black, greenish at base, lower mandible yellowish-green; feet yellow, claws pale horn.

VOICE. According to Robinson, " Everett and Hose state that the note is *kang koh*—birds having been shot uttering this call." A loud distinctive *kang-kok-kok-kok* (Banks).

193. INDIAN CUCKOO

Cuculus micropterus Gould 1837 *Kuong kapong* (I), from the call

Widespread in S.E. Asia.

One race is resident in our area, and comparatively common throughout the lowlands and uplands. The nominate race has been collected once as a stray from the mainland of Asia, by Harrisson in the Kelabit uplands.

DESCRIPTION. 11". See key. Brown mantle of adult contrasting with grey head distinctive. Iris dark brown, rim round eye yellow, gape yellow; upper mandible black, lower greenish; feet yellow, claws horn. The immature bird is dark brown above, with a few buff feathers on the crown and pale bars on the upperparts; buff below barred with brown.

VOICE. The loud flute-like whistle consists of four notes, of which the first three are on the same pitch, and the last is lower. It is freely, often persistently, uttered during the breeding season, usually from a perch high up in a tree.

FOOD. Caterpillars, butterflies, grasshoppers, ants, locustids, fruit.

NEST AND EGGS. Not recorded from Borneo.

RACES. (*a*) *C.m. micropterus* (larger, wing over 164 mm.); (*b*) *C.m. concretus* S. Müller 1845 (wing 154–164 mm.) is the resident form.

[NOTE.—The Checklist, p. 634, stated that Whitehead obtained a single specimen of *C.m. micropterus*; in fact he obtained two specimens, which Sharpe named *C. micropterus* (Ibis 1890: 11), but as he does not mention the common resident form *C.m. concretus* it seems probable that Sharpe assigned them to the wrong subspecies. Unfortunately the skins are not now in the British Museum, and their whereabouts are unknown, so the point cannot be checked.]

[COMMON CUCKOO, *Cuculus canorus* Linnaeus 1758, is not accepted for the Borneo list; for reasons see Checklist.]

195. BLYTH'S CUCKOO

Cuculus saturatus Blyth 1843 (=*C. optatus*)

Breeds in Siberia, Japan, and the Himalayas, reaching Australia in winter.

Occasional passage migrant and winter visitor to our area, a few specimens having been collected in various parts of Borneo; there is some evidence of a return passage movement up the west coast in mid-April. Breeds on Kinabalu?

1
2
3b
3a
4
6
7
8
9
0"
6"
12"
0
100
mm
200
300
1956

PLATE XII

Page

1. LONG-TAILED PARAKEET 242
Psittacula longicauda longicauda.

2. RED-BREASTED PARAKEET 243
Psittacula alexandri alexandri.

3*a*. MALAY LORIKEET (♂) 244
Loriculus galgulus galgulus.

3*b*. MALAY LORIKEET (♀) 244
Loriculus Galgulus galgulus.

4. BLUE-NAPED PARROT 242
Tanygnathus lucionensis lucionensis.

5*a*. LITTLE MALAY PARROT (♂) 243
Psittinus cyanurus cyanurus.

5*b*. LITTLE MALAY PARROT (♀) 243
Psittinus cyanurus cyanurus.

6. BLUE-THROATED BEE-EATER 308
Merops viridis viridis.

7. BROWN-BREASTED BEE-EATER 309
Merops superciliosus philippinus.

8. RED-BEARDED BEE-EATER 309
Nyctiornis amicta.

9. BROAD-BILLED ROLLER. 310
Eurystomus orientalis orientalis.

DESCRIPTION. 12". Size of Common Cuckoo, and not easily distinguished from it in the hand.

VOICE. I attribute to this species a call heard everywhere on Kinabalu from 4,000 to 7,000 feet, in February-March: a mellow triple hoot, *hoop, hoop-hoop*, with the slightest possible pause after the first "hoop", uttered with the bill closed. I had good views of birds uttering this call, and the pale buff under tail-coverts rule out the possibility of the Lesser Cuckoo being responsible; other points noted were plain grey throat, white belly with transverse bars, orange feet, yellow ring round eye. Other notes associated with pairing are a high-pitched *pic-pic-pic-pic-pic-pic* with a bubbling tone; and a harsh *week-week-week* like a wooden rattle.

FOOD. Caterpillars, ants, fruit.

RACES. (*a*) *C.s. saturatus*; (*b*) *C.s. horsfieldi* Horsfield & Moore 1858. See addenda.

196. LESSER CUCKOO

Cuculus poliocephalus Latham 1790

Widespread in Africa, Asia, and Malaysia.

The nominate race has been collected once in Borneo as a stray from the mainland of Asia, at Long Lellang in the upper Baram; another race is a montane resident, from Kinabalu (where Whitehead found it common from 5,000 to 9,000 feet) to the Poi range and the upper Mahakam—as Harrisson did not observe it in the Kelabit uplands, the distribution may be discontinuous.

DESCRIPTION. 10". See key. About the same size as *C. vagans* but in colour it is a miniature of Blyth's Cuckoo. Female is reddish-brown above heavily barred with black; white below, washed with buff or rufous and barred with black. Immature black, barred with white, more coarsely on the belly.

VOICE. "The note is exactly like that of *Megalaima pulcherrima* and I have often stalked the supposed barbet and shot a cuckoo" (Whitehead). The very distinctive song of the nominate (Himalayan) race has not been reported in Borneo.

NEST AND EGGS. Not described for our area.

RACES. (*a*) *C.p. poliocephalus*; (*b*) *C.p. insulindae* Hartert 1912, is the resident race, distinguished by the rich rufous under tail-coverts, as compared with the pale creamy-buff ones of the nominate race.

[NOTE.—Ussher's specimen of *C. himalayanus* from Labuan, vide Checklist p. 636, line 14, is in fact *C. saturatus* (Sims, *in litt.*)]

KEY TO THE TRUE CUCKOOS

Genera *Cacomantis* and *Chalcites*

These are much smaller birds than *Cuculus*, not exceeding about 8 inches in length, and the colour pattern is different.

1. Upperparts not barred but feathers of mantle bordered with buff, throat streaked, breast barred, abdomen with obsolete bars (immature birds plain underneath except for slight barring on flanks)	*Chalcites basalis*
Underparts heavily barred . . .	2
Underparts without bars	6
2. Upperparts heavily barred with blackish .	3
Upperparts not barred with blackish . .	4
3. Centre tail-feathers black with small rufous notches on the outer edges ; bars on underparts thin lines	*Cacomantis sonnerati*
Centre tail-feathers boldly barred or notched with rufous and black ; bars on underparts much bolder	*Cacomantis merulinus imm.* / *Cacomantis variolosus imm.*
4. Back and wings metallic violet . . .	*Chalcites xanthorhynchus* ♂
Back and wings dull greenish-bronze . .	5
5. Feathers of mantle plain ; forehead largely white ; no chestnut on outer webs of tail-feathers	*Chalcites malayanus*
Little or no white on forehead ; outer webs of all except outer pair of tail-feathers more or less chestnut (narrowly on centre pair) at base	*Chalcites xanthorhynchus* ♀
6. Crown and throat pure grey, distinctly paler than back	*Cacomantis merulinus ad.*
Crown almost concolorous with back ; throat washed with rufous	*Cacomantis variolosus ad.*

197. BANDED BAY CUCKOO PLATE XIII, 5

Cacomantis sonnerati (Latham) 1790

Widespread in S.E. Asia.

A rare bird of uncertain status in our area, represented by a few specimens in museum collections from Sarawak and North Borneo, none from Indonesian Borneo.

DESCRIPTION. 8". See key. Not easily distinguished from immature *C. merulinus* and *C. variolosus* except by the much finer barring. Iris yellow ; feet grey.

VOICE. " It has two calls. One is a quadrisyllabic monotone whistle in a minor key, the notes quick and evenly spaced (for a long

PLATE XIII

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1. MALAYAN HAWK-CUCKOO 247
Cuculus fugax fugax.

2*a*. KOEL (♂) 256
Eudynamis scolopacea malayana.

2*b*. KOEL (♀) 256
Eudynamis scolopacea malayana.

3. LESSER HAWK-CUCKOO 247
Cuculus vagans.

4. PLAINTIVE CUCKOO 253
Cacomantis merulinus threnodes.

5. BANDED BAY CUCKOO 251
Cacomantis sonnerati fasciolatus.

6. VIOLET CUCKOO 254
Chalcites xanthorhynchus xanthorhynchus.

7. MALAYSIAN GREEN CUCKOO 254
Chalcites malayanus aheneus.

8. DRONGO-CUCKOO 255
Surniculus lugubris barussarum.

9. RED-WINGED CRESTED CUCKOO 257
Clamator coromandus.

2b
1
6
5
7
8
9
0" 3" 6"
0 50 mm 100 150
1956

time before I knew it I registered it as the 1, 2, 3, 4 bird). The other is a long rising call, starting with three or four slow notes, followed by three sets of four notes each, uttered more quickly, and climbing up the scale from the first note to the last. Very often the bird starts with this long call and then breaks into the 1, 2, 3, 4 call, which continues for a long time " (Edgar, writing of Malaya). These calls have not yet been noticed in our area.

FOOD. Grasshoppers (Medway).

RACE. *C.s. fasciolatus* (S. Müller) 1843.

198. PLAINTIVE CUCKOO PLATE XIII, 4

Cacomantis merulinus (Scopoli) 1786 *Tiup api* (M, I)

Widespread in S.E. Asia.

An abundant resident throughout the lowlands of Borneo in open country, ascending the hills to about 4,000 feet.

DESCRIPTION. ♂. See key. Announces its presence by its distinctive freely uttered song. Iris crimson; upper mandible black, lower with dark tip and reddish-yellow base; feet yellow, claws black.

VOICE. A visitor to Borneo is unlikely to spend many days in the country before hearing the voice of this bird. It has two distinctive songs (1) the ascending call, *tay-ta-ta-tay, tay-ta-ta-tay, tay-ta-ta-tay*, each phrase higher than the last; often finishing up with (2) the cadence call, *tee-tee-tee-tee-tita-tita-tita-tita-tee*, the first four notes are plaintive, uttered fairly slowly, the next four notes are double ones uttered twice as fast, and the last note is again mournful; the whole forms a cadence down the scale. This bird has been named " Brain-fever Bird " in Malaya, not because it utters the words " Brain-fever " but because the persistence with which the song is uttered is alleged to madden the European.

HABITS. It prefers open cultivated country, gardens, grasslands, and scrub jungle, and is the best known cuckoo in Borneo.

FOOD. Fruit, beetles and other insects.

NEST AND EGGS. It lays its egg in the nest of *Prinia flaviventris*.

RACE. *C.m. threnodes* Cabanis & Heine 1862.

199. FAN-TAILED CUCKOO

Cacomantis variolosus (Vigors & Horsfield) 1827 *Bibit* (M)

Throughout Malaysia and from the Philippines to Australia.

In Borneo the only authentic records are :—two skins in the British Museum ex Verreaux collection from " Borneo " (no indication of collector or locality); one immature specimen in the Tristram collection collected by Everett; one

from Rayoh in N. Borneo (Chasen); and one from the Kelabit uplands four miles below Pa Ramudoh (Harrisson).

DESCRIPTION. Closely resembles the preceding species, and until such time as the song is described it will be almost impossible to distinguish in the field. In the hand, in addition to the features given in the key, it will be seen that the rufous notches on the central tail-feathers are confined to the margin and do not reach almost to the shaft of the feather as in *C. merulinus*. Iris dark, eyeskin very pale yellow; bill black, orange at base below.

FOOD. Hairy caterpillars (Harrisson).

NEST AND EGGS. Not described from our area.

RACE. *C.v. sepulchralis* (S. Müller) 1843.

200. VIOLET CUCKOO PLATE XIII, 6

Chalcites xanthorhynchus (Horsfield) 1821 *Burik enchauit* (I)

Widespread in S.E. Asia, but nowhere common.

Resident and sparingly distributed through the lowlands of Borneo, but seldom seen. Also in the North Natuna Islands.

DESCRIPTION. 6". Sexes differ. The male is a beautiful shining violet-purple, except for the lower breast and belly, which are white barred with black. The female is brown with bronze-green reflections above, much as in the two following species, and finely barred rufous and brown below. Immature resembles female. Iris and eyelid red; bill red at base, rest yellow; feet grey or olive-green.

VOICE. The note is *kievik, kievik* (Whitehead). From time to time utters a succession of not very loud monosyllabic whistles (Banks).

HABITS. Not uncommon in Sarawak gardens, among cultivation, and even the edges of mangroves and on the seashore. Creeps quietly up and down branches, occasionally taking off to catch a fly and returning (Banks). I have seen them on rubber trees, rather silent and sluggish.

FOOD. Eats flies (Motley). Fruit, ants, beetles, and other insects (Medway).

NEST AND EGGS. Not recorded in our area.

RACES. (*a*) *C.x. xanthorhynchus* is the form in the Natunas and on the main island of Borneo; (*b*) *C.x. bangueyensis* Chasen & Kolss 1929 is known only from Banggi Island.

201. MALAYSIAN GREEN CUCKOO PLATE XIII, 7

Chalcites malayanus (Raffles) 1822

Throughout Malaysia, extending to New Guinea and Australia.

Resident and widely distributed in Borneo, but rare; also recorded on the Maratua Islands.

DESCRIPTION. 6". Probably difficult to distinguish from the next species in the field, except perhaps by voice. The barring on the underparts is much coarser than on the female Violet Cuckoo.

VOICE. " The call is a distinctive one . . . it is a four-note whistle, the first note long, the next two short, the fourth sometimes rather longer and drawn-out ; the whole call a melancholy cadence, the notes not quick and regular like one of the calls of *Cacomantis sonnerati* but slow, uneven, and sounding as though uttered with an effort " (Edgar).

HABITS AND NEST. Not recorded for our area.

RACE. *C.m. aheneus* Junge 1938. There is a possibility that a similar but distinct species occurs on Kinabalu, see Checklist.

202. BRONZE CUCKOO

Chalcites basalis (Horsfield) 1821

Breeds in Australia and winters in southern Malaysia.

Recorded as a stray once in the North Natuna Islands and once in S. Borneo.

DESCRIPTION. See key. Very like the preceding species, but has little or no white on forehead, feathers of upperparts narrowly bordered with pale buff, outer webs of tail-feathers except outer pair rufous at base, barring on underparts wider (obsolete on abdomen). Wing c. 105 mm.

203. DRONGO-CUCKOO PLATE XIII, 8

Surniculus lugubris (Horsfield) 1821

Widespread in S.E. Asia.

A common resident throughout the lowland forests of Borneo, and also found in the uplands, its range being co-extensive with that of the drongos on which it is parasitic.

DESCRIPTION. 9". Resembles a drongo, but distinguished by slender bill, square tail, and white markings on primaries, underside of wing, and under tail. Often heard, seldom seen. Immature is spotted with white all over. Iris brown (♂) or yellow (♀) ; bill black ; feet bluish-black, claws horn.

VOICE. It has a distinctive very human song of five or six whistling notes on an ascending scale, ending abruptly ; during the breeding season this may be heard all over the lowland forests. I have seen the same bird follow this song with a curious wheezy version, during which the tail is fanned wide open.

FOOD. A very large spider, caterpillars and other insects (Harrisson). Ants, fruit.

NEST AND EGGS. In other countries it lays its eggs in nests of drongos, but no observations have been made in Borneo. An oviduct egg in a specimen collected by Morrison was white with fine purple splotches.

RACES. (*a*) *S.l. dicruroides* (Hodgson) 1839 has been recorded in the North Natuna Islands, where it is presumably a stray; (*b*) *S.l. minimus* Stuart Baker 1919 is represented by two specimens from Bario and the upper Baram hills; (*c*) *S.l. barussarum* Oberholser 1912 is the common lowland form. The relationship between the last two races is not clear.

204. KOEL PLATE XIII, 2

Eudynamis scolopacea (Linnaeus) 1758
Pontianak manok or *burong landas* (M)

India through Malaysia to Australia.

Two races visit the coastal islands and adjacent mainland of our area in winter, one of them in large numbers, but there is no evidence that they stay to breed here. They occur from third week of September to April (late date 10 April) when they are a striking feature of the bird life on the Turtle Islands near Kuching. No inland records.

DESCRIPTION. 16". Sexes differ. Crimson eye is conspicuous, and in flight the long tail and short, rounded wings are noticeable. Bill pale greenish-white (female darker, with base and ridge of upper mandible horn); feet greyish-blue, claws horn.

VOICE. The common and unmistakable call, repeated all day long and on moonlight nights on the Turtle Islands in the monsoon is a three part rising whistle (Harrisson).

HABITS. On the Turtle Islands they frequent all levels of foliage, moving about rather like squirrels (Harrisson).

FOOD. Figs and berries. Birds on the Turtle Islands are very fat (Harrisson).

NEST AND EGGS. Normally parasitic on crows, which do not breed in the areas frequented by the Koel in Borneo.

RACES. (*a*) *E.s. chinensis* Cabanis & Heine 1862 has been recorded from the Turtle Islands and S. Natunas; (*b*) *E.s. malayana* Cabanis & Heine 1862 is the common race. In the former the markings on the female are white, not tinged with rufous, and the male is smaller, wing under 8 ins. Immature birds cannot be separated.

205. RED-WINGED CRESTED CUCKOO PLATE XIII, 9

Clamator coromandus (Linnaeus) 1766
Mendu jambol (M) ; *Pangkas apai sali* (I)

Breeds in India, Burma, etc., and visits Malaysia in winter.

Probably a regular passage migrant and winter visitor to all parts of Borneo, from the coast to the uplands of the interior.

DESCRIPTION. 15", including a tail of 9". There are white tips to the tail-feathers and the wings appear mostly chestnut in flight, reminding one of a small Coucal. Iris dark brown ; bill black ; feet dark brown or pale blue.

VOICE. Silent in Borneo, so far as we know.

HABITS. I have seen it in primary forest, and also in a Sibu garden, sitting quietly in a bush.

FOOD. Spiders, ants, insects (Sliman).

II. MALCOHAS (subfamily Phaenicophaeinae)

This subfamily is represented in America, Africa, and S.E. Asia. All the species found in our area behave in much the same way ; they seldom fly, and are usually noticed in a thick bush or climber-clad tree, hopping up the branches in corkscrew fashion and manipulating their long tails with dexterity ; rather silent birds, only the shaking of the leaves as they clamber slowly about draws attention to their presence. Common though they are, the nest and eggs of not even one species have been described in Borneo ; according to Delacour, however, they build their own nests in the shape of a flimsy cup.

206. RAFFLES'S MALCOHA PLATE XIV, 1

Phaenicophaeus chlorophaeus (Raffles) 1822
Mendu mengelai (M) ; *Mendu elai tuntong* (I)

(*tuntong* is a type of red, black and white coloration in fighting cocks which this bird's tail resembles.)

Malaya, Sumatra, Borneo.

A common resident throughout the lowlands of Borneo in primary and secondary forest, ascending to 3,000 feet. Also in the North Bornean islands.

DESCRIPTION. 12", the smallest malcoha. Sexes differ, but both have the chestnut mantle peculiar to this species. Iris dark brown, skin round eye pale green ; bill pale green, top of upper mandible at base turquoise-blue ; legs slate-blue, claws brown.

VOICE. " The only note I have heard from them is a quick chirp " (Motley). Davison described the note as a peculiar cat-like mew.

HABITS. Doria noted that they flew about from tree to tree in flocks of four or five, the birds in continuous movement with lowered wings and tail spread like a fan.

FOOD. " They fly in small flocks and generally seem to be employed searching for caterpillars upon the leaves of trees. In all I have killed (a large number) the stomachs were filled with these insects, and with the bodies of lepidoptera " (Motley). Caterpillars, cicadas, crickets, beetles, locustids.

NEST AND EGGS. Not described from our area. A shelled oviduct egg, pure white with a matt surface, was obtained on 26 January (Medway).

RACE. *P.c. fuscigularis* (Baker) 1919.

207. LESSER GREEN-BILLED MALCOHA PLATE XIV, 2

Phaenicophaeus diardi (Lesson) 1830
Mendu beruang (M) ; *mendu elai jugam mit* (I)

Malaya, Sumatra, Borneo.

Resident and common throughout the lowlands in primary and secondary forest, ascending to 3,000 feet.

DESCRIPTION. 13". Dark in colour. Iris pale bluish-white, skin round eye rich crimson ; bill green ; feet dull blue-grey.

HABITS. Those of the malcohas.

FOOD. Beetles, locustids, ants, grasshoppers, caterpillars.

NEST AND EGGS. Not recorded for Borneo.

RACE. *P.d. borneensis* (Salvadori) 1874.

208. RUFOUS-BELLIED MALCOHA PLATE XIV, 3

Phaenicophaeus sumatranus (Raffles) 1822
Mendu beruang (M) ; *mendu elai jugam mit* (I)

Malaya, Sumatra, Borneo.

A common resident throughout the lowlands in primary and secondary forest, and also in the Kelabit uplands. Recorded in the North Natuna Islands.

DESCRIPTION. Similar to the preceding species in size and colour, except that the abdomen is dark rufous-chestnut instead of grey. Iris blue to pale bluish-white, skin round eye reddish-brown ; bill green ; feet dark grey.

VOICE. *Tok-tok* or *chi-chi* (Harrisson).

HABITS. Those of the malcohas.

FOOD. Locustids, praying mantis, stick insects, leaf insects, crickets, grasshoppers, and large hairy caterpillars (Harrisson).

NEST AND EGGS. Not described for our area, but females in laying condition were collected in the Kelabit uplands, October to December.

209. RED-BILLED MALCOHA PLATE XIV, 4

Phaenicophaeus javanicus Horsfield 1821
Mendu bukit (M) ; *mendu elei jugam* (I)

Malaya, Sumatra, Java, Borneo.

Resident and occurs throughout the lowlands in primary and secondary forest, but markedly less common than other malcohas. Seldom seen in the Kelabit uplands but it does occur up to 4,000 feet.

DESCRIPTION. 17". Iris chestnut, eyelid blue, skin round eye deep purplish-blue ; bill vermilion ; feet bluish-grey.

HABITS. Those of other malcohas.

FOOD. Grasshoppers, spiders (Harrisson).

NEST AND EGGS. Nothing recorded for our area.

RACES. (*a*) *P.j. natunensis* (Chasen) 1934 in the North Natunas only ; (*b*) *P.j. pallidus* (Robinson & Kloss) 1921, elsewhere.

210. CHESTNUT-BREASTED MALCOHA PLATE XIV, 5

Phaenicophaeus curvirostris (Shaw & Nodder) 1810
Mendu tengar (M) ; *mendu elai jugam besai* (I)

Widespread in Malaysia.

A common resident throughout the lowlands in primary and secondary forest, and also in the Kelabit uplands. It occurs in the North Bornean islands and in the North Natunas.

DESCRIPTION. 17". Tail-feathers without white tips. Iris (♂) sea-blue or pale bluish-white (♀) yellow ; skin round eye dark scarlet (conspicuous in field) ; bill green but upper mandible round nostrils and basal half of lower mandible crimson (♂) or brown (♀) ; feet dull grey or brown.

VOICE. Motley recorded its note as a harsh chatter, much like that of a magpie. According to Everett, when sitting quietly in a

tree its note is a low *kuk-kuk*, but when it is on the wing these syllables are repeated several times rapidly in a loud tone. I have recorded its note as *kok-kok-kok* . . . at the rate of two per second.

HABITS. Those of the malcohas. As Madoc says, malcohas spend a great deal of their time inside the canopy of small trees, and they may sit motionless for several minutes, probably watching for food ; then there is a movement and a shaking of the leaves—and the observer is never sure whether a bird or a squirrel is going to show itself. Everett also noted a partiality for fields of *lalang* grass ; he adds that the flight is swift and gliding, and if the bird is in an open space it always flies very low. The flight is usually brief however, from one tree to the next.

FOOD. Ants, hairy caterpillars, grasshoppers, beetles, nestlings, small crabs, locustids, cockroaches, stick insects, and (once) an 11" green lizard (Harrisson).

NEST AND EGGS. Not described for our area. Madoc (*Malayan Nature Journal* 1956 : 101–103) has a photograph of two birds at their nest, which was built in the fork of a tree and is described as a thick platform of dead twigs with their leaves attached, and with a small shallow depression for the two white eggs. His article includes many interesting field notes, which refer to the Malayan race (*erythrognathus*) but are probably valid for Borneo.

RACE. *P.c. microrhinus* Berlepsch 1895.

III. COUCALS (subfamily Centropodinae)

These birds are confined to the tropics from Africa to Australia. They are non-parasitic cuckoos of terrestrial habits, living in grasslands and secondary forest. The nest is a bulky ball of grass with the entrance at the side; according to Delacour, both sexes incubate, but the male does most of the work.

211. COMMON COUCAL PLATE XIV, 8

Centropus sinensis (Stephens) 1815 *Bubut* (M), from the call.

Widespread in S.E. Asia.

A common resident throughout Borneo in the lowlands, and in the Kelabit uplands it is common in the few grassland expanses of the area. Recorded in the North Natunas.

DESCRIPTION. 21." Could only be confused with the next species. Iris crimson ; bill black ; feet black, soles dirty-grey.

VOICE. A dull booming call of four or more notes on the same pitch, *boob-boob-boob-boob*. . . . The full call (seldom heard) consists of a run down and up the scale, followed by the previous call prolonged to a dozen or so notes, the whole full-toned and melodious, if somewhat mournful. Harrisson has noted a loud clicking note *titektak, titektak*.

HABITS. It avoids primary forest, frequenting scrub jungle, small tangled patches of forest, and areas of *lalang* grass. Davison noted that they are continually seen prowling about on the mud banks of rivers just above the water's edge. It walks sedately on the ground with its tail carefully lifted, and when disturbed it flies into thick cover with a remarkably slow and leisurely flight, a flap and glide with legs partly hanging. It climbs bushes and trees by hopping from branch to branch, and is fond of basking in the sun on the tops of bushes after rain. It is one of the few birds in Borneo that no native will eat, partly because it has a foul taste, and partly because (with some tribes, *e.g.* Kelabits) it is taboo—related to its great usefulness in killing padi pests (Harrisson).

FOOD. Grasshoppers, centipedes, snails, ants, insects, seeds, berries.

NEST AND EGGS. The nest is usually a ball of *lalang* grass, built close to the ground. Eggs (c/2) taken in March and August in N. Borneo are described by Gibson-Hill as regular ovals in shape, white in colour, smooth and slightly glossy, 29×24 mm.

RACE. *C.s. bubutus* Horsfield 1823.

212. SHORT-TOED COUCAL PLATE XIV, 7

Centropus rectunguis Strickland 1846

Malaya, Sumatra, Borneo.

In our area, it is known from four specimens only, all from Sarawak and Brunei, and is a rare and mysterious bird.

DESCRIPTION. 12". An exact miniature of the Common Coucal, with a much shorter tail (7·5–8·5 as against 12–12·5"). It is called the Short-toed Coucal, because the claw of the inner toe measures 0·5" whereas that of the Common Coucal measures 0·75". The Brunei specimen (from Kota Batu close to Brunei Town) was associating with a Common Coucal when shot.

HABITS AND NEST. Not described from Borneo.

PLATE XIV, 6 **213. LESSER COUCAL** PHOTO PLATE 28

Centropus bengalensis (Gmelin) 1788 *Terkup* (M) ; *entrokok melai* (I)

(*melai* is a tall grass it frequents)

Widespread in S.E. Asia.

A common resident throughout Borneo in open country ; in the Kelabit uplands more numerous than the Common Coucal. Found in the North Natunas.

DESCRIPTION. 13". The wings are a much paler chestnut than those of the two preceding species. In winter the upperparts become brown, striped with buff and reddish-brown, and the underparts buff, spotted with white. Iris dirty white, upper mandible black, dull white at base, lower mandible dull white, horn at tip ; feet and claws bluish-black, soles dirty-white.

VOICE. The call is quite distinct, three or four whoops followed by a high-pitched ringing staccato call, *boob, boob, boob, kok-kok-oo, kok-kok-oo, kok-kok-oo.*

HABITS. " This cuckoo may often be turned up in coarse grass plains within a few yards, when it rises with a slow flapping flight, often soaring long distances, seldom more than a few feet above the grass, and then dropping suddenly out of sight " (Whitehead). Unlike the Common Coucal it does not settle or clamber about in trees, a fact first noted by Motley.

FOOD. Grasshoppers, locustids, crickets, hemiptera and other insects, hairy caterpillars, lizards. The really voracious appetite of this curious bird is illustrated by one female examined by Harrisson, which had in its stomach thirteen large black hemipteran bugs, two large black hairy caterpillars, two large green locusts, a piece of animal (? bird) flesh and some lizard's bones.

NEST AND EGGS. The nest is a ball of grass built close to the ground. In the Kelabit uplands the nest is often found when the rice is harvested in February, and if the eggs are still in the nest at that time the Kelabits regard it as an indication that the season is too late and that the Long-tailed Munias and Red Cuckoo-Doves will arrive in force to eat the padi before the harvest is complete.

RACE. *C.b. javanensis* (Dumont) 1818.

IV. GROUND CUCKOOS (subfamily Neomorphinae)

These birds have their headquarters in the New World, but one genus is found in Malaysia and Indo-China. They live on the ground, as their name implies, but nest and roost in trees.

214. GROUND CUCKOO PLATE XIV, 9

Carpococcyx radiceus (Temminck) 1832 *Kopua* (M); *tocktor* (I)

Sumatra and Borneo.

Resident, but rather rare; it is represented by a fair number of specimens from Indonesian Borneo and Sarawak in museum collections, but there seems to be no record as yet for North Borneo.

DESCRIPTION. 24". The young bird has the throat and underparts pale rufous brown. Iris brown or speckled grey; skin round eye green; bill and feet green.

HABITS. Almost unknown. Diard noted that it escapes danger by running and jumping.

FOOD. Von Berchtold found beetles and other insects in their stomachs.

NEST AND EGGS. Not described from Borneo.

RACE. *C.r. radiceus*.

OWLS: Tytonidae and Strigidae

Owls are found all over the world. They are predacious birds with broad, rounded heads, flattened faces, and large eyes directed forwards, usually surrounded by a more or less distinct facial disc of radiating feathers. Owing to the looseness of the plumage the head generally appears to merge into the body without a perceptible neck, but the latter is really rather long and very mobile, so that the bird, without shifting its position, can follow the movements of the observer, even to the extent of turning its head completely back to front. Nearly all species are more or less nocturnal, though some also hunt regularly by day. The flight is slow, with regular wing-beats, and owing to the soft, loose plumage it is noiseless; the normal gait is a walk, though many species are seldom seen on the ground. When disturbed by day or detected roosting an owl is frequently mobbed by small birds. The feet are powerful and furnished with very strong

curved claws of immense grasping power, as anyone who has handled even a small owl will appreciate. Except when too large the prey is generally swallowed whole instead of being picked to pieces as is usual with the hawks and eagles; indigestible portions are disgorged in the form of pellets. Most owls in Borneo nest in hollow trees, and all lay white eggs without markings. When alarmed or annoyed they make hissing noises or snap their beaks a number of times. The Bay Owl is the only representative of the barn owls (Tytonidae) in Borneo.

215. BAY OWL PLATE XV, 1

Phodilus badius (Horsfield) 1821 *Burong hantu* (M)

Widespread in S.E. Asia.

Resident but uncommon throughout the lowlands and in the Kelabit uplands.

DESCRIPTION. 10". A beautiful bird, resembling the European Barn Owl. Iris dark brown, almost black; bill ivory-white; feet pale yellowish-white, claws pale horn.

VOICE. According to Cairns, the full utterance is *kwankwit-kwankwit-kek-kek-kek*, mostly heard when the bird is flying in total darkness. Motley and Dillwyn recorded a single note, frequently repeated, similar to the first note of the European Tawny Owl. A tame one kept by Shelford used to utter a harsh scream when hungry; a sort of chuckling sound when the food offered was seized, or when tickled behind the ear; and a noise like the loud crack of a whip, when the bird was frightened.

HABITS. It has a curious way of sitting on a branch lengthwise rather than crosswise, somewhat like a frogmouth but with the back more up (Harrisson).

FOOD. Small birds (especially flowerpeckers), rats, hard insects (Harrisson).

NEST AND EGGS. A nest with two eggs was found by Harrisson on 2 December on the Limbang River, at Long Medalam.

RACES. (*a*) *P.b. badius* on the mainland of Borneo; (*b*) *P.b. arixuthus* Oberholser 1932, in the North Natunas only.

216. REDDISH SCOPS OWL PLATE XV, 2

Otus rufescens (Horsfield) 1821

Malaya, Sumatra, Java, Borneo, Banka, Sulu.

Resident and known from specimens in museums from all parts of Borneo, ranging from the lowlands to the top of Mt. Murud.

DESCRIPTION. 7". Small size and uniform tawny-rufous colour, spotted with white above and black below. Iris gold ; bill cream ; feet yellowish.

HABITS. Apparently a bird of primary forest, both lowland and montane, but little is known about it.

NEST AND EGGS. Not recorded from Borneo.

RACE. *O.r. rufescens.*

217. MOUNTAIN SCOPS OWL PLATE XV, 3

Otus spilocephalus (Blyth) 1846

Widespread in S.E. Asia.

A montane resident ranging from Kinabalu (where Whitehead found it in the dark and gloomy forests at 9,000 feet) along the spinal range to Mt. Mulu and Mt. Dulit.

DESCRIPTION. 7–8" (female larger). Like the preceding species, but finely speckled all over with black and buff. Iris yellow ; bill pale cream ; feet pale horn.

VOICE. Whitehead states he never heard it utter a sound. In the Himalayas it utters persistently at night a plaintive double whistle *plew-plew*, with a slight interval between the two notes.

NEST AND EGGS. Not recorded from Borneo.

RACE. *O.s. luciae* (Sharpe) 1888.

218. COMMON SCOPS OWL PLATE XV, 4

Otus scops (Linnaeus) 1758

Distribution almost world-wide.

Known only from Mantanani Island, where Everett collected it in 1891.

DESCRIPTION. 7". This and the two following species differ from the Reddish and Mountain Scops Owls in being brown or reddish (not tawny) in colour and in having bolder markings. The Common Scops Owl has two colour phases, foxy-brown and bright reddish ; it has large white patches on the wings and differs from the next species in having no collar on the hind-neck.

HABITS AND NEST. Not described from Borneo.

RACE. *O.s. mantanensis* (Sharpe) 1892.

219. COLLARED SCOPS OWL PLATE XV, 5

Otus bakkamoena Pennant 1769 *Burong kawok* (M) ; *poak* (I)

Throughout Asia.

A common resident throughout the lowlands of Borneo and the Kelabit uplands. Found in the North Natunas.

DESCRIPTION. 8". Identify by familiar call. It derives its name from a pale collar across the hind-neck. In the hand distinguish from Common Scops Owl by legs being feathered to base of toes. Iris (♂) dull yellow (♀) reddish-brown ; beak horn ; feet and claws horn.

VOICE. The musical mournful call *pwok* or *kwo-oo* (the two syllables run together so that it sounds almost like one note) is commonly heard in towns and villages, but is uttered at rather long intervals. At close quarters a gentle twitter (Harrisson).

HABITS. One flew into my house in Kuching after dark and was unable to find its way out again until all lights in the room were turned off.

FOOD. Mice and munias ; a nestling thrived on fish and green leaves (Harrisson).

NEST AND EGGS. Gibson-Hill described eggs (c/2) taken by Ryves in N. Borneo in January and March as a regular oval, almost spherical in shape, surface smooth and slightly glossy, colour white, 33 × 28 mm. Harrisson found a fledgling just out of the nest in the Kelabit uplands on 16 June.

RACE. *O.b. lemurum* Deignan 1957.

220. RAJAH'S SCOPS OWL PLATE XV, 6

Otus brookei (Sharpe) 1892

Sumatra and Borneo.

In our area known only from the type specimen, collected by Hose near the top of Mt. Dulit.

DESCRIPTION. 9". Resembles the preceding species, and has a well-marked white collar on the hind-neck, but is larger (wing about 6·6 inches), the plumage is dark brown boldly marked with white, and the eyes are yellow, not brown.

VOICE. " Its note is clear, and at first almost startling, but is repeated monotonously with no change of inflection " (Hose).

NEST AND EGGS. Unknown.

RACE. *O.b. brookei.*

221. MALAYSIAN EAGLE-OWL PLATE XV, 8

Bubo sumatrana (Raffles) 1822 *Dogan* (M) ; *menaul buau* (I)

(*buau* is a nocturnal man-eating and pig-hunting spirit or vampire)

Throughout Malaysia.

Resident and sparingly distributed throughout the lowlands of Borneo, ascending the mountains to about 3,000 feet.

DESCRIPTION. 18". The colouring is distinctive. Iris dark brown, eyelid pale lead-blue; beak pale yellow; feet paler yellow than beak, claws black, whitish at base.

VOICE. A call often heard in Niah caves from birds in flight is a loud *Whooa-who*; *whooa-who*, ending with a sort of deep groan which is variable in pitch (Harrisson). A subadult found in jungle near Kuching with an eye injury and kept by Harrisson was silent at first but developed an increasing repertoire of noises as it grew tamer, including (*a*) a clicking sound, apparently made with the tongue; (*b*) a hiss (fear reaction); (*c*) a loud chuckling noise when anyone passed its cage; (*d*) a call *ow-rr ow-rr* if a human was near.

HABITS. Nocturnal. At Niah enters the cave at the last streak of daylight, flying low and fast, and has a marked period of activity around 1 a.m. Harrisson's tame bird went to the ground readily and hopped when there. It often slept in the daytime with one eye shut, and was able to pull its eyelids down separately or both at once. It would peck at intruders, but more in display than in attack, the "peck" being neither vicious nor painful. When it first became aware of a python in a cage twenty feet away it was terrified, and the python had to be shielded from its view.

FOOD. Rodents, snakes, small birds. Harrisson's bird had eaten a young owl when first captured, and expelled a pellet proving this. Most of its eating was done between 8 p.m. and 11 p.m., sometimes in the early hours of the morning, and once at the first light of dawn, but *never* by day even when quite tame—in marked contrast to Fish Owl. Dead rats were eaten whole except for the feet, tail, and some ribs. Java Sparrows were eaten alive or dead, leaving only a few primaries. Raw meat was eaten only if shaped into the form of a bird or rat; raw fish was taken after some preliminary nibbling and testing. Pellets were expelled regularly, usually within twenty-four hours, always by night.

NEST AND EGGS. Kelabit informants say it nests regularly in the Kelabit uplands before the rice is ripe, normally laying two eggs. On 20 February at Pa Main an adult female and a nestling nearly able to fly were taken from a hole in a tree; the other bird of the pair followed the taker to his hut in the rice fields and swooped around by day. It has also nested in an old tree in the heart of Kuching Town, in a hole only five feet from the ground; in February 1955 there were two young. On 4 July 1958 a fully grown nestling was found sixty feet up a tree at Batu Kitang, near Kuching (Harrisson).

RACE. *B.s. strepitans* (Temminck) 1823.

222. MALAYSIAN FISH OWL PLATE XV, 10

Bubo ketupu (Horsfield) 1821

Menaul malam or *Dogan* (M) ; *menaul buntau* (I)

(*buntau* means heavy with lack of sleep)

Indo-China and Malaysia.

A common resident throughout the lowlands of Borneo.

DESCRIPTION. 18". The colouring is distinctive. Iris bright lemon-yellow ; bill dark horn or black, paler at base, yellower at cere ; feet greyish-white, claws dark horn.

VOICE. Motley described its note as a melancholy sound, often repeated, between a trill and a shrill whistle. Harrisson's pet bird, raised from a nestling and kept for several years, uttered no loud call, but responded to words with cooing and chuckling noises ; when excited it swayed laterally to and fro, calling with a low chuckle, and erecting the ear tufts. Usually very calm, it became very alarmed at a red duster, adopted threat posture with head low and forwards, wings fanned up, and hissed like a snake.

HABITS. It frequents open places near padi fields (Whitehead), stream banks in primary forest and casuarina trees on the seashore (Smythies). In November 1952 I saw one fly out of a casuarina tree on the beach at Kuala Belait ; it was 5 p.m., and a Peregrine Falcon attacked it with a low-angle stoop, striking it heavily in the centre of the back. The Fish Owl seemed scarcely to lose height or to feel the blow, although some feathers flew, and went on unconcerned to the next tree, into which it disappeared. Harrisson's pet bird was very fond of bathing, and in fact was semi-aquatic and really at home in the water ; it liked having water poured on its head and back or splashing itself with its wings. It also adored having its back scratched, crouching, chuckling, and wiggling—much like a cat.

FOOD. Fish, frogs, crustaceans, and large waterbugs (Robinson). Harrisson's bird ate mainly raw fish, which it liked to hold under water, even when dead and cut up before eating ; but it also readily ate mice, bats, and munias, leaving little but mice tails and primary feathers. It used its claws to grip and crush food, and cocked its tail up in a very odd way when food-excited. It was very active and keen-sighted by day, and preferred to eat by day rather than by night, in contrast to the Eagle-Owl. It shut eyes when swallowing, tilting the head back. The upland nestling (below) had been fed on beetles and a piece of green vegetable matter.

PLATE XIV

PLATE XIV

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1*a*. RAFFLES'S MALCOHA (♂) 257
Phaenicophaeus chlorophaeus fuscigularis.

1*b*. RAFFLES'S MALCOHA (♀) 257
Phaenicophaeus chlorophaeus fuscigularis.

2. LESSER GREEN-BILLED MALCOHA 258
Phaenicophaeus diardi borneensis.

3. RUFOUS-BELLIED MALCOHA 258
Phaenicophaeus sumatranus.

4. RED-BILLED MALCOHA 259
Phaenicophaeus javanicus pallidus.

5. CHESTNUT-BREASTED MALCOHA 259
Phaenicophaeus curvirostris microrhinus.

6. LESSER COUCAL 262
Centropus bengalensis javanensis.

7. SHORT-TOED COUCAL 261
Centropus rectunguis.

8. COMMON COUCAL 260
Centropus sinensis bubutus.

9. GROUND CUCKOO 263
Carpococcyx radiceus radiceus.

NEST AND EGGS. Harrisson collected a nearly full-grown juvenile from a hole in a tree at Pa Main, Kelabit uplands, on 18 February.

RACE. *B.k. ketupu.*

223. PYGMY OWLET PLATE XV, 11

Glaucidium brodiei (Burton) 1836

Widespread in S.E. Asia.

In Borneo it is a little known montane resident, probably extending all along the spinal chain from Kinabalu to Mt. Liang Kubung, but few specimens have been collected.

DESCRIPTION. 6". Small size and absence of ear tufts distinguish it from the Scops Owls. Lores white, head grey, nape greyish spotted with white, back rufous-brown, tail with rufous bars. Iris yellow; bill yellow, basal half of upper mandible dark slaty-blue at sides.

VOICE. Not described in our area. In Burma it is a rather metallic *tonk-ta-tonk-tonk*, high pitched and repeated at intervals, often heard by day.

HABITS. Often active in the daytime.

FOOD. A specimen collected on Mt. Trus Madi was holding a Grey Drongo it had captured, and its stomach contained grasshoppers, insects and bird flesh (Boys).

NEST AND EGGS. Not described from Borneo.

RACE. *O.b. borneense* Sharpe 1893.

224. HAWK-OWL PLATE XV, 7

Ninox scutulata (Raffles) 1822 *Punggok* (M)

[Probably a general name for any owl with a plaintive note in contrast to screech-owls which are birds of ill-omen (*burong hantu*)—Wilkinson's Dictionary, p. 921.]

Widespread in E. Asia.

One race is resident and widely distributed in Borneo, and in the North Natunas. Another race visits North Borneo and Sarawak in winter in small numbers, especially the offshore islands.

DESCRIPTION. 10". Colour and absence of ear tufts distinctive. Iris bright yellow; lower mandible and ridge of upper mandible light horn, cere greenish, rest of beak black; feet yellow, claws black.

VOICE. According to Everett, the Malay name *punggok* represents the clear loud cry of the bird. Hose states that it makes a melancholy cry at night. This may be the same as its call in Burma *whoo-woop*,

a musical double hoot rising in pitch, repeated several times, but I have never heard the voice of this owl in Borneo.

FOOD. " These small owls are often seen flying about in the early part of the evening, hawking for dragonflies. I have shot them with dragonflies in their claws " (Whitehead). Cicadas, cockroaches, hornets, ichneumons, and beetles (including the huge rhinoceros beetles) (Harrisson).

NEST AND EGGS. Gibson-Hill describes an egg taken in N. Borneo in February as " Shape a regular oval, almost spherical. Surface smooth and slightly glossy. Colour white." 35×32 mm.

RACES. (*a*) *N.s. borneensis* (Bonaparte) 1850, wing under 8", is the resident race ; (*b*) *N.s. burmanica* Hume 1876, wing over 8", is a winter visitor.

225. MALAYSIAN WOOD OWL PLATE XV, 9

Strix leptogrammica Temminck 1831

Widespread in S.E. Asia.

Resident in primary forest throughout Borneo in the lowlands. Whitehead did not find it on Kinabalu, nor any of the highlands visited by him, but according to Harrisson in the Kelabit uplands it is probably a regular breeder in small numbers, though difficult to detect.

DESCRIPTION. 16". The colouring is distinctive. Iris dark brown (Robinson) ; bill black horn ; legs pale blue.

VOICE. A deep *boo-boo* is attributed by Kelabits to this bird (Harrisson).

FOOD. Grubs (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *S.l. vaga* Mayr 1938, duller and larger, is the form in N. Borneo ; (*b*) *S.l. leptogrammica* south of the range of *vaga* ; birds from Mt. Dulit are said to be intermediate.

226. SHORT-EARED OWL

Asio flammeus (Pontoppidan) 1763

Distribution world-wide ; occurs in S.E. Asia as a winter visitor.

A stray in Borneo, where a single specimen was collected at Kuching on 17 November 1910.

DESCRIPTION. 15". Terrestrial and largely diurnal habits and long wings distinguish it in the field. It appears light tawny with dark bars all over except on the thighs, which are rich tawny. The short ear-tufts from which it derives its name are inconspicuous in the field.

RACE. *A.f. flammeus.*

PLATE XV

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1. BAY OWL 264
Phodilus badius badius.

2. REDDISH SCOPS OWL 264
Otus rufescens rufescens.

3. MOUNTAIN SCOPS OWL 265
Otus spilocephalus luciae.

4. COMMON SCOPS OWL 265
Otus scops mantanensis.

5. COLLARED SCOPS OWL 265
Otus bakkamoena lemurum.

6. RAJAH'S SCOPS OWL 266
Otus brookei brookei.

7. HAWK-OWL 270
Ninox scutulata borneensis.

8. MALAYSIAN EAGLE-OWL 266
Bubo sumatrana strepitans.

9. MALAYSIAN WOOD OWL 271
Strix leptogrammica leptogrammica.

10. MALAYSIAN FISH OWL 268
Bubo ketupu ketupu.

11. PYGMY OWLET 270
Glaucidium brodiei borneense.

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1956

FROGMOUTHS: Podargidae
Timbok (M); tungguk (I)

These birds derive their name from their very wide bills. The family is confined to S.E. Asia, Malaysia, and the Australasian region, and is believed to be distantly related to the nightjars, but there are marked differences in habits. Firstly, frogmouths seem to be incapable of making any sound; no call-note has ever been reliably reported, and I have seen a live bird held in the hand which opened its beak widely but failed to make any sort of noise. Secondly, they do not fly about at dusk hawking for insects but obtain their food by picking insects off branches or off the ground (Shelford is the only naturalist who claims to have seen frogmouths—Blyth's—hawking insects, but it seems probable that he was looking at nightjars). Being both silent and nocturnal they are exceedingly difficult birds to study.

KEY TO THE FROGMOUTHS — *Batrachostomus*

1.	Very large, wing 260–280 mm.	*auritus*
	Large, wing 220–250 mm.	*harterti*
	Medium, wing 131–143 mm.	*javensis cornutus*
	Very small, wing under 116 mm.	*affinis*
	Small, wing 116–130 mm.	2
2.	Palawan and Banggi Islands only	*javensis chaseni*
	Generally distributed	3
3.	Tail without pale cross-bars	*poliolophus mixtus*
	Tail with cross-bars	*stellatus*

227. LARGE FROGMOUTH — PLATE XVI, 1

Batrachostomus auritus (Gray) 1829
Tertala besar (M); *burong pama* (I)

(*pama* is a kind of frog)

Malaya, Sumatra, Borneo.

Resident. It has been collected in most parts of Borneo and in the North Natunas.

DESCRIPTION. 17". See key. Iris white or brown, eyelids heavy, protruding, orange; large patch on ridge of upper mandible at base and rim of lower mandible yellow; rest of bill reddish-brown, gape yellow; feet yellowish, claws black.

HABITS. Frequents both primary and secondary forest.

FOOD. Cicadas (Banks), grasshoppers.

NEST AND EGGS. In his posthumous book Shelford describes the nest, with a photograph of the nest and egg, as follows : " The nest is a curious structure being a thick circular pad of fine down closely matted together and firmly attached to the slender branch of some shrub or small tree ; a single egg is laid. . . . It is difficult to understand how the egg is kept in position ; the slightest oscillation of the branch on which the nest is made would suffice to throw the egg to the ground, if the mother-bird were not incubating it. . . . She rests in the characteristic nightjar attitude along and not across the branch bearing the nest." Mr. R. Dolbey of the Labu Estate, Brunei, informed me that he collected a nest off the branch of a shrub four feet from the ground in secondary forest, and presented it to the British Museum in 1925. According to Delacour, the male incubates by day, the female by night.

228. DULIT FROGMOUTH PLATE XVI, 2

Batrachostomus harterti Sharpe 1892

Confined to Borneo. A submontane resident of which seven specimens are known, from Mt. Dulit, Usun Apau Plateau, Kelabit uplands, and Mt. Liang Kubung, ranging from 1,000 to 4,000 feet. An eighth specimen in the Sarawak Museum resembles *harterti* in colour but *auritus* in size (wing 165 mm.) and presents a problem.

DESCRIPTION. 13–14". See key. In colour it is purple-brown, whereas *auritus* is ashy-brown.

HABITS. The type specimen was collected on Mt. Dulit at 2,000 feet " in a small jungle hut into which it had flown in the dusk evidently attracted by the light " (Hose).

NEST AND EGGS. Unknown.

PLATE XVI, 3

229. GOULD'S FROGMOUTH PHOTO PLATE 29

Batrachostomus stellatus (Gould) 1837

Malaysia except Java.

Resident throughout Borneo in the lowlands in primary forest ; also occurs on Mt. Ranai, North Natunas.

DESCRIPTION. 8½". See key. Stresemann gives for Bornean specimens wing 116–129 mm., tail 113–121 mm. Sexes alike but dimorphic. In the more usual phase the upperparts are rather bright rusty, resembling the female of *B. poliolophus mixtus*, but in the rare phase the upperparts are dark rufous-brown. Feathers of abdomen creamy-white with narrow reddish-brown margins,

whereas in *B. javensis* there is a narrow black margin round the white patches on breast and abdomen. Iris (♂) golden (♀) dark brown with pale flecks and eyelids pale yellow ; bill brown ; feet (♂) pinkish (♀) very pale yellow, claws horn.

FOOD. Locustids (Harrisson).

NEST AND EGGS. The nest illustrated in the photographs was right beside a footpath running through primary forest near the Sungei Buloh leper settlement, Malaya, and was about four feet off the ground. A female collected on 30 April 1951 in the Usun Apau area contained an egg almost ready to lay (Harrisson).

RACE. None recognized.

230. PALE-HEADED FROGMOUTH PLATE XVI, 6

Batrachostomus poliolophus Hartert 1892

Sumatra and Borneo.

A submontane resident, a few specimens of which have been obtained in various parts of Borneo, but mostly on Mt. Dulit and in the Kelabit uplands.

DESCRIPTION. 8". Wing 122–130 mm. Sexes differ. The male is finely vermiculated on the upperparts with black on a greyish-brown background, and closely resembles one colour phase of *B. javensis cornutus*, but differs in having the underparts almost as thickly vermiculated on a whitish ground as the upperparts. The female is reddish-brown, very like *B. stellatus* but with a shorter tail (95, 110 mm. Stresemann) lacking pale crossbars.

FOOD. Crickets, small beetles and small orthoptera.

RACE. *B.p. mixtus* Sharpe 1892.

231. JAVAN FROGMOUTH PLATE XVI, 4

Batrachostomus javensis (Horsfield) 1821 *Tertala kechil* (M)

Sumatra, Java, Borneo, Palawan, Tenasserim.

Resident, and perhaps the commonest of the small frogmouths, specimens having been collected in all parts of Borneo.

DESCRIPTION. 9½". See key. Sexes differ, the male being usually dark grey and the female usually reddish-brown, both with white markings, but both sexes are polymorphic. Iris yellow ; upper mandible dark horn, lower pale greenish ; feet pale brown.

HABITS. It seems to live in secondary forest near towns and villages ; once in Sarikei and once in Kuching it flew at night into Morrison's house (see also Dulit Frogmouth). Motley wrote : " I

have once or twice seen it, evidently asleep, on a low branch in the low dark thickets about Martapura, and each time with the huge mouth wide open."

NEST AND EGGS. According to Coomans de Ruiter (1931 : 21–24) in S.W. Borneo it prefers to nest in secondary forest on the edge of primary forest. It chooses a horizontal branch, preferably somewhat rotten, so that the bits of bark sticking up here and there and the many cracks afford suitable points of attachment for the nest material. This consists chiefly of down, moss and small bits of bark, and the firmness of the nest leaves much to be desired. The cup is only 10 mm. deep and contains a single elliptical white egg. The nest is more or less circular, 70 mm. diameter . . . the bird sits perfectly still on the approach of a man and is very difficult to see.

RACES. (*a*) *B.j. chaseni* Stresemann 1937 (wing 124 mm. tail 112 mm.) is a small race known in our area only from Banggi Island ; (*b*) *B.j. cornutus* (Temminck) 1823 (wing 131–143 mm. tail 120–136 mm.) is a larger form on the mainland of Borneo.

232. BLYTH'S FROGMOUTH PLATE XVI, 5

Batrachostomus affinis Blyth 1847

Malaysia except Java.

Resident in Borneo, but only six specimens have been collected (Kapuas River, Mt. Dulit, Marudi, Darvel Bay, Banggi Island, and one in Bogor Museum without locality).

DESCRIPTION. 7½". See key. Sexes differ, resembling corresponding sex of preceding species in colour.

HABITS. Unknown.

NEST AND EGGS. Not described from Borneo. Stuart Baker gives a description in his *Nidification of Indian Birds* 1934, III : 494.

NIGHTJARS : Caprimulgidae

This family is represented in most parts of the world. A typical nightjar is a bird with rather long wings and tail, usually seen as dusk turns into darkness hawking insects in open spaces near trees. The flight is easy, silent and wheeling, with sudden twists and zigzags in pursuit of insects, and with deliberate wing-beats varied by gliding and floating on extended wings. It is nocturnal in habits, spending

the day resting quietly on the ground with eyes almost, but not quite, closed. It normally perches lengthwise on a branch, resting on its breast, and only exceptionally perches across it in the normal manner. The various species resemble each other rather closely in plumage, and the observer seldom gets a chance to study them in a good light. Call-notes are the best guide to identity, but for birds in the hand the following key may be useful :

KEY TO THE NIGHTJARS

1.	No bristles at gape. No white or buff spots on wings or tail	*Eurostopodus*
	Strong bristles at gape ; white or buff spots on wings or tail, or both	2
2.	No white on wings	*C. concretus*
	White spots on wings	3
3.	Small. Wing under 6·5 inches.	*C. affinis*
	Larger. Wing over 7·5 inches	4
4.	Two outer pairs of tail feathers with buff or white tips .	*C. macrurus*
	Either no pale tips to tail-feathers (♀) or four outer pairs of feathers with a subterminal white band (♂) .	*C. indicus*

233. MALAYSIAN EARED NIGHTJAR PLATE XVI, 7

Eurostopodus temminckí (Gould) 1838 *Tok tadau* (M)

Malaya, Sumatra, Borneo, Banka.

Apparently not recorded from North Borneo but perhaps overlooked. Resident elsewhere in Borneo from the coast to the Kelabit uplands, and quite common.

DESCRIPTION. 11". See key. Distinctive call-note is best clue to identity. Iris dark brown ; bill pale horn, black at tip ; feet very dark brown, claws black.

VOICE. The beautiful three-note whistle, *tok tadau*, is usually uttered on the wing at dusk and dawn only, not through the night.

HABITS. Typically seen at dusk and dawn in pairs or small parties of four to six birds hawking insects over water at tree-top height, usually along rivers or estuaries in primary forest. I have also heard it regularly over the area behind the Astana in Kuching, where however it is outnumbered by the next species. It is a higher and stronger flyer. Whitehead describes it perfectly : " This species has a very peculiar habit of flying high in the heavens just as the last

rays of the setting sun are fading away, with wings held well above the body, uttering a pretty whistling note *Teta bow, teta bow*. This nightjar may be seen by the dozen exactly at 6.10 p.m. So well timed was their flight that I could set my watch by them. After ten minutes' flight the bird comes to the earth, and may be seen flitting over the ricefields, now and then soaring up after some insect, often settling on some dead branch or post, where its pretty note becomes changed to a frog-like croak. A few minutes before sunrise the bird takes another flight high in the sky, and *teta bow* may be heard for a few minutes, when it drops to the earth, on which it rests, remaining silent and sleepy during the heat of the day until a few minutes past 6 p.m."

FOOD. Beetles and other insects (Harrisson).

NEST AND EGGS. On 9 February 1956 one was collected at Long Akah, upper Baram, sitting on one egg on the ground.

PLATE XVI, 10 **234. LONG-TAILED NIGHTJAR** PHOTO PLATE 30

Caprimulgus macrurus Horsfield 1821
Burong tukang kayu or *Tok tok* (M), from the call.

India to New Guinea and N. Australia.

A common resident throughout the lowlands of Borneo in open country, and a familiar garden bird. It has been collected at Bundu Tuhan, 3,900 feet, on Kinabalu, which is probably its altitude limit.

DESCRIPTION. 11". See key. Familiar note is best clue to identity. Iris dark brown ; bill black ; feet dark brown.

VOICE. Everyone in Borneo is familiar with the call of the " tok tok " bird. It is a rich note, deliberate and loud, repeated very steadily at the rate of about fifteen " toks " in ten seconds. A dozen or two " toks " are usually uttered at a time—the record is probably held by a bird reported in the *Malayan Nature Journal* by Evans with a run of 1,174 " toks " at the rate of four per second. A purring note, three per second or sometimes slower, is often uttered as a warming-up note before breaking into the *tok tok* note. It may be heard calling in almost every month of the year, but is most in evidence during the breeding season, February to May, when it often calls for long periods at night, in addition to the usual half-hour at dusk and dawn. I have seen birds calling on the wing, but more usually the bird calls from a perch on a post or low tree ; all

the time the bird is calling it is moving its head and keeping a sharp look-out for insects, every now and then taking a short flight, when the white tips to the two outer tail-feathers and the white spots on the wings become conspicuous.

HABITS. They like sitting in the middle of the road at night, where their eyes glow like red-hot coals in the glare of the headlights, and where they get squashed only too frequently.

FOOD. Grasshoppers, cockchafers, scarabs, other beetles and insects (Harrisson).

NEST AND EGGS. The eggs are laid on the bare ground, no attempt being made to construct a nest. It cannot resist well-kept lawns, and for this reason almost every district officer's compound in Sarawak can boast at least one breeding pair. " It generally nests in open places, and I have seen a nest on the seashore under the shelter of a tree just above high-water mark. The eggs, two in number, are a pale creamy-yellow with a slight pinkish tinge, blotched all over with pale grey and less so with pale brown. None of the spots or blotches are distinct " (Whitehead). About 32×23 mm.

RACE. *C.m. salvadori* Sharpe 1875.

235. MIGRATORY NIGHTJAR

Caprimulgus indicus Latham 1790

Breeds in E. Siberia and Japan, wintering in S.E. Asia.

Winter visitor. Although there are a few specimens in museums taken in the lowlands in all parts of Borneo, it is perhaps more regular in the uplands. It has been taken at sea off the Natunas.

DESCRIPTION. 11". See key. Very close to the preceding species in general appearance. One small difference is that the bristles at the gape are all black in *indicus*, but white at the base in *macrurus*. Sexes differ. The patches on the first four primaries are white in the male, rufous-brown in the female, and the four outer pairs of tail-feathers have a subterminal white band in the male, but not in the female.

VOICE. The note has not been described in Borneo. The form wintering in Burma has a distinctive note, *tuck-tuck-tuck* . . . at a steady, even, but very rapid pace, five per second.

HABITS. At Bario in 1947 Harrisson built a separate hut to be able to work at night outside the longhouse uproar. During the winter months sometimes as many as five of these nightjars at one

time would feed, mostly before midnight, under the eaves upon the insects attracted by his bright petrol light. They never entered, but made a most distracting noise by fluttering against the leaf thatch and bamboo walls with their wings.

FOOD. Flying ants, grasshoppers, locustids, cockchafers, small wasps, termites, and other insects (Harrisson).

RACE. *C.i. jotaka* Temminck & Schlegel 1847.

236. SAVANNA NIGHTJAR PLATE XVI, 8

Caprimulgus affinis Horsfield 1821

Widespread in S.E. Asia.

Resident in S. Borneo, where Motley reported it to be an exceedingly common bird on the bare and stony hills round Bandjarmasin.

DESCRIPTION. 8". See key. A pale sandy-coloured bird without prominent spots or bars but finely vermiculated. Sexes differ. Only the male has a white patch on the outer pair of tail-feathers. Both have white patches on the four outer primaries.

HABITS. "In the evening some hundred may be seen on the wing about my house, sweeping in wide circles, and constantly repeating a shrill chirp, which may be heard, when there is moonlight, throughout the night. It sits during the day among stones, not rising till nearly trodden upon. In the evening . . . they often perch on prominent objects, such as the poles of the fences and the carved pieces of wood with which the Malays ornament their roofs, but this I have never seen them do in the daytime" (Motley).

NEST AND EGGS. "The eggs are laid without nest among bare stones, and are, as well as the young, like those of our English species; the mother too employs the same arts to tempt the intruders away from her treasures" (Motley).

RACE. *C.a. affinis.*

237. BONAPARTE'S NIGHTJAR PLATE XVI, 9

Caprimulgus concretus Bonaparte 1850

Sumatra, Borneo, Billiton.

Resident. There are a few specimens in Museum collections from a number of localities in Borneo, including several taken recently within six miles of Kuching, but very little is known about the bird.

DESCRIPTION. 8". See key. Small size and rich brown colour distinguish it. Iris dark; bill brown; feet pale brown.

VOICE. Unknown.

HABITS AND NEST. Unknown.

RACE. *C.c. concretus.*

1
2
3
4
5
6
7
8
9
10
0"
3"
6"
0
50
mm
100
150
1956

PLATE XVI

Page

1. LARGE FROGMOUTH 273
Batrachostomus auritus.

2. DULIT FROGMOUTH 274
Batrachostomus harterti

3. GOULD'S FROGMOUTH 274
Batrachostomus stellatus.

4. JAVAN FROGMOUTH 275
Batrachostomus javensis chaseni.

5. BLYTH'S FROGMOUTH 276
Batrachostomus affinis.

6. PALE-HEADED FROGMOUTH 275
Batrachostomus poliolophus mixtus.

7. MALAYSIAN EARED NIGHTJAR. 277
Eurostopodus temminckí.

8. SAVANNA NIGHTJAR 280
Caprimulgus affinis affinis.

9. BONAPARTE'S NIGHTJAR 280
Caprimulgus concretus concretus.

10. LONG-TAILED NIGHTJAR 278
Caprimulgus macrurus salvadori.

SWIFTS : Apodidae

The names *layang* (M) and *lelayang* (I) apply to both swifts and swallows.

Though somewhat resembling swallows in outline, the swifts are very different in structure and are excluded from the great order of perching birds (Passeriformes). The true swifts, unlike the tree swifts of the next family and the swallows, *never perch* on trees or overhead wires, but rest by clinging to buildings, rocks, or cave walls. The name swift was given to the European species because it flies at a tremendous pace, but in our area we have both large and small members of the family. The comparatively enormous Spinetailed Swift is probably the fastest bird in the world. The small swiftlets lack the breath-taking speed of the large swifts and fly less directly, tilting now to one side and now to another with frequent changes of direction. Whether large or small, however, swifts in flight can be recognized by long narrow wings curved backwards, a succession of rapid wing-beats alternating with glides on extended wings, never with the wings partially closed like a swallow.

Cave Swiftlets (*Collocalia*)

The Indo-Australian region is the centre of abundance of these small swifts, and they are common and widely distributed in Borneo. They fly over all types of habitat. Some nest in caves, and possess the remarkable ability of finding, not merely their way, but their own individual nest amongst hundreds of others in *total darkness*. The documentary film, *Birds' Nest Soup* by Tom Harrisson and Hugh Gibb, which won a Grand Prix at the international film festival at Cannes in 1958, will have made these swiftlets familiar to a wider public. A secretion of the salivary glands is used by many birds as a cement in the construction of their nests, but only some of the swiftlets make their nests largely or wholly of saliva. Marshall and Foley (1956) have recently confirmed that the salivary glands of these swiftlets are enormously enlarged in the breeding season. Soup made from these nests is believed by the Chinese to act as an aphrodisiac and this accounts for the large demand and high prices. Commercially the nests are classified as ' white ', ' black ', and ' mossy ', the last category being valueless ; white nests are about twenty-five times as valuable as black.

KEY TO THE SWIFTLETS (Medway) *Collocalia*

1. Belly white, rest of plumage glossy black . . . *esculenta*
   Belly concolorous with breast, plumage very slightly glossy 2
2. Tarsus with two distinct rows of feathers, one outside, one inside, the leg ; wing rarely under 129 mm. . . . *maxima*
   Tarsus very slightly feathered or naked 3
3. Rump strikingly pale, almost white ; wing (in Borneo) 110–120 mm. . . . . *francica*
   Undisturbed plumage of rump concolorous with back . 4
4. Feathers of back dark to their bases ; wing 119–129 mm. . *fuciphaga*
   White bases to feathers of back exposed if plumage parted or ruffled ; wing 114–119 mm. . . . . *vestita*

[See also forthcoming paper in *S.M.J.* by Sims.]

238. LOW'S SWIFTLET PLATE XVII, 1

Collocalia maxima Hume 1878

Tenasserim, Peninsular Thailand, Malaya, Sumatra, Java, Borneo.

A bird of limestone caves, and the commonest swiftlet in Borneo.

DESCRIPTION. See key. This is the largest of the swiftlets (except for the rare *C. gigas*) and has a relatively short tail, which is nearly square or only slightly forked. Tarsus densely feathered.

NEST AND EGGS. " The nest is usually $2\frac{3}{4}$" long, $1\frac{1}{2}$–2" wide, and $\frac{1}{4}$" deep, made of whitish hardened saliva mixed with the bird's feathers. It is half-saucer shaped, the flat side against the cave wall, buttressed at the side with two thickened, adhesive feet, which are the main support of the nest, containing only one egg at a time " (Banks).

The construction of a nest takes over two months on the average (minimum forty days) ; the incubation period is twenty-eight days ; the fledging period two months. The rearing of a single brood therefore takes five to six months. The nests are heavily infested with parasites, including bugs, and the larvae of a moth which eat through the nest material and often cause it to fall to the ground (Medway).

RACES. (*a*) *C.m. lowi* (Sharpe) 1879, wing 125–140 mm., over most of our area ; (*b*) *C.m. tichelmani* Stresemann 1926, wing 120–129 mm., rump averaging somewhat paler, in S.E. Borneo.

[GIANT SWIFTLET, *Collocalia gigas* Hartert & Butler 1901 is known from about four specimens only—from Malaya, Sumatra, and Java. Large swiftlets that might possibly have been this species have been seen by Morrison on top of Mt. Sepali 3,191 feet, Kanowit district in May 1952 ; and by Harrisson near Santubong in August 1956. It is uniformly dark in colour and much larger than any other species, wing 157–162 mm.]

PLATE XVII

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1. LOW'S SWIFTLET *Collocalia maxima lowi.*	283
2. MALAYSIAN SPINETAILED SWIFT *Chaetura gigantea gigantea.*	287
3. WHITE-BELLIED SWIFTLET *Collocalia esculenta cyanoptila.*	286
4. HOUSE SWIFT *Apus affinis subfurcatus.*	289
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8. WHITE-WHISKERED TREE SWIFT *Hemiprocne comata comata.*	292
9. PACIFIC SWALLOW *Hirundo tahitica abbotti.*	351

1
2
3
4
5
6
7
8
9
0"
3"
6"
0
50 mm 100
150
1957

239. THUNBERG'S SWIFTLET

Collocalia fuciphaga (Thunberg) 1821

India, China, Indo-China, and Malaysia (Delacour).

Resident in Sarawak, North Borneo, and the Natunas.

DESCRIPTION. See key. Probably indistinguishable from *vestita* on the wing. Banks (1949 : 12) first drew attention to the fact that " white-nest " swiftlets were making mossy nests in parts of Sarawak, and Harrisson (1950 : 329) further discussed the phenomenon. Medway later made a careful study of the problem and determined the bird's true identity. (*S.M.J.* 1958, 12 : 682–689).

NEST AND EGGS. It makes a mossy nest, differing from the mossy nest of *esculenta* in that it is rounder, softer, and mossier. Such nests have been found in Niah cave, also in caves in the Bintulu district, in the Serian district, in the Bau district, and in the Baram caves with *vestita*.

RACE. *C. f. natunae* Stresemann 1930.

240. GREY-RUMPED SWIFTLET

Collocalia francica (Gmelin) 1789

Widespread in S.E. Asia, extending to the Marianas.

A seaside bird, found in suitable localities round the coast of Borneo, *e.g.* Satang and Laki Islands near Kuching, Mantanani Island, Berhala Island near Sandakan, nesting in the crevices of sandstone cliffs.

DESCRIPTION. See key. Tarsus without feathers. The small size and relatively long deeply forked tail are helpful museum characters : wing 113–121 mm., tail shortest feather 43–46 mm., longest 50–53 mm., difference in one bird usually 5 to 7 mm. (from Stresemann 1931).

FOOD. Hawks for tiny insects at dusk and dawn over the beach and fringing coconuts (Harrisson).

NEST AND EGGS. The bird makes a valuable " white " nest. This is usually pure saliva, but occasionally includes strands of green vegetable matter, hence the fable that the nest is made of saliva and seaweed. The material of the nest is softer and less tightly meshed than that of the white nests of other species (Harrisson). The colonies are, however, small because the crevices of the sandstone cliffs do not provide the extensive nesting facilities of the limestone caves used by *vestita* ; the nests, though of good quality,

are therefore only available in small quantities. Two eggs are normally laid.

RACES. (*a*) *C.f. germani* Oustalet 1876 in Sarawak and N. Borneo ; (*b*) *C.f. perplexa* Riley 1927 in the Maratuas only.

241. BROWN-RUMPED SWIFTLET

Collocalia vestita (Lesson) 1843

Malaysia and the Philippines.

Lives in caves, notably the Gomanton caves near Sandakan and the caves near Long Lama, upper Baram.

DESCRIPTION. See key. A uniform dark colour like *maxima* but noticeably smaller in flight (Banks). Tarsus more or less feathered, rarely quite devoid of feathers. Tail much as in *C.f. germani* but upperparts and underparts darker and with more bluish, less greenish gloss. Rump same colour as back.

NEST AND EGGS. This species is the most important maker of the valuable " white " nests in Borneo. " The nests vary in appearance and quality according to which batch they belong but not to the extent believed by some natives. The first " white " nests are thick and much tinged with red. The second nest is of a better quality ; it is thinner and whiter. The third nest is smaller, very thin and much stained with red. The red stain is chiefly noticeable at the base of the nest where it is attached to the wall. . . . the commercially ideal nest is very white, entirely free from feathers and unstained " (Chasen, writing of Gomanton). Two eggs are normally laid.

RACES. (*a*) *C.v. vestita*, in the Natunas ; (*b*) *C.v. maratua* Riley 1927, smaller (wing 113–116 mm.) in the Maratuas ; (*c*) *C.v. mearnsi* Oberholser 1912, wing 115–127 mm., elsewhere.

PLATE XVII, 3 **242. WHITE-BELLIED SWIFTLET** PHOTO PLATE 31

Collocalia esculenta (Linnaeus) 1758 *Layang lumut* (M)

From the Andamans and Mergui Archipelago through Malaysia to New Caledonia. Widely distributed in Borneo from the coast to the Kelabit uplands.

DESCRIPTION. See key. The smallest and most distinctive of the swiftlets.

NEST AND EGGS. " Wherever I have met *esculenta* nesting, it has done so near the mouth of a cave or shelter with some trace of daylight

(often bright). The nest is, in my experience, a pendulant cup of fairly hard and/or fibrous moss, lichen, tree fern, etc., with distinctly marked hinges mainly of saliva at each side of the appendage" (Harrisson). "The nests may be found almost anywhere, houses, roofs, drain-pipes, caves that other species do not use, and the better-lit parts of other caves" (Banks). A small colony of six nests at Cape Paku in the Bako National Park were made of grass stems. I have also seen nests collected by Medway which were made of a vegetable substance like stiff black hairs. Though loosely called "mossy" nests, moss is only one of many materials used. The nests are useless commercially. Two oblong eggs are normally laid, about 18×12 mm.

RACES. (*a*) *C.e. dodgei* Richmond 1905, in Borneo; (*b*) *C.e. cyanoptila* Oberholser 1906, in the North Natunas.

243. MALAYSIAN SPINETAILED SWIFT PLATE XVII, 2

Chaetura gigantea (Temminck) 1825 *Layang rangkang* (I)

India to Java and Celebes.

Resident in Borneo in small numbers.

DESCRIPTION. 8½". A large blackish swift with white under tail-coverts (not very conspicuous in the field).

VOICE. Its voice is recorded by Bromley (*Malay Nature Journal* III, 3: 153) as a rather brittle squeak *chirrwiet*, uttered two or three times. Also a single thin squeak *chiek*.

HABITS. Usually seen hurtling through the air in small parties with a loud swish of wings, the individuals following one another at intervals. At other times it hawks insects over some ridge-top, taking advantage of the rising currents of air to remain almost motionless in one spot or moving back and forth along the ridge in a wide circuit. I have seen a party of twenty circling high in the air over Ranau in a thirty-knot wind. When hawking over water it circles lower and lower until it is able to dip down at one point in the arc and brush the surface, apparently with its beak; when swooping down to the water a drumming sound of three or four beats is often heard.

NEST AND EGGS. Not described from Borneo. In Assam it was reported by Stuart Baker to nest in hollow trees. In Malaya a nest was found by Allen beside a waterfall, the spray from which fell on the sitting bird.

RACE. *C.g. gigantea.*

PLATE XVIII

Page

1*a*. DIARD'S TROGON (♂) 294
Harpactes diardi diardi.

1*b*. DIARD'S TROGON (♀) 294
Harpactes diardi diardi.

2*a*. SCARLET-RUMPED TROGON (♂) 295
Harpactes duvauceli.

2*b*. SCARLET-RUMPED TROGON (♀) 295
Harpactes duvauceli.

3*a*. RED-NAPED TROGON (♂) 294
Harpactes kasumba impavidus.

3*b*. RED-NAPED TROGON (♀) 294
Harpactes kasumba impavidus.

4*a*. WHITEHEAD'S TROGON (♂) 295
Harpactes whiteheadi.

4*b*. WHITEHEAD'S TROGON (♀) 295
Harpactes whiteheadi.

5*a*. ORANGE-BREASTED TROGON (♂) 296
Harpactes oreskios dulitensis.

5*b*. ORANGE-BREASTED TROGON (♀) 296
Harpactes oreskios dulitensis.

6*a*. CINNAMON-RUMPED TROGON (♂) 296
Harpactes orrhophaeus viduus.

6*b*. CINNAMON-RUMPED TROGON (♀) 296
Harpactes orrhophaeus viduus.

1a
1b
2a
2b
3a
3b
4a
4b
5a
5b
6a
6b
0"
3"
6"
0
50
mm
100
150
1956

243a. WHITE-THROATED SPINETAILED SWIFT

Chaetura caudacuta (Latham) 1801

The nominate race breeds in E. Siberia and Japan, and migrates thence through Malaysia to Australia and Tasmania. Its normal route probably lies east of Borneo, but on 19 April 1957 I saw three birds flying round the top of Sagan Hill in Limbang district which were probably returning north. Other races occur in Malaya, Sumatra, Java.

DESCRIPTION. 7½". In flight they resemble the preceding species in size and pace, but are strikingly handsome birds with white forehead, chin and throat, contrasting with gun-metal blue wings and tail; seen from above a striking feature is the white centre of the back shading off into brown.

HABITS. The birds seen by me flew round and over the top of the hill for twenty minutes or more at mid-day, in much the same manner as the preceding species will often do.

RACE. *C.c. caudacuta*.

244. WHITE-RUMPED SPINETAILED SWIFT

PLATE XVII, 6

Chaetura leucopygialis (Blyth) 1849

Malaya, Sumatra, Java, Borneo.

Abundant throughout Borneo from the interior to the coast.

DESCRIPTION. 4½". This and the House Swift are the only species with white rumps; this species is smaller, and the white (actually silver-grey) appears to extend to the tip of the tail, owing to the very long upper tail-coverts. Iris, bill and feet black.

HABITS. This very common species may be seen all over Borneo in open country: over uplands, hill padi fields, rivers, coastal estuaries and plains, and I have even seen it over Kuching though it does not normally frequent towns. It is nearly always seen in fairly large parties.

NEST AND EGGS. Unknown.

245. HOUSE SWIFT

PLATE XVII, 4

Apus affinis (J. E. Gray) 1832

Africa to S. China and Malaysia.

Resident and local migrant, not as common as might be expected.

DESCRIPTION. 5". Conspicuous white throat and rump prevent confusion with any swift other than the preceding species. Iris brown; bill black; feet dark brown.

VOICE. The loud note is repeated six to ten times, faster than one can count, as the birds swing up to their nests, especially in

the early mornings, but in crowded colonies the noise goes on all day.

HABITS. These fine birds are common in towns like Kuching, but we still know very little about them. Banks reported: "On one occasion (11 December 1925) at Bintulu on the coast I saw hundreds and hundreds of these birds over a wide front flying south to south-west with a mild wind behind them. Though quite fine then it had been rough and the birds were moving in parties of five to ten, far up out of gunshot and continuing from when I saw them at about 6 a.m. until the last few at about 9 a.m." Harrisson has seen regular movements along the coast, at Kuala Niah and Santubong, at dawn and dusk; these he attributes to the bird's wide ranging feeding habits and localized nesting sites.

NEST AND EGGS. The favourite site for a nest is just under the eaves of a house. In 1958 a single pair built under the porch of "Yun Tang" across river in Kuching, but more typically the birds nest in colonies numbering up to a hundred pairs, the nests being piled together in a confused jumble. These colonies are found in some towns but not others; thus Kuching and Sibu have them, but they are absent from some old-established towns like Brunei where one would expect them. Cliff sites are also used, and Harrisson reports a number of colonies round Santubong and Bako Bays, including Tokong Ara rock, where it has bred regularly 1949–1958. One colony on a big rock at the west end of Telok Asam in the Bako National Park had six nests in 1958, and Harrisson found another of over fifty nests in 1957. These colonies are either under overhanging rocks or on sandstone cliff-faces ten to thirty feet above high water mark.

"The nest is a conglomeration of every kind of material, feathers, rags, grass, sticks, and wool, and this is all fastened together with a stiff glutinous substance secreted by the birds themselves and so firmly attached to the woodwork that it requires a sharp knife to remove it . . . I find that these birds and the nests are full of small parasites, and the only reason I can give is that the bird never washes or dusts itself. The eggs, two in number, are pure white" (Bartlett 1895: 215).

The process of rearing a single brood probably takes at least six months, although we have no accurate data. The Yun Tang nest mentioned above was already completed when I first saw it on 1 February; the date when incubation started was not observed, but the young birds did not leave the nest until the end of June. This particular nest had two entrances, roughly east and west, and

eventually developed a large hole in one side, through which the young birds could be clearly seen. Nestlings of a Pacific Swallow nesting about six feet away were attacked by small ants and found dead on the ground below the nest when a few days old ; the young swifts were not attacked.

Information wanted for this bird (and easily obtainable) is the length of incubation period, interval between hatching and young birds leaving nest, number of broods reared in one year, and whether the same nest is used each year. David Lack's book on the European species, *Swifts in a Tower*, shows what can be done by a little patient observation. Colonies are probably used throughout the year, but island colonies (*e.g.* the one on Talang Talang Kechil Island) are, according to Harrisson, completely empty and silent all day outside the breeding season but fill up at night when the birds come back to roost in the nests.

RACE. *A.a. subfurcatus* (Blyth) 1849.

246. PALM SWIFT PLATE XVII, 5

Cypsiurus parvus Lichtenstein 1823

Africa and S. Asia.

Resident in our area, but local.

DESCRIPTION. 4". In the field appears a uniform dark brown colour, and might be confused with a swiftlet but for its association with palms. In the hand the forked tail at once distinguishes it from a swiftlet, but this is very difficult to see when the bird is flying because the tail is usually closed, and only opened momentarily when the bird banks or turns. Voice distinctive.

VOICE. The scream takes the form of a little trilling cry, freely uttered on the wing, quite different from the twittering notes of *Collocalia*.

HABITS. As its name indicates, the Palm Swift is associated with palms, but only the broad-leaved species (*Borassus*, *Livistona*, *Areca*) and not those with pinnate leaves (Coconut and Sago). Apart from *Areca*, which is planted in most villages, these broad-leaved palms are only found in the larger towns and district headquarters, where they are planted as ornamental trees. For this reason, the Palm Swift is chiefly a town bird in our area, *e.g.* Bandjarmasin, Samarinda, Kuching, Sibu, Sarikei, Lawas, etc., but seldom seen elsewhere. A convenient place to study them is in the public gardens behind the Museum in Kuching.

NEST AND EGGS. The nest is a tiny pad of cotton-down attached to the inside of a drooping palm leaf ; to reach it the bird has to fly up vertically from below.

RACE. *C.p. infumatus* (Sclater) 1865.

TREE SWIFTS : Hemiprocnidae

These swifts, unlike the true swifts, perch and nest in trees, and instead of chasing insects on the wing all day they behave rather like flycatchers, darting out at intervals from their perch.

247. WHITE-WHISKERED TREE SWIFT PLATE XVII, 8

Hemiprocne comata (Temminck) 1824 *Lelayang rangkang* (I)

(*rangkang* is a dead branch or twig—a favourite perch)

Malaysia and the Philippines.

A common resident throughout the lowlands of our area.

DESCRIPTION. 6". Sexes differ, the male having a chestnut earpatch which is lacking in the female. A strikingly handsome bird, the long white stripes above and below the eye being diagnostic. Tertiaries partly white. Plumage dark, with metallic blue-black and green gloss in a good light.

HABITS. A very tame bird, nearly always in pairs, usually seen sitting on the branch of a tree over a river or forest clearing. When returning to its perch from a sally it has a curious trick of closing its long wings " by numbers " in three or four quick jerks.

FOOD. Wasps and small black beetles (Harrisson).

NEST. There is a nest on display in the Sarawak Museum.

RACE. *H.c. comata.*

248. CRESTED TREE SWIFT PLATE XVII, 7

Hemiprocne longipennis (Rafinesque) 1802

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo. Occasionally seen flying over the Kelabit uplands but does not live there.

DESCRIPTION. 8". Sexes differ, the ear-coverts being chestnut in the male. In overhead flight the grey underparts (white on abdomen) and the very long needle-like tail are distinctive. Iris, bill, and feet black.

VOICE. The call-notes are loud and parrot-like, *kia-kia-kia* or *chwe-chwep*, uttered frequently both on the wing and from a perch.

HABITS. Like other species that catch their food by sallies from a perch, the Crested Tree Swift is found in places where the perch affords a good view, such as trees on the forest fringe or over rivers. At dusk single birds fly continuously quartering the sky in regular sweeps (up to ½ mile ?) calling (Medway). Birds sometimes collect into a small flock and fly around noisily in a sort of joy flight (Harrisson). I have twice seen about six of them flying on the flanks of a swarm of bees over the forest, apparently picking off bees as they went along. Like other large swifts they can fly very fast.

NEST AND EGGS. The remarkable nest has often been described. It is a minute shallow half-saucer of bark and feathers gummed together with saliva attached to the side of a horizontal branch, and looking just like a knot when seen from below. It is only just large enough to accommodate the single egg, which fits in it like an acorn in its cup. When incubating, the parent bird sits across the branch, which takes its weight, and covers the egg with the feathers of the abdomen.

RACE. *H.l. longipennis.*

TROGONS : Trogonidae

Trogons are brightly coloured birds with a short, broad bill and a very broad square-cut tail. They are found in tropical America, Africa, and S.E. Asia. The plumage is soft and fluffy, and the skin is papery thin, making it very difficult to preserve good specimens. They are arboreal in habits, but usually perch in the understorey of the forest not far off the ground ; they have an odd habit of sitting with the back turned towards an observer and gazing at him over the shoulder. They feed mainly on insects, but some species at least also eat fruits and vegetable matter. According to Delacour they nest in hollow trees and lay rounded, buff-coloured eggs.

249. DIARD'S TROGON PLATE XVIII, 1

Harpactes diardi (Temminck) 1832 *Papau* (I)

Malaya, Sumatra, Borneo.

Resident and fairly common throughout Borneo in primary forest up to 4,000 feet.

DESCRIPTION. 12". Sexes differ. Both sexes have the three outer pairs of tail-feathers broadly tipped white finely freckled with black, wereas in the Red-naped Trogon the tips are plain white. The male has the crown dark purple, not jet black, and lacks the prominent white breast-band of the Red-naped Trogon. The female has the abdomen crimson-pink, whereas the female Red-naped Trogon has it cinnamon. Immature birds are spotted on the wing. Iris reddish-brown, skin round eye mauve ; gape mauve ; bill blue with black ridge and black tip ; feet grey or light grey-blue, claws horn.

VOICE. The call, an Iban omen, is *pau, pau, pau* . . . uttered slowly up to ten times on a gradually descending scale.

HABITS. Those of the family.

FOOD. Caterpillars, stick insects, locustids, fruits.

NEST AND EGGS. Not described from Borneo.

RACE. *H.d. diardi.*

250. RED-NAPED TROGON PLATE XVIII, 3

Harpactes kasumba (Raffles) 1822

(*Kesumba* is a Sanskrit generic name for trees yielding yellowish-red dyes, hence *burong kesumba* (M) is applied to species of trogon because of their colour—Wilkinson's Dictionary.)

Malaya, Sumatra, Borneo.

Resident throughout Borneo in the lowlands in primary forest.

DESCRIPTION. 12". Sexes differ. Resembles Diard's Trogon, the male of which also has a red nape but of a different shade, paler and pinker ; for distinctions see under that species. Iris brown or grey or black ; bare skin round eye blue ; bill blue with black tip ; feet pale blue.

HABITS. Those of the family.

NEST AND EGGS. Not described from Borneo.

RACE. *H.k. impavidus* (Chasen & Kloss) 1931.

251. WHITEHEAD'S TROGON PLATE XVIII, 4

Harpactes whiteheadi Sharpe 1888

Confined to Borneo. A montane resident, ranging from Kinabalu along the spinal range to Mt. Mulu, the Usun Apau Plateau, and Mt. Dulit.

DESCRIPTION. 12". Sexes differ, but both are distinguished from the Red-naped Trogon by the light grey breast, and by the finer and more closely spaced barring on the wing-coverts. The male also has the forehead, crown, nape and ear-coverts scarlet. Iris reddish or chestnut ; bill bluish, culmen and tip black ; feet light grey, soles brownish.

HABITS. One of Borneo's best birds, it was first discovered by Whitehead on Kinabalu : " This beautiful trogon was met with at 4,000 feet, where it frequented the dark and wet patches of old forest. These birds generally sit in the higher branches of the lower forest trees, and seldom move, except to take short flights from perch to perch.

"Whilst I was taking shelter from the rain under some palm-leaves one of these trogons settled on a tree quite close to me ; it uttered every now and then a peculiar growling note, swaying its tail backwards and forwards, spreading out the feathers with each movement, and every now and then making a short flight to capture some insect, and settling on another perch." Harrisson confirms this quiet and static behaviour, which is in strong contrast to that of the other montane trogon, the Orange-breasted, which almost forces itself upon the observer's attention and often the native hunter's gun ; whereas the larger and lovelier bird is very easily overlooked.

FOOD. Grasshoppers, ants, large green leaf insects, etc. (Harrisson). Stones have also been found in its stomach.

NEST AND EGGS. Unknown.

252. SCARLET-RUMPED TROGON PLATE XVIII, 2

Harpactes duvauceli (Temminck) 1824 *Beragai* (I)

Malaya, Sumatra, Borneo.

A common resident throughout the lowland forest of Borneo, and also occurs in the North Natunas.

DESCRIPTION. 9". Much smaller than the red trogons so far described. Sexes differ, but the scarlet rump is a distinctive feature of the male. Female has dark brown throat, paler breast, and pink

abdomen. Iris dark brown or vivid blue, eyelid and gape light cobalt ; culmen and centre of mandible black, rest of bill light cobalt ; feet light grey. The blue of the bill is paler in the female than in the male.

VOICE. The call-note is a very soft *too-too-too* repeated quickly, and if suddenly alarmed it utters a note as it takes to flight sounding like *kir-r-r* (Davison). The call regarded by the Ibans as an omen is a run of notes uttered rapidly, descending slightly in pitch, and though I have heard this call with Ibans I have not yet succeeded in observing the bird actually making the call.

FOOD. Green locustids, insects (Harrisson).

NEST AND EGGS. Not described from Borneo.

253. CINNAMON-RUMPED TROGON PLATE XVIII, 6

Harpactes orrophaeus (Cabanis & Heine) 1863

Malaya, Sumatra, Borneo.

A submontane resident. Most of the specimens in museums have been collected on mountains at 3,500 to 4,500 feet, but it has also been obtained at Bettotan in the lowlands of North Borneo far from mountains.

DESCRIPTION. 10".. Sexes differ. Both resemble the preceding species, but the male has no crimson on the rump and the female has no pink on the abdomen.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *H.o. viduus* Grant 1892.

254. ORANGE-BREASTED TROGON PLATE XVIII, 5

Harpactes oreskios (Temminck) 1823

Indo-China, Thailand, Burma, Malaysia.

A montane resident, ranging from Kinabalu (where Whitehead met with it at 1,000 to 3,000 feet but nowhere common) along the spinal range to Mt. Dulit and Mt. Penrissen. In the Kelabit uplands it is the common trogon of the mountains from 3,000 feet upwards.

DESCRIPTION. 10". Sexes differ, but the yellow belly of both is diagnostic. Iris dark greyish-olive ; bill bluish, ridge and tip black ; feet grey.

A. M. Hughes
1956

PLATE XIX

Page

1*a*. BANDED KINGFISHER (♂) 298
Lacedo pulchella melanops.

1*b*. BANDED KINGFISHER (♀). 298
Lacedo pulchella melanops.

2. CHESTNUT-COLLARED KINGFISHER 299
Halcyon concreta borneana.

3. WHITE-COLLARED KINGFISHER 300
Halcyon chloris chloroptera.

4. RUDDY KINGFISHER 303
Halcyon coromanda minor.

5. BLACK-CAPPED KINGFISHER 304
Halcyon pileata.

6. STORK-BILLED KINGFISHER 304
Pelargopsis capensis fraseri.

7. DEEP BLUE KINGFISHER 306
Alcedo meninting verreauxi.

8. BLUE-BANDED KINGFISHER 306
Alcedo euryzona euryzona.

9. COMMON KINGFISHER 305
Alcedo atthis bengalensis.

10. FOREST KINGFISHER 307
Ceyx erithacus motleyi.

11. FOREST KINGFISHER 307
Ceyx erithacus rufidorsus.

VOICE. A noisy and conspicuous bird ; the note is a repeated *kek kek* (Harrisson).

FOOD. Crickets, locustids, cicadas, beetles, grasshoppers, lizards, ants, fruit and (regularly) an admixture of vegetable material (Harrisson).

NEST AND EGGS. In the Kelabit uplands it nests regularly in the early months of the year ; a single egg (the only one in the clutch) was taken in February (Harrisson). A single egg, in which incubation had started, taken at Kiau on Kinabalu in March is described by Gibson-Hill as " egg-shaped ; surface smooth and glossy ; colour a uniform ivory-yellow." 29×21 mm.

RACE. *H.o. dulitensis* Grant 1892.

KINGFISHERS : Alcedinidae

Kingfishers are found all over the world and can be recognized by their upright posture, habit of sitting motionless on an exposed perch or of flashing past at high speed, long powerful bills and brilliant colouring. It so happens that the European members of the family live along streams and catch fish, hence the family name ; but in our area there are a number that live in the jungle, far from water, and feed on insects, etc. Some members of the family lay their eggs at the end of a tunnel excavated in the bank of a river or in a road-cutting, whereas others nest in hollow trees. All lay white eggs.

255. BANDED KINGFISHER PLATE XIX, 1

Lacedo pulchella (Horsfield) 1821 *Membuas* (I)

S. Indo-China, Thailand, Burma, Malaysia.

Resident throughout Borneo in primary forest, ranging from the lowlands up to 5,500 feet in moss forest, but uncommon.

DESCRIPTION. 8". Sexes differ. Male has upperparts banded blue and black, female brown and black. Iris brown or grey, bill red (black when immature according to Delacour) ; feet grey or greenish-blue, claws black.

VOICE. I have noted its call, which Ibans regard as an omen, as a high-pitched *chingai-kok, chingai-kok* or *pi-pit, pi-pit*. Banks stated that its loud clear whistle is scarcely distinguishable from that of the Giant Squirrel (*Ratufa*).

HABITS. Not a water bird, and confined to primary forest. A very active, energetic and noisy bird in the mountains and makes itself as conspicuous as the Chestnut-collared Kingfisher does not. Its general habits suggest a woodpecker almost as much as a kingfisher (Harrisson).

FOOD. Grasshoppers, beetles, locustids, stick insects, crickets, cicadas (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *L.p. pulchella*, in the North Natunas; (*b*) *L.p. melanops* (Bonaparte) 1850 on the mainland of Borneo.

256. CHESTNUT-COLLARED KINGFISHER

PLATE XIX, 2 PHOTO PLATE 32

Halcyon concreta (Temminck) 1825

Malaya, Sumatra, Borneo, Banka, Billiton.

Resident and distributed throughout Borneo in primary forest other than peatswamp forest, but very local in the lowlands. In the mountains it is found up to 5,500 feet.

DESCRIPTION. 9". Sexes differ, the female having the mantle and wings dark green spotted with buff, not dark blue as in the male. (♂) bill red with blackish tip, or yellow; iris dark with salmon-pink rim; feet red. (♀) Iris dark brown, lids pale yellow; bill yellow except for black ridge of upper mandible; feet and claws pale yellow.

HABITS. Adams reported this to be the commonest kingfisher in the Suanlamba River area near Sandakan, "found in low, thickly wooded regions at considerable distances from streams." In the mountains also it is a forest bird independent of water. Although curiously heavy and dumpy in flight, this is the least conspicuous of all our kingfishers; I have never heard it make a sound and it will sit perfectly still for long periods on a low branch in deep mountain jungle (Harrisson).

FOOD. It feeds chiefly on large insects such as cicadas and cockchafers, but the stomach of one shot by Williams contained fish; also longicorn beetles, ants, etc. (Harrisson).

NEST AND EGGS. In the Kelabit uplands a nesting hole two feet deep but without eggs was found on 31 October, and a nest with eggs on 4 December. A half-grown bird was taken from an old rotten tree-trunk at Batu Kitang near Kuching on 5 April. Gibson-Hill described eggs (c/2) taken at Kiau on 21 February as regular ovals in shape, surface smooth and very slightly glossy, colour white, 37×31 mm.

PLATE XIX, 3 **257. WHITE-COLLARED KINGFISHER** PHOTO PLATE 33

Halcyon chloris (Boddaert) 1783 *Bekakak tekoyong* (M)

Ethiopia to Australia and Samoa.

Resident throughout Borneo in coastal areas and estuaries, but not found at any distance inland. A familiar garden bird in towns on or near the coast, such as Kuching and Brunei. As might be expected of a maritime species, it is found also on all the main island groups.

DESCRIPTION. 9". Sexes differ slightly, the female being duller and greener than the male. Can only be confused with the next species. Iris brown ; bill dark grey to black above, cream to pale grey underneath ; feet pale grey.

VOICE. The harsh voice of this bird, *chew-chew-chew-chew-chew*, usually five notes, sometimes four, rarely three or six, is heard at frequent intervals, especially at dawn, and is a familiar sound in coastal towns, and even more so in seaside resorts such as Santubong or the Bako National Park. Harrisson's pair, kept under observation for over three years in his Kuching garden, had in addition five distinct notes, each entirely restricted to a special function, as follows :—

(1) *Chut :* a low puffing note, rapidly repeated as many times as required (normally three to five) to signify that either bird was flying to or from *boring* a nest hole (never uttered on entering or leaving a completed hole, when the birds were silent) ;

(2) *it-burit :* a grunting note, used in flight to make contact during change-overs in incubation or feeding young ;

(3) *yu-yu-yu :* a soft and light version of the normal shriek, heard at the nest hole and when young had flown. Female only ?

(4) *churr :* a small husky throaty note used in courtship and in non-nesting close contact (male only ?) ;

(5) A long-sustained single-note shriek, in flight, nearly always signalling direct attack on other birds or squirrels while egg or young in nest (Harrisson).

HABITS. One of the most versatile birds, equally at home on the roof of a house or on the rocks of a Turtle Island. Very aggressive, attacking any other bird, as well as squirrels, cats and dogs—but only when nesting (Harrisson).

FOOD. When breeding, Harrisson found much the commonest food items in Kuching are, in order,

(1) lizards (mostly *Agama* sp.)—over 100 observations ;

1b
1a
2
3
4
5
6
7
8
0"
6"
12"
18"
24"
0
200
mm
400
600
1956

PLATE XX

Page

1*a*. WHITE-CRESTED HORNBILL 314
Berenicornis comatus.

1*b*. WHITE-CRESTED HORNBILL 314
Berenicornis comatus.

2. WREATHED HORNBILL 315
Aceros undulatus undulatus.

3. WRINKLED HORNBILL 315
Aceros leucocephalus corrugatus.

4. BUSHY-CRESTED HORNBILL 314
Anorrhinus galeritus.

5. BLACK HORNBILL 316
Anthracoceros malayanus.

6. HELMETED HORNBILL 318
Rhinoplax vigil.

7. RHINOCEROS HORNBILL 317
Buceros rhinoceros borneensis.

8. PIED HORNBILL 317
Anthrococerus coronatus convexus.

(2) large beetles, notably and regularly *Exophilis hypoleuca*, a large scarab that lives on casuarina and fruit trees (and is also a favourite food of Ibans and Tarsiers) ;

(3) frogs, mostly arboreal species ;

(4) carpenter bees, frequently taken on the wing (ten observations) ;

(5) locustids, especially green grasshoppers ;

(6) small snakes ;

(7) earthworms, taken off or out of the ground.

If large, the animal is beaten against a branch, for five minutes if necessary, the bird never using its feet but powerfully swinging its strong beak and neck. The young are fed whole and at an early age can swallow lizards up to three inches long, *i.e.* minus the tail which nearly always comes off during the beating (Harrisson).

Nest and Eggs. In March 1955 a pair started boring holes in a durian tree in Harrisson's garden in Pig Lane, Kuching. Since then they have been kept under observation, and notes fill two thick foolscap books. It is hoped this material will be published separately in detail. Hole boring is begun by a rapid series of flights, each bird taking off—more or less alternately—from a branch six to ten feet from and slightly below the target area. The bird flies at speed, *invariably* giving the *chut* call (see voice), which is never heard otherwise, and impacting with bill tip direct into the tree trunk. The feet are then brought up under the belly to give woodpecker-like support. The bird stays in this (for it) awkward position for (at the most) nine to ten seconds ; then turns and swoops back roughly to the point of take-off. As the holes deepen, the bill is inserted and hammering inside is vigorous, the tail flexed down to give added grip over the lower lip ; but again, the bird never stays more than a few seconds (unlike woodpeckers). Boring is at first very diffuse, as many as eight holes being attacked concurrently, but this is eventually reduced to about three holes. There is a distinct cycle of activity thus :

(1) General noisy shrieking in area (claiming territory) ;

(2) boring, at first very diffuse ; a pair may bore daily for *months* before making one hole they will use ;

(3) boring at two or three holes, and sexual activity ;

(4) broody behaviour at and into hole ; aggressive to other species ;

(5) lay and incubate and rear young ;

(6) encourage young to fly and then tend them ;

(7) range widely till young leave.

Both birds take an active part at every stage from first boring to feeding the flown young. Two broods are reared in quick succession (about forty-four days from laying first egg to flight), but *never* in the same hole. Summer nesting is a regular feature of this species, throughout south-west Sarawak at least (Harrisson).

Gibson-Hill describes eggs from Sandakan Estate collected on 26 June (c/3) as a regular oval in shape, surface smooth and slightly glossy, colour white, 29×24 mm.

RACE. *H.c. chloroptera* (Oberholser) 1919.

258. SACRED KINGFISHER

Halcyon sancta Vigors & Horsfield 1827

An Australian species, migrating to Malaysia in the southern winter.

An occasional visitor to S. Borneo.

DESCRIPTION. 8". Very like the preceding species but smaller and with the forehead, eyebrows and underparts washed with buff.

HABITS. Nothing recorded from Borneo.

259. RUDDY KINGFISHER PLATE XIX, 4

Halcyon coromanda (Latham) 1790.

Widespread in S.E. Asia.

One race occurs as a straggler in winter from the mainland of Asia; another is resident and widespread in coastal districts of Borneo but nowhere common, and has also been collected in a few scattered inland localities.

DESCRIPTION. 9". The colouring is distinctive. The young bird (according to Delacour) is paler underneath, with the stripe on the rump more purplish. Iris brown or black, eyelids orange; bill, feet and claws bright orange to coral-red.

HABITS. On Labuan, Motley states that they feed almost entirely at sea, and are seldom to be seen far from the beach. When walking along the seashore during high tide he observed these birds flying out of the jungle, plunging into the sea, and carrying their prey off among the trees; they did not perch on rocks or branches overhanging the water. Whitehead notes it as a bird of nipah palms.

NEST AND EGGS. The only breeding record is for Labuan, where Low collected eggs in May. He reported that "the nest is said to be pendulous and invariably to be accompanied in the same mass by a bee, which is peculiarly vicious, so that the nest can only be robbed

by destroying the bees." This requires confirmation. The eggs are described as pure white, 31 × 30 mm.

RACES. (*a*) *H.c. coromanda*, which breeds in India and Burma and winters in Malaysia, Celebes, and the Philippines, has been collected once at Lamag, N. Borneo; (*b*) *H.c. minor* Temminck & Schlegel 1848, smaller (wing c. 105 mm. as against wing over 110 mm.) with the breast much darker buff with a purple tinge, is the resident form.

260. BLACK-CAPPED KINGFISHER PLATE XIX, 5

Halcyon pileata (Boddaert) 1783

Breeds in N. China and Korea, migrating south in winter.

Abundant winter visitor from September to April, when they are found along all Bornean rivers, including mangrove estuaries. Recorded in the North Natunas.

DESCRIPTION. 10". Not likely to be confused with any other species. Immature birds of all *Halcyon* species have dusky borders to the breast feathers. Iris brown or black; bill and feet carmine-red.

VOICE. It utters shrill and loud notes when disturbed, but its voice is less unpleasant than that of some kingfishers.

HABITS. During the months it is with us, this is THE kingfisher of rivers in Borneo, and must be familiar to all who travel along them by dugout canoe, from its habit of perching conspicuously on a branch overhanging the water and flying along ahead of the boat when disturbed. "It frequents the open patches of swamp-rice, perching on the forest trees which surround them, making short flights at anything it can see in the swamp around" (Whitehead). Harrisson notes that it is also an abundant bird of open plain country, not only in the Kelabit uplands and Kinabalu foothills, but also (for instance) in the huge grassland valley of the Bahau in the upper Kayan.

FOOD. Dragonflies, and their larvae, water boatmen, bees and large wasps, beetles, large locustids, leaf insects, grasshoppers, and (exceptionally) fish. Even birds shot over water had been eating exclusively insect food (Medway).

261. STORK-BILLED KINGFISHER PLATE XIX, 6

Pelargopsis capensis (Linnaeus) 1766
Raja udang (the prawn king) (M)

Widespread in S.E. Asia.

A common resident on all rivers and tidal creeks and the only *resident* commonly seen on the *larger* rivers.

DESCRIPTION. 13". Large size prevents confusion with any other species. As it flies away the silky light blue of lower back and rump is conspicuous. Iris brown, eyelid scarlet or pale pink; bill red tipped black; feet red, claws black. Young birds have dusky borders to the breast feathers, as in *Halcyon*.

VOICE. "It is an excessively noisy bird, darting off when disturbed with a harsh chuckling scream, which it continues for some time after it has reseated itself" (Davison). The birds of a pair call to each other in a characteristic, arresting, and plaintive manner.

HABITS. It is a much quieter bird than the Black-capped Kingfisher, but apt to be more aggressive. Whereas the latter loves to sit and scream, this one likes to move and seldom calls except in flight. It will fiercely attack other birds, up to the size of Sea Eagle, Brahminy Kite, and Adjutant Stork (Harrisson).

FOOD. Fish, crabs, frogs, lizards, grasshoppers, beetles, insects (Harrisson, Medway).

NEST AND EGGS. Eggs were collected on Labuan by Low, and measured about 38×32 mm., but the nest was not described. Delacour states that it usually nests in termite hills.

RACE. *P.c.fraseri* Sharpe 1870.

262. COMMON KINGFISHER PLATE XIX, 7

Alcedo atthis (Linnaeus) 1758 *Ensing* (I) for *Alcedo* spp.

Widespread in Europe and Asia.

A winter visitor to Borneo, not uncommon along open water, and by ditches and ponds in open country, but rarely seen on forest streams. In the Kelabit uplands it frequents the irrigated padi fields. Records date from 3 August to 27 April, and there is no evidence at present to suggest that any pairs breed in Borneo, though further observations are desirable.

DESCRIPTION. 6". Distinguish from the next species, which is the same size and shape, by the greenish-blue as opposed to deep blue upperparts and the buffy-white as opposed to rufous upper throat; the underparts are rufous as opposed to rufous-chestnut. Young birds only differ in being a trifle duller. Iris fawn or dark; bill all black or base of lower mandible dull red (female may have lower mandible all red); legs coral-red.

VOICE. A hard sharp squeak *ch'kee* is uttered on the wing, and a little subdued *click* from time to time when perched.

HABITS. The small kingfishers of the genus *Alcedo* are usually seen perched bolt upright, or flying very swiftly and straight low

over the surface of the water ; a frequent up and down movement of the head when perched, accompanied by a forward flick of the tail, seem to indicate uneasiness or excitement. They usually capture their food by plunging obliquely into the water from a suitable vantage point, such as an overhanging branch, on which they sit motionless waiting for something to come within reach ; rarely they hover over the surface of the water with the body almost at right angles to the surface before diving perpendicularly into the water. Large fish are beaten on the branch before being swallowed head-first.

FOOD. Fish, shrimps, ants, worms, padi field crickets, insects.

RACE. *A.a. bengalensis* Gmelin 1788.

263. DEEP BLUE KINGFISHER PLATE XIX, 8

Alcedo meninting Horsfield 1821 *Burong binti-binti* (M)

Widespread in Malaysia.

A common resident along streams in the lowlands, favouring overhung or tunnel-like brooks in primary forest. It has been obtained in the Kelabit uplands at 3,500 feet.

DESCRIPTION. 6". Similar to Common Kingfisher, but a much darker and more richly coloured bird. Colours of soft parts seem to vary considerably. (♂) Iris brown or green ; upper mandible grey, lower pale grey, base of bill dull scarlet ; feet pale blue or light scarlet. (♀) Iris grey or red ; upper mandible black, lower red ; feet orange or scarlet.

HABITS. Much shier than Common Kingfisher, and more of a forest bird.

FOOD. Small fish only (Harrisson).

NEST AND EGGS. Sharpe described eggs collected by Low on Labuan as glossy white and rather rounded, 20×16 mm.

RACE. *A.m. verreauxi* De La Berge 1851.

264. BLUE-BANDED KINGFISHER PLATE XIX, 9

Alcedo euryzona Temminck 1830

Malaysia.

Resident and not uncommon along streams in primary forest in the lowlands, especially small streams, in the headwaters of rivers. In the Kelabit uplands it is not uncommon and goes up to 4,000 feet.

DESCRIPTION. 7". Sexes differ. In flight the silky light blue of the back, rump and upper tail-coverts contrasts with the black upperparts. The female differs in having the breast and belly rufous

and the bill largely red. The name refers to the blue band across the breast of the male. Iris brown ; bill black ; feet orange to reddish-brown.

VOICE. It utters a prolonged shrill *peep* as it disappears in full retreat (Banks).

FOOD. Feeds on fish and crustaceans (Delacour), insects and lizards (Harrisson).

NEST AND EGGS. Not recorded from Borneo.

RACE. *A.e. euryzona*.

265. FOREST KINGFISHER PLATE XIX. 10 & 11

*Ceyx erithacus** (Linnaeus) 1758 *Mantis* (M) ; *Ensing batu* (I)

Widespread in S.E. Asia

A common resident in Borneo in the primary forest of the lowlands. According to Banks it is a local migrant on the coast, visiting light-houses at certain seasons.

DESCRIPTION. ♂. Usually seen as a yellow and mauve flash as one is travelling along a stream. Iris brown ; bill and feet coral-red ; toes three only, hence alternative name of Three-toed Kingfisher.

VOICE. " Often will the traveller see a small bright yellow bird pass him like a little express train, whistling as though it were important to let everyone know it was coming. Then suddenly the whistling ceases and the bird has perched, often some distance away, where it sits motionless until again disturbed " (Whitehead).

HABITS. This beautiful little kingfisher is typically seen along the narrower forest streams where the *ensurai* trees lean out from the banks to meet overhead and one is constantly poling or dragging the dugout up the shallow pebble reaches.

FOOD. Whitehead doubted that it ever fed on fish, but a specimen collected at Santubong on 27 October 1956 had eaten nothing else. In the Niah caves it perches on a rock over the stream, but feeds on insects on the guano—a sudden dive off the rock, down to the guano, land, catch insect and off, all in one move almost (Medway). Small locustids and other insects (Harrisson). Stuart Baker in Assam watched one in a forest glade catching spiders. " It flew at the webs with great speed and turning at right angles at the last moment, snatched or missed the spider as it passed."

NEST AND EGGS. Eggs (pure glossy white in colour) have been

* Sims (1959) shows that *C. rufidorsus* and *C. erithacus* should be treated as conspecific.

collected on Labuan by Low, 19×15 mm., and by Whitehead on the Lawas River (the whole nest was swarming with red ants).

RACES. (*a*) *C.e. rufidorsus* Strickland 1846, in S. Borneo and Labuan ; (*b*) *C.e. motleyi* Chasen & Kloss 1929, in N. Borneo excluding Labuan, has (i) blue-black spot on forehead, (ii) ultramarine patch on each side of neck, (iii) black wing coverts tipped with ultramarine. About eighty per cent. of the specimens from Borneo examined by Sims were intermediate between the two forms, the percentage of intermediates remaining approximately constant throughout the areas from which the material was examined. " It seems that wherever the dark and rufous birds come into contact they freely interbreed, as the high percentage of intermediates indicates. There do not, therefore, appear to be any physiological barriers between these two taxa."

Sims suggests that Borneo was probably colonized by the dark bird in the pre-Tertiary period before it became separated from continental Asia. The rufous bird evolved during the long period of isolation that followed in the Tertiary. A secondary isolation occurred when eastern N. Borneo was cut off from the Crocker Range. Two isolated populations of this kingfisher then evolved on parallel lines but at different rates, only the backs of the north-easterly birds lost their black pigment. During the Pleistocene these populations mixed again, resulting in the confusing picture to be seen at the present time.

BEE-EATERS : Meropidae

This family is found throughout the tropical and temperate regions of the Old World, but is rather poorly represented in Borneo, only two species being at all common.

PLATE XII, 6 **267. BLUE-THROATED BEE-EATER** PHOTO PLATE 34

Merops viridis Linnaeus 1766 *Kulang-kulang* or *Kriok* (M) ; *karoh* (I)

Widespread in S.E. Asia.

Resident in coastal districts of Borneo, but to some extent a local migrant, concentrating to breed in sandy areas and dispersing widely afterwards. Occurs in the Karimatas and North Natunas.

DESCRIPTION. 11". (tail 5"). The blue throat is diagnostic. Iris chestnut ; bill black ; feet dark brown.

VOICE. A trilling note is freely uttered on the wing.

HABITS. The fly-catching habits from a perch, with a swoop and

a loud snap of the bill each time an insect is taken, attract attention. When thus hawking for insects it has an easy graceful wheeling action in which more or less brief periods of rapid wing movement alternate irregularly with intervals of sailing round on rigid wings ; it alights neatly and quietly on its perch. It is a sociable bird, nearly always seen in flocks or small parties ; when on local migration the birds follow each other at intervals on a broad front with a dipping flight. Harrisson observed one circling the ship in Lat. 1 ° 44′ N., Long. 107 ° 36′ E.

Food. It feeds entirely on insects—beetles, dragonflies, orthoptera, wasps, bees (Everett).

Nest and Eggs. I have seen breeding colonies on the Penaga golf course, Seria, in early April ; and near the Anduki airport, Seria, in flat sandy areas covered with short grass, the eggs being laid in a circular chamber at the end of a tunnel. Nooses are sometimes set by Malays at the mouth of the tunnel to trap the birds. Whitehead collected eggs (c/4–5) in early June about 24×23 mm.

Race. *M.v. viridis.*

268. BROWN-BREASTED BEE-EATER PLATE XII, 7

Merops superciliosus Linnaeus 1766

From Africa through S. Asia to New Guinea.

Common in S. Borneo, occasional visitor elsewhere. In museums there are about six specimens from Indonesian Borneo, one from the Trusan River, and one from Lumbidan.

Description. Slightly larger than the preceding species ; yellow chin and brown throat distinguish it.

Habits. "A very common bird in open places, sailing in circles to hunt large Coleoptera and Hymenoptera. It also makes great havoc among the Dragonflies with which the air is sometimes filled here. When these birds have seized their prey, they return to their stand, usually a bare high branch, and there kill it by beating it against the twigs. Great numbers of them may sometimes be seen together in the evening flying in one direction, uttering the cry which gives their name (*pink pink*)." So Motley describes them in the Bandjarmasin area.

Race. *M.s. philippinus* Linnaeus 1766. This bird has also been named the Green-headed Bee-eater and the Blue-tailed Bee-eater, and some authors treat it as a distinct species.

269. RED-BEARDED BEE-EATER PLATE XII, 8

Nyctiornis amicta (Temminck) 1824

Burong empak-empak or *empak jerok* (M), *puso* (I)

Malaya, Sumatra, Borneo, Banka.

Resident throughout Borneo in the lowlands in primary forest, and usually abundant. Also found in the Kelabit uplands.

DESCRIPTION. 11". Unmistakable. Young birds have the crown green, not lilac, and the throat and breast green, not red. Iris orange ; bill blackish, base of lower mandible pale horn ; legs dull green.

VOICE. " The note . . . is a hoarse *quo-qua-qua-qua* uttered at irregular intervals. When one calls it is usually answered by its mate, the birds being generally found in pairs, seldom singly, and never that I know of in parties. When uttering its note the bird leans forward, stretches out its neck, and puffs out the feathers of its throat and at each syllable of its note bobs its head up and down " (Davison).

Harrisson made the following notes on breeding birds at Niah 1954–8. When the pair are together near the nest the male utters a very deep *kwow* as approach or warning note, and the tail is always fanned. The female replies with a long rattling *kwakwakoogoogoo*, and the tail is flicked regularly. There is also a very deep guttural *kwok* issued by either bird at any time.

These notes differ from the ordinary ones *cha cha dududuak* and also the distinctive growling general alarm note *krerkrer*.

HABITS. Unlike the smaller bee-eaters it does not perch conspicuously on exposed perches, but selects a branch on the fringe of the forest, some ten or twenty feet from the ground, where it is fairly well concealed, from which to dart out at intervals ; it does not always return to the same perch. " Although keeping, as a rule, to the woods, it avoids the denser portions, frequenting those parts where the larger trees are somewhat scattered, and where plenty of sunlight penetrates ; favourite places are the banks of large streams, and the borders of swamps and shallow lagoons surrounded by forest " (Davison).

FOOD. Wasps, hornets, bees, cicadas, beetles, scarabs, locustids, crickets, large ants (Harrisson).

NEST AND EGGS. Females in breeding condition were obtained in the Kelabit uplands in November, and Everett found a nest and eggs at Belidah in January. One of five burrows excavated in the Museum's main archaeological excavation pit inside the Great Cave, Niah, contained one fresh egg in February 1957. The female alone incubated and probably she alone excavated, for her tail was worn down to a deplorable rough stump—whereas the male's tail was impeccable and brilliant (Harrisson).

ROLLERS : Coraciidae

Rollers are found throughout the temperate and tropical countries of the Old World, south to Australia, but there is only one species in our area.

PLATE XII, 9 **270. BROAD-BILLED ROLLER** PHOTO PLATE 35

Eurystomus orientalis (Linnaeus) 1766 *Tiong bali* (M)

India and N.E. Asia to Australia.

Two races visit Borneo in winter from China and Thailand, and a third is a common resident in the lowland forests. A series from the Kelabit uplands, where it is a feature of the open landscape from November to January, probably includes all three races.

DESCRIPTION. 11". In flight a large white patch is seen on the wing. Iris dark brown ; bill coral to orange with narrow black tip ; feet orange or scarlet.

VOICE. The note is *kick kick*, sounding somewhat like the noise used to urge on horses (Whitehead). A harsh croak is also uttered at long intervals.

HABITS. "Common, frequenting open places, especially dead trees that have been left standing after forest fires. It perches on some high branch from which it makes short flights at insects, returning to the same perch. . . . In the breeding season they fly very fast in wide circles with short quick wing-beats and often dive at each other with loud cries" (Whitehead). For some reason this harmless but conspicuous bird of open country attracts the unfavourable attention, in passing, of the more aggressive species ; I have seen it in flight attacked by Stork-billed Kingfisher, Pacific Swallow, and White-breasted Swallow-Shrike (Harrisson).

FOOD. Locusts, green locustids, cicadas, dung beetles, green grasshoppers (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *E.o. cyanicollis* Vieillot 1819, the resident race ; (*b*) *E.o. calonyx* Sharpe 1890, and (*c*) *E.o. deignani* Ripley 1942, are winter visitors. These races are not easily distinguished, even by an expert.

HOOPOES : Upupidae

This family consists of one species, which inhabits Europe, Africa, and Asia, but is only a stray in Borneo.

271. HOOPOE

Upupa epops Linnaeus 1758

One specimen was collected on Labuan in the 1870s.

DESCRIPTION. 12". The long curved bill, striking crest and pinkish-brown plumage, with boldly barred wings and lower back, are unmistakable. Usually seen walking about on the ground. The crest is erected momentarily when settling.

RACE. *U.e. saturata* Lönnberg 1909 (a race of doubtful validity).

HORNBILLS: Bucerotidae

The hornbills are found in tropical Africa and Asia; they are not closely related to the American toucans, another family of birds with large bills. Their huge, exotic bills are often furnished with a horny excrescence on the top, known as a casque; this is usually hollow or filled with a spongy cellular tissue, but in one species—the Helmeted Hornbill—it is solid and is the source of "hornbill ivory", once more valuable than jade; for centuries this has been exported to China, and there elaborately carved (see article by Harrisson 1951, on "Humans and hornbills in Borneo").

Hornbills are remarkable for their peculiar and unique nesting arrangements. The eggs, which are usually white when fresh but become stained brown, are laid in a hollow tree. When ready to lay, the female enters the nest-hole and spends the first two or three days plastering up the entrance with her own droppings, which are very viscid like glue, and harden into a clay-like substance; the male may assist with clay on the outside, using the flattened sides of his bill like a trowel. When the work has been completed only a narrow vertical slit is left, about the width of a man's finger and two or three inches long. The female is now a prisoner, and remains in solitary confinement until the young have hatched out; her droppings are thrown out daily through the slit, and she extrudes the point of her bill to receive food from the male, who clings with his claws to the bark while feeding her. During the period of her imprisonment she becomes very fat and dirty, and on first emerging is so stiff that she can hardly fly.

Shelford's posthumous book contains an interesting general description of these nesting habits. He points out that it must be difficult to find a tree with just the right type of hollow, *i.e.* so that the female standing or sitting on the floor of the hollow can reach the slit with her bill, and in fact it seems that if the floor is too far

down inside the trunk of the tree, the birds proceed to drop sticks and rubbish down the hole until the floor hollow has been raised to the correct height. Having once found a nice hole the same pair of birds will go on using it for many years in succession.

He noticed that the substance narrowing the slit of a Rhinoceros Hornbill's nest-hole often contained much wood and noted: "It looks as if the Hornbills swallowed fragments of wood, then regurgitated them in a comminuted condition, together with a copious secretion of either salivary or proventricular glands; but this is a point that needs further investigation."

Seeds from the female's food fall to the ground and germinate. By examining the seedlings at the foot of the tree, the natives can judge, not only the date of incubation by the age of the seedlings, but also the number of years during which the hornbills have nested in the same tree.

As to why hornbills adopt this remarkable nesting procedure, Whitehead surmised that "the object of firmly fastening in the hen bird is doubtless as a protection against the bands of monkeys which roam through the forests, and perhaps are the worst enemies to the increase of tropical birds." He was also able to throw some light on what happens to the female in her prison if her mate dies: "In our wanderings we found the nest of this hornbill (*Anorrhinus galeritus*), and before being aware of its proximity we shot three of the birds which were visiting the tree. When I discovered the nest by the heap of guano at the foot of the tree I was sorry that we had done so, and sent one of my boys to see if he could climb to the imprisoned female and let her loose. On the following day he returned with the hen bird and a nearly-fledged young one, and to my surprise he told me that there were two or three old birds busy attending on the imprisoned ones. . . . It is perhaps fortunate that the birds do not pair, as any accident to the attendant male would mean death by slow starvation to the imprisoned hen, she being weak and useless for some time after her incarceration."

Wild fruits are the natural food of the hornbills, but in captivity they will eat almost anything, and are remarkably clever at catching food thrown to them.

A monograph of the Bucerotidae or family of the Hornbills by D. G. Elliott, issued in London in ten parts 1876–82, has beautiful coloured plates of all the species and is one of the many sumptuous folio volumes on birds that the nineteenth century produced. For field notes and photographs see the papers by Bartels (1937) and Dunselman (1937a).

272. WHITE-CRESTED HORNBILL PLATE XX. 1

Berenicornis comatus (Raffles) 1822 *Sentuku* (I)

Annam, Tenasserim, Malaya, Sumatra, Borneo.

A submontane resident, sparingly distributed throughout Borneo in primary forest, but not often seen.

DESCRIPTION. 34". Sexes differ, the neck and underparts being white in the male, black in the female. White crest, white tips to wing, and white tail of adult are diagnostic. Immature bird has tail black tipped white. Iris orange, eyelids and gape sky-blue ; feet black.

VOICE. Von Berchtold describes its call as a lively repeated *kukuk* similar to the call of the European Cuckoo ; according to Davison, the call is a single soft *hoo* when it takes wing, and the same sound repeated rapidly about a dozen times when it is feeding.

HABITS. Little known.

FOOD. Fruit (especially figs), lizards, small birds. Medway has seen them at Niah cave catching weak-flying swiftlets on the wing.

NEST AND EGGS. Not described from Borneo.

273. BUSHY-CRESTED HORNBILL PLATE XX. 4

Anorrhinus galeritus (Temminck) 1831 *Kekalau* (I)

Malaya, Sumatra, Borneo.

Resident in primary forest throughout Borneo and occurs in the North Natuna Islands ; the most abundant of the hornbills in the lowland forests, and the only hornbill resident in the Kelabit uplands, though other species pass over and may drop in occasionally.

DESCRIPTION. 27". The only hornbill with no white in the plumage. The tail is brownish-grey, with the terminal third black. The bill and casque are black in the male, but in the female there is a variable amount of white on the bill, and the casque is white. Whitehead noted that the curious change of colour in the soft parts which the young bird undergoes before becoming adult is interesting. He described the juvenile as : iris blue, bill dull red at tip, pea-green at base ; skin on face bright king's-yellow. In the adult the iris is red in the male, black in the female ; round eye sky-blue ; bare skin under throat dark blue ; feet black.

HABITS. Usually seen in small noisy flocks, whose high-pitched chattering voices attract attention.

FOOD. The stomach of one in the Kelabit uplands was full of fruit pulp and a large cockroach (Harrisson).

NEST AND EGGS. " I found a nest of this species in an old tree, the female and the young one being securely fastened in by gums and resins. The curious part, however, was that there were no less than five other hornbills feeding her, including males and females. I shot three birds at the tree on the first day, before I discovered the nest, which had evidently been used many times, judging by the excrement at the foot of the tree ; and on the following day there were two other birds feeding the imprisoned hen " (Whitehead).

274. WRINKLED HORNBILL PLATE XX, 3

Aceros leucocephalus (Vieillot) 1816 *Alau buloh* (M) ; *jako* (I)

Malaya, Sumatra, Borneo, Philippines, Celebes.

Resident and sparsely distributed throughout Borneo in the lowlands in primary forest, but seldom seen.

DESCRIPTION. Sexes differ. The same size as the preceding species, but distinguished by different bill and by having the terminal two-thirds of the tail white. The female has the head and neck black, not white as in the male. Iris dark reddish ; bare skin of throat faint greenish-blue ; casque red, base of lower mandible ochre, rest of bill yellow with some red at base ; feet and claws dull horn.

VOICE. Harrisson distinguishes three calls (1) *kowwow*, a deep echoing call, rather typically hornbill ; (2) a softer and more musical version in flight, *wakowwakowkow* ; (3) a very harsh call *pukekkek*.

HABITS. A wary bird of the tree-tops in primary forest, sometimes found singly (Banks).

NEST AND EGGS. Not described from Borneo.

RACE. *A.l. corrugatus* (Temminck) 1832.

275. WREATHED HORNBILL PLATE XX, 2

Aceros undulatus (Shaw) 1811 *Alau sangoh* (M) ; *undan* (I)

Burma, Thailand, Indo-China, Malaysia.

Resident and sparsely distributed in Borneo, perhaps only in submontane localities. I have seen a flock of twelve on Mt. Kinabalu at 5,500 feet.

DESCRIPTION. 36". Sexes differ, the male having the crown chestnut, the female black. Large size, white tail, and white sides of head and neck (these parts often stained yellow) are diagnostic. Iris and bare skin round eye cherry-red ; skin of throat yellow above, blue below ; bill dull white or vivid chrome-yellow, then a black band (broken in centre) then pastel green.

VOICE. Nothing on record from Borneo. In Burma a short hoarse bark and loud menacing roars have been reported.

HABITS. According to Davison, " the strokes of their wings are accompanied by a peculiar metallic or resonant swish which can be heard at an incredible distance ; they are usually seen in parties of half-a-dozen to twenty or more birds, which travel long distances to feed."

FOOD. Oates found them on the ground picking up and swallowing large quantities of snails.

NEST AND EGGS. Not described from Borneo, but an excellent account of nesting in Sumatra (in Dutch with English summary) with numerous photographs is given by Bartels in *Limosa* 1956, 29 : 1–18.

RACE. *A.u. undulatus.*

276. BLACK HORNBILL PLATE XX, 5

Anthracoceros malayanus (Raffles) 1822 *Alau babi* (M) ; *rangak* (I)

Malaya, Sumatra, Borneo, Banka, Billiton.

Resident throughout the lowland forests of Borneo, but not noticeably common anywhere.

DESCRIPTION. 29". Distinguish by small size and black plumage (with or without a broad white stripe over the eye to the nape) except for white tips to the outer tail-feathers. The bill is pale yellow in the male, blackish in the female. (♂) Iris brown to reddish-chestnut, bare skin round eye black or with yellow patch of skin below eye ; feet and claws black ; (♀) Iris orange ; bare skin round eye dull pink, or white.

HABITS. A bird of primary forest.

FOOD. Harrisson notes of a tame bird :—Most hornbills will eat almost anything but this species conspicuously so, which makes it easy to keep as a longhouse pet. It thrives on rice, biscuit, pawpaw, bananas, or turtles' eggs, but it can equally live on a meat diet. Raw fish is eagerly taken and swallowed whole. Small birds (*e.g.* Java Sparrows) are masticated in the bill for three or four minutes, constantly turned and twisted until the bones are crushed and pulped ; in this process the bird's body is occasionally wiped and rubbed on a branch, but the feet are never used to hold or crush. A Horseshoe Bat was similarly treated but when attempting to swallow it head first in the usual manner the long folding wings stuck in the sides of the bill, with comical effect. After much gulping the Hornbill got the bat down whole and at once followed it up with half a banana and a sip of water.

NEST AND EGGS. Eggs (c/3) taken at Kaung, North Borneo, on 5 February, are described by Gibson-Hill as "egg-shaped. Surface smooth and fairly glossy. Colour white. About 47×32 mm."

277. PIED HORNBILL PLATE XX, 8

Anthracoceros coronatus (Boddaert) 1783 *Alau pedada* (M)

Widespread in S.E. Asia.

Resident in Borneo, but chiefly a bird of the coast and offshore islands, though it has been collected well inland in S. Borneo. Not very common.

DESCRIPTION. 30". Distinguish by small size and pied plumage, the belly and outer tail-feathers being white and the wings tipped white. Iris dark brown; bare skin round eye and on chin white, with tinge of blue by beak, on lores, and below eye; feet and claws black.

VOICE. A noisy bird with high-pitched and strident notes, usually seen in small parties.

HABITS. The flight consists of alternate flapping and gliding without any perceptible dip in the flight. It may be found in primary forest, but prefers secondary forest or open country.

FOOD. Figs, hard berries, large grasshoppers (Harrisson).

NEST AND EGGS. Not described from Borneo, but eggs were collected on Labuan by Low many years ago, 56×34 mm.

RACE. *A.c. convexus* (Temminck) 1832.

278. RHINOCEROS HORNBILL PLATE XX, 7 AND FRONTISPIECE

Buceros rhinoceros Linnaeus 1758 *Kenyalang* (I)

Malaysia.

Resident throughout Borneo in submontane forests, but absent from the flat coastal peatswamp forests. Still fairly common in most areas, though shot for food and hat feathers by Ibans and other tribes.

DESCRIPTION. 42". The only hornbill with a black bar across a white tail. Bill and feathers often stained with yellow oil secreted from a gland above the root of the tail. (♀) Iris white; skin round eye yellowish-white, reddish posteriorly; feet greenish-yellow, claws horn.

VOICE. The remarkable roaring call is one of the most characteristic sounds of the Bornean rain forest ; it consists of a succession of roars uttered at short intervals.

HABITS. It keeps much to the tops of the forest giants 150–200 feet above the ground, but I have seen an Iban shoot three in three successive days by standing under a tree and enticing the birds within range by imitating the call. Usually singly or in pairs, but a small party may collect on a fruiting tree—Whitehead counted eleven on one occasion.

The bird plays an important part in Iban religious ritual, the " gawai kenyalang " being the most lavish and the most prolonged (usually five nights) of all the gawai that are performed from time to time ; an elaborately carved figure of the bird is the centre-piece in the ritual, which was celebrated in olden days on the return of a successful head-hunting party. See Chapter 7.

FOOD. Mainly jungle fruits, but Medway has seen it capture a munia in flight. Remarkably adept at catching food thrown to it, *e.g.* turtles' eggs (Harrisson).

NEST AND EGGS. The nesting habits are those of the family ; the egg is white, closely mottled with brown, giving it a pepper and salt appearance.

RACE. *B.r. borneoensis* Schlegel & Müller 1840.

279. HELMETED HORNBILL PLATE XX, 6

Rhinoplax vigil (Forster) 1781 *Tajai* (I)

Malaya, Sumatra, Borneo.

Resident throughout Borneo in submontane forests, somewhat less common than the Rhinoceros Hornbill.

DESCRIPTION. 50" (including tail of 28"). Unmistakable to eye and ear.

VOICE. The remarkable call starts off with a series of mellow hoots *took* . . . *took* . . . *took* uttered at rather long intervals, gradually rising in pitch and increasing in speed until the climax is reached, an unbroken series of shrill chuckles, dying away into a mocking laugh of four to six notes *cack-cack-cack-cack*. According to Banks, this is the call of the male only, the female merely saying *tagou, tagou,* repeatedly ; and the alarm call is a distinct series of shrill high startling cackles.

HABITS. The *took* note is imitated by Ibans to attract the bird within range ; apart from providing a few pounds of protein, the

bird is valued for its casque (see under family) and for its long central tail-feathers. The birds are usually solitary or in pairs.

FOOD. Large soft fruit, lizards, birds and their eggs (Harrisson).

NEST AND EGGS. Not described from Borneo.

HONEYGUIDES : Indicatoridae

This family is mainly African, but one species is found in the Himalayas and another in Malaysia. A detailed and interesting study of the whole family has recently been published by Friedmann (1955). The name is derived from the habits of some African species, which lead men to the nests of wild bees, but the Asian species do not behave in this way.

280. MALAYSIAN HONEYGUIDE PLATE XLV, 1

Indicator archipelagicus Temminck 1832

Malaya, Sumatra, Borneo.

A rare lowland resident, specimens of which have been collected singly in a number of localities all over Borneo (details in Checklist).

DESCRIPTION. 6½". A nondescript bird, rather finch-like in appearance, and the yellow shoulder patches of the male (lacking in the female) do not stand out in the field. Iris bright scarlet; feet flesh.

VOICE. Extraordinary call-notes, exactly like a domestic cat's *miaw*, repeated with deep notes and an appendix, *miaw-krrrruuu*, or *miaw-miaw-krrwuu* (Harrisson).

HABITS. It seems to frequent open country or secondary jungle, and has been collected within two miles of Kuching.

FOOD. The stomach of one bird contained pieces of fresh comb as well as whole bees and bee-larvae (Harrisson).

NEST AND EGGS. Nothing known, but Friedmann suggests it may be parasitic on the Brown Barbet.

BARBETS : Capitonidae

This family has a wide range in the tropics of Asia, Africa, and America, and is richly represented in Borneo. Except for the Brown

PLATE XXI

Page

1. BROWN BARBET 321
Calorhamphus fuliginosus fuliginosus

2. YELLOW-CROWNED BARBET 324
Megalaima henrici brachyrhyncha.

3. BLACK-THROATED BARBET 325
Megalaima eximia.

4*a*. GAUDY BARBET (♂) 323
Megalaima mystacophanes mystacophanes.

4*b*. GAUDY BARBET (♀) 323
Megalaima mystacophanes mystacophanes.

5. LITTLE BARBET 326
Megalaima australis duvauceli.

6. MANY-COLOURED BARBET 323
Megalaima rafflesi rafflesi.

7. GOLD-WHISKERED BARBET 322
Megalaima chrysopogon chrysopsis.

8. GOLDEN-NAPED BARBET 324
Megalaima pulcherrima.

9. MOUNTAIN BARBET 325
Megalaima monticola.

PLATE XXI

Barbet, a peculiar form, the barbets in our area all have green plumage with a wonderful range of other colours about the head and neck.

The plate does not illustrate the green bodies but only the heads, so that they can be drawn as large as possible to bring out the detail. Like the woodpeckers, they have two toes directed forwards and two backwards, but they are fruit-eaters rather than insect-eaters, their food including berries, seeds, figs, buds, and nectar of flowers. They are essentially birds of the tree-tops, in which they sit and utter monotonous call-notes for hours on end; it is a remarkable fact, not apparently noticed hitherto, that these notes are *hummed* and not sung, *i.e.* they are uttered *with the bill closed* and the throat bulging out in a comical way at each note. Barbets are, in a sense, " humming-birds ".

These call-notes could be a clue to identity; unfortunately, so ignorant are we of the habits of even these common birds, that the notes of a number still remain undescribed, in spite of the fact that, during the heat of the day, they are almost the only birds to be heard in the great forests. It is not altogether a simple problem, because most species have at least two different notes and it is not known whether these are made by the same sex or by different sexes, but a little careful work in the field would solve it. It is important to solve it, because barbets keep much to the tree-tops, where they are most difficult to see, owing to their colour and their habit of sitting still for long periods; thus they are far more familiar to the ear than to the eye.

In their nesting habits they resemble the woodpeckers; like them they excavate holes in the trunks and branches of trees with their powerful bills, and lay their pure white eggs on chips and debris at the bottom of the hollow.

281. BROWN BARBET PLATE XXI, 1

Calorhamphus fuliginosus (Temminck) 1830 *Tasau siu* (I)

Throughout Malaysia.

A common resident throughout the lowlands of Borneo, ascending to 3,500 feet.

DESCRIPTION. 7". Upperparts brown, underparts from breast pale greyish-yellow. Iris pale green, brown, or dull yellow; bill black in male, pale purple or grey or horn in female; feet red (often conspicuous in the field), soles pale yellow.

VOICE. I recorded the note as a curious thin high-pitched whistle. Davison described it as "a most extraordinary note, a low soft whistle."

HABITS. "It is generally found in small parties of three or four, sometimes in pairs and occasionally singly, hunting about the leaves, branches and trunks of trees, peering into every crevice and cranny in the bark, and clinging about in all sorts of positions far more like a tit than a barbet" (Davison). I have seen larger parties, of six or eight birds, sometimes quite low down in the understorey of the forest or on low trees.

FOOD. Fruit, ants, caterpillars.

NEST AND EGGS. Chavasse found a nest in a rotten tree on 22 December on the Usun Apau Plateau.

RACES. (*a*) *C.f. fuliginosus* (Temminck), in S. Borneo and S. Sarawak; (*b*) *C.f. tertius* Chasen & Kloss 1929, (which has the red of the underparts restricted to the chin and throat, and the abdomen more washed with sulphur-yellow) in N. Sarawak and N. Borneo; the boundary between the two races is roughly the northern watershed of the Baram River.

282. GOLD-WHISKERED BARBET PLATE XXI, 7

Megalaima chrysopogon (Temminck) 1824

Malaysia.

A common resident in submontane forests but absent from coastal peatswamp forests and rare in the lowlands away from mountains.

DESCRIPTION. 10". Under the difficult conditions in which they are seen in the field, this and the two following species are not easy to distinguish on plumage; the grey throat is perhaps the best guide. Iris grey or brown; upper mandible black, lower black or grey; feet yellow or pale olive-green.

VOICE. A loud quick double note of coppersmith tone 25 per 10 seconds in series of 30–50 double notes; also a "winding-up" call of 7–8 notes repeated.

HABITS. Found only in primary forest.

FOOD. Fruit only.

NEST AND EGGS. Not recorded from Borneo.

RACE. *M.c. chrysopsis* Goffin 1863.

283. MANY-COLOURED BARBET PLATE XXI, 6

Megalaima rafflesi (Lesson) 1839

Malaya, Sumatra, Borneo, Banka, Billiton.

A common resident in the lowlands in primary forest, occasional in secondary forest and rubber gardens throughout Borneo; there is some overlap with the zone of the Gold-whiskered Barbet, but as a rule where one is common the other is rare or absent.

DESCRIPTION. 10". Throat blue, entire crown crimson. Iris (♂) brown (♀) blue; bill black; feet (♂) pale olive-green, grey dark brown or black; (♀) black.

VOICE. A deep-toned resonant call, *took-took* (slight pause) *took-took-took* . . . to 10–15 notes at the rate of 3 per second. On two occasions I have watched and listened to a bird in a Brunei forest for long periods, and the pause after the second note was invariable and most distinctive.

NEST AND EGGS. Not recorded from Borneo.

RACE. *M.r. rafflesi.*

284. GAUDY BARBET PLATE XXI, 4

Megalaima mystacophanes (Temminck) 1824

Malaya, Sumatra, Borneo.

An abundant lowland resident of primary forest sharing the habitat of Raffles's Barbet. Found up to 4,500 feet.

DESCRIPTION. 8". Sexes differ, the female having the fore-crown greenish-blue as opposed to bright yellow in the male, and the throat greenish-blue as opposed to crimson. She resembles both sexes of the Mountain Barbet (*q.v.*) Iris dark brown; bill black; feet (♂) olive or olive-green (♀) bluish.

VOICE. Voice described as *pooh pooh lentogok lentogok* (Whitehead); a curious cooing whistle (Williams). I describe it as two short notes followed by a series of 10–15 resonant notes at the rate of two per second; tail dips at each note, which is uttered with bill closed and throat bulging out.

FOOD. Fruit; in one bird, insects.

NEST AND EGGS. Not recorded from Borneo.

RACE. *M.m. mystacophanes.*

285. YELLOW-CROWNED BARBET PLATE XXI, 2

Megalaima henrici (Temminck) 1831

Malaya, Sumatra, Borneo.

A common submontane resident in primary forest, ascending to 3,000 feet.

DESCRIPTION. 8". Centre and back of crown blue; forecrown and sides of crown yellow; lores black; a crimson collar on the nape; throat blue with two red spots on the lower sides.

VOICE. A very distinctive call, *took-took-took-took-trrrroook*, repeated, always four *tooks* followed by a rolling note, repeated without a break for ten or twenty seconds, each individual phrase lasting just over one second.

HABITS. This bird's call is one of the common sounds of submontane primary forest, but there are few specimens in museum collections, and for that reason it has always been considered a rarity. I had been hearing this call away up in the treetops, and had never been able to get a sight of the bird, until one Easter when botanizing on the ridges of Mt. Sagan in Limbang district I had a perfect view of a bird on a low tree for some minutes making this call; a mystery that had haunted me for eight years was solved at last!

NEST AND EGGS. Nothing recorded from Borneo.

RACE. *M.h. brachyrhyncha* Neumann 1908 (if recognizable).

286. GOLDEN-NAPED BARBET PLATE XXI, 8

Megalaima pulcherrima Sharpe 1888

Confined to Borneo, where it is a common higher montane species ranging from Kinabalu along the spinal chain to Mt. Mulu and Mt. Murud. On Kinabalu it ranges from 3,000 to 8,000 feet.

DESCRIPTION. 8". Forecrown, centre of crown, nape and throat blue; a golden collar on the nape. Iris brown; bill black; feet greenish, claws dark horn.

VOICE. The call is *took-took-trrrrook ,took-took-trrrrook*, etc., always two *tooks*. To the Kelabits this sounds like *tok tok borak* (*borak* is rice-beer) and they consider it a great joke that this bird should call loudly for *borak* from the mountain tops!

HABITS. A bird of montane primary forest, easily studied along the Kundasan–Bundu Tuhan track round Kinabalu.

FOOD. Small fruit in moss forest (Harrisson).

NEST AND EGGS. Unknown.

287. MOUNTAIN BARBET PLATE XXI, 9

Megalaima monticola (Sharpe) 1889

Confined to Borneo where it is a common montane species. Except for Mt. Penrissen and Mt. Poi it has been found on almost all mountains where collections have been made, from Kinabalu to Mt. Liang Kubung and the upper Kayan river.

DESCRIPTION. 9". Easily confused in the hand with female Gaudy Barbet but has a smaller bill and no red spot at the base of the rictal bristles on each side. Iris chestnut; bill black; feet dark greenish.

VOICE. The call is *took-took-took-took-* (hiccup), *took-took-took-took-* (hiccup), etc., usually very fast, five *tooks* per second, but variable and sometimes slower. The bird opens its bill only to hiccup, the rest of the time the bill is closed and the throat bulges out at each note, a ludicrous performance to watch. Another call I attribute to this species consists of a series of rolling notes with pauses in between, *rrrrrrr, rrrrrrr, rrrrrr*, the number of "rs" gradually decreasing until the bird finishes up on three or four notes—a common call on Kinabalu at 4,000–6,500 feet.

HABITS. One of the montane birds that regularly comes out into open and cultivated country, especially groves of fruit trees around longhouses. It is one of the two species on which Kelabit boys regularly learn to use the blowpipe—the other being the Red-necked Phalarope (Harrisson).

FOOD. Berries, beetles, ants (Harrisson).

NEST AND EGGS. Unknown.

288. BLACK-THROATED BARBET PLATE XXI, 5

Megalaima eximia (Sharpe) 1892

Confined to Borneo, where it is a montane species with a range similar to that of the Mountain Barbet, except that it occurs also on Mts. Penrissen and Poi.

DESCRIPTION. 6". Size of Little Barbet, but has the centre of the crown crimson instead of blue, and the upper throat black instead of blue. Iris brown; bill black, base of lower mandible horn; feet greenish.

VOICE. A much quieter barbet than the rest (Harrisson).

HABITS. Unknown.

NEST AND EGGS. Unknown.

RACES. (*a*) *M.e. eximia*; (*b*) *M.e. cyanea* (Harrisson & Hartley) 1934, with forehead and throat blue not black, on Mt. Kinabalu only.

289. LITTLE BARBET PLATE XXI 3

Megalaima australis (Horsfield) 1821

Widespread in S.E. Asia.

Resident in the lowlands, and the commonest barbet in Borneo; a familiar bird of rubber gardens and cultivated areas in addition to primary and secondary forest.

DESCRIPTION. 6". Identify by small size and voice. Iris brown; bill black; feet greenish-grey.

VOICE. The normal call is a double note, rather guttural, *to-rook, to-rook*, etc., uttered with the bill closed and the head continually turned from side to side. A modification of this call sounds rather like one of those referee whistles with a pea inside them. When refereeing, the head is *not* turned from side to side, and I have watched one bird make first one call, then a pause, then the other call, so that the difference in calls is not related to sex. On two occasions I have watched a bird utter a single rather high-pitched note at rather long intervals. This is the only barbet that is commonly heard in towns and gardens, where its *to-rook* note is uttered for hours, at any time of the day.

NEST AND EGGS. Nothing recorded from Borneo.

RACE. *M.a. duvauceli* (Lesson) 1830.

WOODPECKERS: Picidae

PICULETS (subfamily Picumninae)

The piculets are distinguished from the true woodpeckers by their very small size and short, soft tail-feathers. They are found principally in S. America, but extend to Africa and Asia, and two species are found in Borneo.

290. RUFOUS PICULET PLATE XXIII, 3

Sasia abnormis (Temminck) 1825 *Katupong, kikih, jaloh* (I)

Widespread in S.E. Asia.

Resident throughout Borneo in the lowlands and Kelabit uplands.

DESCRIPTION. 3½". Sexes differ, the female having no yellow on the forehead. Iris bright red, eye-ring red or reddish-blue (almost pale mauve); upper mandible black, lower yellow; feet orange-yellow, claws yellow. Young birds are dull olive-green.

VOICE. The usual note is a single sharp note and Ibans refer to this as *katupong*; the alarm-note, which they know as *kikih* or *jaloh*, is different *kih-kih-kih* . . . rapidly uttered. Both are regarded as omens (see p. 83) Harrisson describes a thin carrying call *ssit ssit* repeated regularly five or six times.

HABITS. It frequents chiefly secondary forest, where it prefers the vicinity of old decaying tree-trunks; less often in primary forest.

FOOD. Grubs and ant larvae in tree-trunks; soft insects.

NEST AND EGGS. Not described from Borneo.

RACE. *S.a. abnormis.*

291. SPECKLED PICULET PLATE XXIII, 4

Picumnus innominatus Burton 1836

Widespread in S.E. Asia.

A mystery bird in Borneo, represented by three specimens only. One was collected at Timbang Batu, Bongon River, Marudu Bay, on 7 January 1893, and two on Mt. Magdalena at 4,000 feet in June 1956.

DESCRIPTION. 4". Sexes differ, the feathers of the forecrown being tipped with orange in the male, not in the female. Olive upperparts and boldly spotted underparts distinctive.

HABITS. Unknown in Borneo. Presence usually revealed by a quiet tapping; keeps close to the ground as a rule, and is partial to bamboos.

NEST AND EGGS. Not described from Borneo.

RACE. *P.i. malayorum* Hartert 1912.

WOODPECKERS (subfamily Picinae) Belatok (M)

Woodpeckers are found in most parts of the world, and are easily recognized by their actions. A woodpecker flies by noisily flapping its wings for a few strokes and then gliding with them closed; this causes it to dip deeply and results in a heavy undulating flight; one bird often follows another from tree to tree, uttering loud, discordant call-notes. It usually alights on the trunk or on a main branch and then works its way up with a series of jerks, always resting with the body in a perpendicular position with the head upwards; when it wishes to descend a foot or two to search a likely spot it moves down

backwards with the same awkward jerks. Though it is unable to move down a tree-trunk head-first like a nuthatch, its structure is otherwise admirably adapted for its needs. The toes (four in most species, three in some) grasp the crevices of the bark and tilt the body backwards on to the stiff graduated tail, which is pressed into the bark by the bird's own weight. In this position the long neck affords a swing for the blows of the pickaxe bill, which is stout and modified into a cutting weapon with the end of the upper mandible vertical and chisel-shaped. It is used to extract the larvae of wood-boring insects from inside and under the bark and to expose the ends of insect galleries, which are then searched by extruding the long tongue with its barbed tip sticky with saliva. Many woodpeckers, however, feed largely on ants, which they obtain either on tree-trunks or on the ground.

The "drumming" of a woodpecker is a loud vibrating sound produced by an extremely rapid rain of blows (eight to ten per second) of the bill on a dead tree-trunk or hollow branch. In its search for insects a woodpecker frequently makes a loud tapping noise, slow or fast according to the size of the bird, but always much less rapid than, and quite distinct from, the drumming sound, which has nothing to do with the feeding habits of the bird; the significance of drumming is a cause of much speculation by ornithologists. Information as to which of the woodpeckers found in Borneo drum, and which do not, is almost non-existent.

For nesting purposes a hole is usually bored in a tree-trunk or branch at almost any height from the ground; for obvious reasons, a tree with a hollow or rotten wood in the centre is selected. Normally the entrance runs in horizontally for a few inches until the unsound wood is reached, and then turns downwards into a large oval chamber in which the eggs rest on chips and debris. The eggs are broad ovals in shape and like those of most birds that nest in holes, plain white in colour.

292. CRIMSON-WINGED WOODPECKER PLATE XXII, 2

Picus puniceus Horsfield 1821 *Belatok kesumba* (M)

Malaysia.

A common resident in primary forest and occasional in gardens, from the lowlands to the Kelabit uplands, and to about 5,000 feet on the mountains.

DESCRIPTION. 9". Sexes differ, the male having red patches on the cheeks which are wanting in the female. Bright yellow crest on

1
2
3
4
5
6
7
8
9a
9b
0"
3"
6"
0
50 mm 100
150
1956

PLATE XXII

Page

1. CHECKERED-THROATED WOODPECKER 330
Picus mentalis humei.

2. CRIMSON-WINGED WOODPECKER 328
Picus puniceus observandus.

3. BANDED RED WOODPECKER 330
Picus miniaceus malaccensis.

4. GOLDEN-BACKED THREE-TOED WOODPECKER . . 333
Dinopium javanense borneonense.

5. CRIMSON-BACKED FOUR-TOED WOODPECKER . . 337
Chrysocolaptes lucidus andrewsi.

6. GREAT SLATY WOODPECKER 335
Mulleripicus pulverulentus pulverulentus.

7. GREAT BLACK WOODPECKER 335
Dryocopus javensis javensis.

8. OLIVE-BACKED THREE-TOED WOODPECKER . . . 334
Dinopium rafflesi dulitense.

9*a*. ORANGE-BACKED WOODPECKER (♂) 337
Chrysocolaptes validus xanthopygius.

9*b*. ORANGE-BACKED WOODPECKER (♀) 337
Chrysocolaptes validus xanthopygius.

hind-neck, crimson crown and wings, and plain brown breast and abdomen distinguish it. Iris dark chestnut ; upper mandible black, lower yellow ; feet dull green or dull yellow smeared with blackish.

VOICE. A curious plaintive call-note, a very peculiar note not in the least resembling any of the varied notes of other woodpeckers (Davison).

FOOD. Feeds almost exclusively on ants, termites, and their eggs and larvae.

NEST AND EGGS. A female was taken from a nest hole containing three eggs on 16 June at Pa Mada, Kelabit uplands.

RACE. *P.p. observandus* (Hartert) 1896.

293. CHECKERED-THROATED WOODPECKER

PLATE XXII, 1

Picus mentalis Temminck 1825 *Kepiet* (I)

Malaysia.

A common resident in primary forest with a wide altitude range ; it has been collected on Mt. Trus Madi at 5,500 feet and is the commonest woodpecker in the Kelabit uplands ; on Mt. Poi it goes to over 4,000 feet.

DESCRIPTION. 11". Sexes differ, the male having spotted cheek patches, the female plain chestnut ones. Distinguish from preceding species by larger size, olive-brown crown, checkered black and white throat, and rufous-chestnut breast. Iris dark crimson, brown, or brownish-yellow, facial skin greenish ; upper mandible blackish, lower pale greyish or horn, edges and tip darker, greener at gape ; feet dull green, claws dark brown.

VOICE. A screaming jay-like call.

HABITS. It prefers primary forest or moss forest and is rarely seen in scrub or secondary forest (Harrisson).

FOOD. Ants, termites and larvae, beetles, grasshoppers, cockroaches, and other insects ; fruit (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *P.m. humei* (Hargitt) 1889.

294. BANDED RED WOODPECKER

PLATE XXII, 3

Picus miniaceus Pennant 1769

Malaysia.

A common resident in primary forest, with a range of altitude similar to that of the preceding species. Occasionally in gardens.

DESCRIPTION. 10". Like the Crimson-winged Woodpecker, has the crown and wings crimson and a yellow nuchal crest (in this species mixed with crimson). Sexes differ, the females having the cheeks spotted with white. The name is derived from the narrow blackish banding on the buff belly. Iris dark reddish-brown or chestnut ; upper mandible black, lower whitish or grey or pale blue ; feet grey, greenish, or dull greenish-brown, claws horn.

VOICE. I watched a pair in a Sibu garden which uttered a plaintive mewing cry of two or three notes on the same pitch.

FOOD. Ants and eggs (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P.m. malaccensis* Latham 1790 ; (*b*) *P.m. dayak* (Stresemann) 1921, smaller, in S. Borneo. The distribution of these two forms requires working out.

295. RUFOUS WOODPECKER PLATE XXIII, 1

Micropternus brachyurus (Vieillot) 1818 *Belatok cherang* (M)

Widespread in S.E. Asia.

A common resident in primary and secondary forest with a wide altitude range, from sea level to 5,700 feet. Also found in the North Natunas.

DESCRIPTION. 9". Sexes differ, the male alone having a crimson patch below and round the eye. Iris light brown, chestnut, reddish-brown, or dull crimson ; bill black ; feet dark grey or dirty brown.

VOICE. I have heard it utter a loud high-pitched call of five to six notes on the same pitch.

FOOD. Feeds entirely on ants (Harrisson).

NEST AND EGGS. Not described from Borneo. Elsewhere it hollows out a chamber for its eggs in the carton-like nests made by certain kinds of ants.

RACE. *M.b. badiosus* (Bonaparte) 1850.

296. ORIENTAL PYGMY PIED WOODPECKER

PLATE XXIII, 7

Dendrocopos canicapillus (Blyth) 1845

Widespread in S.E. Asia.

Resident in the lowlands. Apparently scarce in S. Borneo, elsewhere locally common, ascending the mountains to 4,000 feet.

DESCRIPTION. 5½". Sexes differ, the male having two small crimson streaks above the white eyebrows. Distinguish from next species by strong orange wash on the underparts and absence of broad black stripes on the cheeks. Iris whitish; bill grey; feet dark greenish-grey.

VOICE. Not described for Borneo. Elsewhere it utters a shrill squeaking note, a short sharp *cheep* or *chip chip*, and like most pied woodpeckers it is known to drum.

FOOD. Ants, small beetles, small red caterpillars (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *D.c. aurantiiventris* (Salvadori) 1868.

297. MALAYSIAN PYGMY PIED WOODPECKER

PLATE XXIII, 9

Dendrocopos moluccensis (Gmelin) 1788 *Belatok pedada* (M)

Malaysia and the Lesser Sundas.

Resident in Borneo, but apparently rather rare, and found chiefly in coastal districts. There are no montane records.

DESCRIPTION. 5½". Resembles the preceding species.

VOICE. Not described.

HABITS. Several have been collected near Kuching, so it should not be difficult to study.

NEST AND EGGS. Low collected eggs on Labuan, 18×14 mm.

RACE. *D.m. moluccensis.*

298. FULVOUS-RUMPED BARRED WOODPECKER

PLATE XXIII, 6

Meiglyptes tristis (Horsfield) 1821 *Belatok batu* (M)

Malaysia.

A common resident in the lowland forests throughout Borneo; found also in the North Bornean islands and the North Natunas.

DESCRIPTION. 6". Sexes differ, the male alone having crimson stripes on the cheeks. A pale patch on the lower back. Iris brown; bill black; feet pale olive-green or greenish.

VOICE. Not described.

FOOD. Ants.

NEST AND EGGS. Not described from Borneo.

RACE. *M.t. micropternus* Hesse 1911.

299. BUFF-NECKED BARRED WOODPECKER

PLATE XXIII, 8

Meiglyptes tukki (Lesson) 1839

Malaysia.

A common resident in the lowland forests of Borneo.

DESCRIPTION. 8". Resembles the preceding species, but lacks the pale patch on the back and has a prominent buff patch on the side of the neck. Iris dull crimson ; upper mandible black, lower grey, darker at tip ; feet dull greyish-green.

VOICE. Not described.

FOOD. Ants and termites.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *M.t. tukki*, in N. Borneo and the N. Natunas ; (*b*) *M.t. percnerpes* Oberholser 1924 (upperparts much paler, underparts paler and duller) in S. Borneo ; (*c*) *M.t. pulonis* Chasen & Kloss 1929, on Banggi Island only.

300. GREY-AND-BUFF WOODPECKER PLATE XXIII, 5

Hemicircus concretus (Temminck) 1824

Malaysia.

Resident and widely distributed in Borneo, but local and nowhere common.

DESCRIPTION. 5". Sexes differ, the crown being scarlet in males (buffy-cinnamon in young males) and grey in females. A handsome little woodpecker with upperparts checkered black and rich buff (which fades to white in old skins) conspicuous buff rump, and very short tail ; underparts dark olive-green. Iris brown ; bill and feet dark grey.

VOICE. Not described.

HABITS AND FOOD. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *H.c. coccometopus* Reichenbach 1854.

301. GOLDEN-BACKED THREE-TOED WOODPECKER

PLATE XXII, 4

Dinopium javanense (Ljungh) 1797 *Belatok kungit* (M)

Widespread in S.E. Asia.

Resident in Borneo but apparently confined to coastal areas, except in the Papar district of North Borneo where Everett described

it as the commonest species of its tribe both on the coast and for some distance inland.

DESCRIPTION. 9". Sexes differ, the crown and nape being crimson in males, black with white streaks in females. Crimson lower back and rump and the black and buff pattern of the underparts distinguish it from the next species. Iris dark brown or chestnut ; upper mandible and tip of lower black, rest grey-blue ; feet grey, claws horn.

VOICE. Nearly always in pairs, the two birds usually in different trees keeping contact with a loud rattling call (not otherwise used ?) in flight : *churrrrrrrr* which may be prolonged to several seconds. Both birds use the same contact call, but the male note is appreciably harsher and rougher (Harrisson).

HABITS. Unusual for a woodpecker. Although quite large, it has a very delicate stance and movements. Frequently works up to the very top shoots of casuarina, mangrove, or other trees. It is not so restless as most species but will remain for many minutes in one position, only revealing itself by occasional movements of the head with its vivid scarlet crest erect (Harrisson).

FOOD. Mostly picks ants, etc., off the bark but will also hammer at high branches on young trees, shedding the bark for insects underneath (Harrisson).

NEST AND EGGS. Low collected an egg on Labuan, 24×18 mm.

RACE. *D. j. borneonense* (Dubois) 1897.

302. OLIVE-BACKED THREE-TOED WOODPECKER

PLATE XXII, 8

Dinopium rafflesi (Vigors) 1831

Malaya, Sumatra, Borneo, Banka.

Resident in the lowland forests, but not common ; there are specimens in museums from most parts of Borneo, and it has been obtained once in the Kelabit uplands at 5,200 feet.

DESCRIPTION. 10". Sexes differ, crown and crest being crimson in males, black in females. Differs from the last species in having the mantle back and rump olive-green, throat pale, and underparts plain olive-brown (with a few white spots on the sides). Iris dark ; upper mandible blackish, lower light grey, the tip darker grey ; feet dull greyish-green.

VOICE. Not described.

FOOD. Ants, termites and especially ant pupae (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *D. r. dulitense* Delacour 1946.

303. GREAT BLACK WOODPECKER PLATE XXII, 7

Dryocopus javensis (Horsfield) 1821
Belatok mahkota (M) ; *belatok tawang* (I)

Widespread in S.E. Asia.

Resident but uncommon in the lowlands of Borneo in primary forest ; also found in the North Bornean islands and the North Natunas.

DESCRIPTION. 17". Unmistakable. Sexes differ, the crown and cheek patches being scarlet in males, black in females. Iris straw-yellow ; upper mandible dull black, lower a little paler ; feet dark grey.

VOICE. In Burma it utters a variety of notes, but a powerful single note is perhaps the most usual ; drumming has also been recorded.

NEST AND EGGS. Not described from Borneo.

RACE. *D. j. javensis.*

304. GREAT SLATY WOODPECKER PLATE XXII, 6

Mulleripicus pulverulentus (Temminck) 1826 *Indu gara* (I)

Widespread in S.E. Asia.

Resident and not uncommon in primary forest, in both lowlands and uplands. Occurs in the North Natunas.

DESCRIPTION. 17". Sexes differ, the male having a crimson cheek patch. In its noisy flight it appears dark grey with the head and neck paler. Iris very dark brown, facial skin dark blue ; upper mandible dirty white with dark ridge, lower dirty white but grey at base and tip ; feet blackish.

VOICE. It utters a peculiar and quite distinctive whinnying note.

HABITS. Usually seen in pairs or small family parties, which follow one another at intervals from the top of one tall tree to another, clamorous and cautious. Drumming has been observed in Burma.

FOOD. Ants and insects.

RACE. *M. p. pulverulentus.*

305. MAROON WOODPECKER PLATE XXIII, 2

Blythipicus rubiginosus (Swainson) 1837 *Pangkas, kutok* (I)

Malaya, Sumatra, Borneo.

A common resident in lowland and hill forests with a wide altitudinal range, going up to 5,500 feet on Kinabalu.

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1. RUFOUS WOODPECKER *Micropternus brachyurus badiosus.*	331
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1
2
3
4
5
6
7
8
9
0"
3"
6"
0
50
mm
100
150
1956

DESCRIPTION. 8". The ivory-white bill is diagnostic. Iris light brownish-red ; feet blue-black.

VOICE. Ibans distinguish two omen calls. The first, known as *kutok*, is a sharp *chikick, chikick* note ; the second, known as *pangkas*, is a high-pitched *chai-chai-chai-chai* . . . , a typical woodpecker call.

HABITS. Frequents both primary and secondary forest and rubber gardens.

FOOD. Soft grubs taken from dead wood (Harrisson).

NEST AND EGGS. In the Kelabit uplands nests in January.

RACE. *B. r. parvus* Chasen & Kloss 1929.

306. CRIMSON-BACKED FOUR-TOED WOODPECKER

PLATE XXII, 5

Chrysocolaptes lucidus (Scopoli) 1786

Widespread in S.E. Asia.

Resident in a restricted area of N.E. Borneo from Sandakan down to Sibatik Island.

DESCRIPTION. 11". Both sexes resemble the Golden-backed Three-toed Woodpecker, and would be difficult to differentiate in the field. In the hand the extra toe and the different shape of the tail are distinctive.

VOICE. Not described from Borneo. In Burma it utters a harsh loud prolonged call, incessant and strident, and drums occasionally.

FOOD. Large white moth grubs (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *C. l. andrewsi* Amadon 1943.

307. ORANGE-BACKED WOODPECKER PLATE XXII, 9

Chrysocolaptes validus (Temminck) 1825

Malaya, Sumatra, Java, Borneo.

A common resident in the lowland forests, and has been collected as high as 6,500 feet on Mt. Murud. Occurs in the North Natunas.

DESCRIPTION. 11". Sexes differ, the female having the back whitish instead of orange, and the head and underparts greyish-brown instead of crimson. Iris pale yellow or light brown ; upper mandible transparent, lower yellow ; feet olivaceous.

VOICE. Not described from Borneo.

FOOD. Insects, caterpillars (Harrisson).

NEST AND EGGS. A single egg collected in N. Borneo on 25 June was described by Gibson-Hill as " egg-shaped. Surface smooth and glossy. Colour white. 29×23 mm."

RACE. *C. v. xanthopygius* Finsch 1905.

BROADBILLS : Eurylaimidae

This family is found in tropical Africa and Asia, and in Malaysia. It is very well represented in Borneo, which has two magnificent species found nowhere else in the world. As the name suggests, broadbills can be recognised by their heavy broad bills, often brightly coloured ; many of them have the most beautiful plumage, but as they are rather stolid and lethargic birds of the dense tropical forest, they are not often seen except for one species—the ubiquitous Black-and-Red Broadbill.

They all build much the same type of nest. It is usually suspended from the tip of a branch in a shady ravine in the forest, and nearly always hangs over a stream or pool of water. It is shaped like a gigantic pear with a long drawn-out neck attaching it to the supporting branch, and usually has a large porch over the entrance. It is made of grass, leaves, moss, roots, etc., and lined with green leaves ; below the nest proper hangs a long tail of oddments fastened on with cobwebs, and the outside of the nest is often decorated with lichen and cocoons.

308. GREEN BROADBILL PLATE XXIV, 2

Calyptomena viridis Raffles 1822 *Entebar* (I)

Malaya, Sumatra, Borneo, Siberut.

Resident throughout Borneo in the lowland forests ; Whitehead described it as fairly common in old forests, where it frequents the lower branches of high trees in shady places ; reaches an altitude of 4,000 feet on Kinabalu but is scarce at that elevation. It occurs in the North Natuna Islands.

DESCRIPTION. 6". Sexes differ. The male is a beautiful iridescent grass green with black bars and patches on the wings, whereas the female is a dull green and without the black markings. Iris dark brown ; bill black above, greenish below and at tip, yellow along edges ; feet dull green, soles yellowish.

VOICE. Harrisson describes a *chai* note repeated fast.

HABITS. Owing to its sluggish habits and green colour it is not easy to see in the tops of the tall trees it frequents.

FOOD. Fruit.

NEST AND EGGS. "The nest is suspended from the branch of a tree and is gourd-shaped, large at the bottom and narrow above, the narrow neck forming a band which passes over the branch to secure it. It is composed of coarse fibres very closely and compactly put together; the aperture is in the side. The eggs, two in number, are uniform creamy-white, slightly tinged with very pale brown." (Bartlett, 1895 : 215).

RACE. *C. v. gloriosa* Deignan 1947.

309. HOSE'S BROADBILL PLATE XXIV, 1

Calyptomena hosei Sharpe 1892

Confined to Borneo, where it is a submontane bird with a patchy distribution. It has, for instance, never been seen around Kinabalu ; but is quite common in the Baram drainage (Kelabit uplands, Mt. Murud, Mt. Batu Song, Mt. Dulit from sea level to 3,000 feet, Usun Apau Plateau—and once seen on Mt. Mulu) ; very common on Mt. Liang Kubung but absent from Mt. Kenepai ; absent from the upper Mahakam, but occurs in the upper Telen.

DESCRIPTION. 8". Sexes differ, the female being dull green with the middle of the abdomen light blue and black spots on the wings only. The lovely pale blue catches and reflects the light, where the usual broadbill green absorbs it in the jungle ; hence it is much easier to spot than the Green Broadbill (Harrisson). Iris dark ; bill blackish ; feet dull olive-green.

VOICE. Hose mentions that he was attracted by the curious note. not unlike the subdued cooing of a dove.

FOOD. Fruit and insects, sometimes mixed (Harrisson).

NEST AND EGGS. Not described from Borneo.

310. WHITEHEAD'S BROADBILL PLATE XXIV, 3

Calyptomena whiteheadi Sharpe 1887

Confined to Borneo, where it is a montane species. It probably extends all along the spinal range from Kinabalu, where it was first discovered, at least to Mt. Batu Tibang, on which it has been collected at 4,000 feet. It is, however, absent from Mt. Penrissen,

Mt. Poi, and Mt. Liang Kubung. It occurs on Mt. Mulu, the Usun Apau Plateau, and Mt. Dulit, and in fact probably on all mountains in the Baram drainage.

DESCRIPTION. 10". Sexes differ, the male being iridescent green. Large size and black throat prevent confusion with the Green Broadbill. Iris dark brown ; feet green-grey, soles yellow.

VOICE. It is a very quiet bird and just likes to sit still ; but Boys records a loud and harsh jay-like call and a snore-like wheeze, very noisy, and Harrisson a shrill *saaat* and a grinding noise.

HABITS. " Frequents the dark damp ravines of Kinabalu, where the forest is tropical, but wherever the ground is poor and the trees become alpine in character it is absent. The bird frequents the lower branches of big trees " (Whitehead).

FOOD. Feeds chiefly on jungle fruits (Whitehead). Fruits are generally swallowed whole, and twice I have seen a bird take down a large-stoned fruit, bigger than plum-size, in one stupendous gulp (Harrisson).

NEST AND EGGS. Whitehead found a nest on 17 March which he painted into the frontispiece of his magnificent book, and described as follows : " The nest was hanging from the end of a slender bough about fifty feet from the ground. This position is no doubt chosen for protection from monkeys. The outside was composed of fresh green moss bound over the bough and worked into the sides, ending up with a long streamer, which assists in assimilating the appearance of the nest to the long dripping streamers of moss and lichens which hang from every bough in these ever rainy regions. The inside of the nest is very solid, lined with dry bamboo-leaves above and below, forming a well sheltered pocket." This nest contained two featherless young. Another nest found a few days later contained two glossy creamy-white eggs. Gibson-Hill describes an egg taken by Ryves as "shape pyriform. Surface fine matt. Colour uniform white. 33×26 mm."

PLATE XXIV, 4 **311. LONG-TAILED BROADBILL** PHOTO PLATE 36

Psarisomus dalhousiae (Jameson) 1835

Widespread in S.E. Asia.

A montane resident with a restricted range from Kinabalu to the Tama Abo range and Mt. Dulit ; also on Mt. Mulu.

DESCRIPTION. 10". It is difficult in an illustration to convey the brilliance of this bird's plumage or the brightness of the blues and

yellows that offset the general green colour ; there is a blue patch on the crown and the wings and tail appear mainly light blue in flight. " Sexes differ, the nape of the neck of the female having a patch of yellow feathers between the black and blue patches. This colour is absent in the collar of the male, which has only a blue patch " (Whitehead). Iris glassy-blue with well defined orange inner ring ; bill with white tip ; legs greenish.

VOICE. Not described from Borneo. In Burma it utters a not unmusical, rather shrill, loud whistling call of five to eight notes all on the same pitch, and is a bird of dense mountain forest.

FOOD. Insects, grasshoppers, cicadas, locustids (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (None recognizable).

312. BLACK-AND-RED BROADBILL PLATE XXIV, 6

Cymbirhynchus macrorhynchus (Gmelin) 1788
Ganggang merah (M, I)

Malaysia and S. Indo-China.

Resident throughout the lowlands of Borneo, and abundant in most areas.

DESCRIPTION. 8". A white streak down each wing is prominent in flight. Young birds are duller and have some grey and white on the throat. Iris green ; upper mandible bright blue, lower yellow ; feet pale grey-blue to dark blue.

VOICE. According to Davison, the note resembles that of the two following species but can be distinguished by a practised ear. I have found it to be a remarkably silent bird.

HABITS. Owing to its river-haunting habits this broadbill is seen far more often in Borneo than any of the other species ; it is the only one not restricted to primary forest, and may be seen about rubber gardens or the outskirts of towns.

FOOD. Beetles (Williams). Includes riverine things, even a little fish, small crustaceans, and once a small crab (Harrisson). Also crickets, grasshoppers, berries.

NEST AND EGGS. Its gigantic pear-shaped nest is typical of the family, and is built overhanging a river or stream ; it looks like a bunch of rubbish caught up by an overhanging branch during a high flood. The egg is densely flecked chestnut on a pinkish-buff ground, the markings thicker at the broad end (Medway).

RACE. *C. m. macrorhynchus.*

313. BLACK-AND-YELLOW BROADBILL PLATE XXIV, 5

Eurylaimus ochromalus Raffles 1822
Madi kechil (M) ; *kungkong memadi* (I)

Malaysia.

Resident throughout Borneo in the lowlands in primary forest, ascending mountains to about 4,000 feet ; occurs in the North Natuna Islands.

DESCRIPTION. 6". In general colour it resembles the next species, but is distinguished by smaller size and different head pattern. Young birds are duller, with pale yellow forehead and eyebrows. Iris golden-yellow ; bill sky-blue or green, more purple at base and with black edges to mandibles ; feet purple, claws horn.

VOICE. I have watched it uttering a plaintive peeping cry, also a long shivering call consisting of one note repeated, for about seven seconds, accelerating as it goes on. Harrisson describes a *kor kor kor* note of the male at the nest.

HABITS. This charming little bird is heard far more often than it is seen, like many others of the dense forest. Williams observed it clinging to the trunk of a tree like a woodpecker hunting for its food.

FOOD. Molluscs, hymenoptera, scarabs, longicorns and other beetles, locustids, grasshoppers, other insects, fruit (Harrisson).

NEST AND EGGS. Kelabits say it likes to nest in a thorny tree or close to a bees' nest. It makes a large hanging nest with a hole in the side, usually in secondary forest, and the usual clutch comprises two eggs. Harrisson found a nest, a loose floppy sack, bulky and soft, sixty feet up in a big tree near Bau on 22 April, with two well-fledged young.

RACE. *E. o. ochromalus.*

314. BANDED BROADBILL PLATE XXIV, 7

Eurylaimus javanicus Horsfield 1821 *Madi besar* (M)

Malaysia and S. Indo-China.

In Borneo its range coincides with that of the Black-and-Yellow Broadbill, and it seems to be equally common. Also occurs in the North Natuna Islands.

DESCRIPTION. 8". Resembles the preceding species but has no white collar. Young birds are duller above, yellowish-pink below. Iris white ; bill blue, edges and tip black ; feet pale flesh or blue-grey.

VOICE. It has a most distinctive note, which starts as a *chrrr*,

accelerates with great rapidity until it could be a cicada, then dies away with no break at all (Harrisson).

HABITS. Not described from Borneo.

FOOD. Large locustids, spiders.

NEST AND EGGS. Not described from Borneo.

RACE. *E. j. brookei* Robinson & Kloss 1919.

315. DUSKY BROADBILL PLATE XXIV, 8

Corydon sumatranus (Raffles) 1822
Madi hitam (M); *tuntong berutak* (I)

Malaysia and Indo-China.

Sparsely distributed in the lowlands of Borneo in primary forest, and occurs in the Kelabit uplands to 4,000 feet.

DESCRIPTION. 9". There is a concealed flame-coloured patch on the back, and white patches appear on the wings and tail in flight. Iris dark brown, skin round eye pale purple; bill flesh-pink with crimson patches or pale purple fading to dirty white at tip; feet and claws black.

VOICE. I have several times come across noisy parties in primary forest, but find it difficult to write down its calls. Harrisson describes its note as *ki-ip, ki-ip.*

HABITS. The parties I have seen kept to the lower part of the canopy, but Morrison noted them perching prominently on the extreme tops of trees. It has a funny way of clambering about, rather like a malcoha (Harrisson).

FOOD. Lizard, grasshoppers, ants, scarabs, locustids, soft insects (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *C.s. brunnescens* Hartert 1916.

[NOTE.—Further examination of the material in the Sarawak Museum since the publication of the Checklist suggests that *C.s. orientalis* Mayr 1938 is untenable. Sims, working on material in the British Museum, informs me *in litt.* that he has arrived at the same conclusion.]

PITTAS: Pittidae

Pittas are found in Africa, S.E. and N.E. Asia, Malaysia and Australasia. They are plump forest birds with long legs and short tails that live on the ground and obtain their food by scratching

about amongst the leaves and hunting for ants, worms, lizards, beetles, and insects of all kinds ; though they can fly quite well, they usually progress by immense bounds repeated at great speed (c.f. kangaroo), a habit that makes them easy to recognize in the field—if indeed any help is required in recognizing some of the most beautiful birds in the world. In dense cover they are easily overlooked, but their loud whistles, generally of two or three syllables, often reveal their presence.

" Pittas as a rule keep to the ground or on the lower branches of trees near it ; but I have shot these birds high up in trees where they have been whistling. It is not at all an uncommon thing to hear a pitta cry out in the middle of the night, which they do either in the forests or when taking flights from one forest to another ; these movements take place most frequently on moonlight nights.

There is little doubt that pittas are migratory, as they may be met with at certain times in numbers on the small islands some distance from the coast, which at other times do not contain a single bird (see under *P. moluccensis*). At some seasons districts on the coast are frequented by numbers of a certain species, where in other seasons it would be impossible to procure a specimen." (Whitehead).

The nest is a large ball-like structure, often elongated like a Rugby football, placed on or near the ground with the entrance at the side ; it is constructed of bamboo leaves, grass, and roots, carelessly and untidily assembled, and may have a lining of fibres and rootlets. The eggs are white to pale cream, speckled and streaked with various shades of red and purple.

Sliman calls these birds *tiong tanah*, a name not given in Wilkinson's Dictionary.

316. GIANT PITTA PLATE XXV, 2

Pitta caerulea (Raffles) 1822 *Paat* (I)

Malaya, Sumatra, Borneo.

A rare resident of primary forest in the lowlands, and a single specimen has been obtained on Mt. Murud at 3,000 feet.

DESCRIPTION. 11". Sexes differ ; in the female the mantle is reddish-brown as opposed to blue in the male, and the whole crown is buffy-grey mottled with black. Young birds are dark brown and mottled.

PLATE XXIV

PLATE XXIV

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1. HOSE'S BROADBILL 339
Calyptomena hosei.

2. GREEN BROADBILL 338
Calyptomena viridis gloriosa.

3. WHITEHEAD'S BROADBILL 339
Calyptomena whiteheadi.

4. LONG-TAILED BROADBILL 340
Psarisomus dalhousiae.

5. BLACK-AND-YELLOW BROADBILL 342
Eurylaimus ochromalus ochromalus.

6. BLACK-AND-RED BROADBILL 341
Cymbirhynchus macrorhynchus macrorhynchus.

7. BANDED BROADBILL 342
Eurylaimus javanicus brookei.

8. DUSKY BROADBILL 343
Corydon sumatranus brunnescens.

HABITS. Little known. Davison described it as extremely shy and unlike other pittas in that when disturbed it rises and flies off low but rapidly for about 200 yards.

NEST AND EGGS. Not described from Borneo.

RACE. *P. c. hosei* Baker 1918.

317. BLUE-BANDED PITTA PLATE XXV, 1

Pitta arcuata Gould 1871

Confined to Borneo.

A bird of primary forest with a preference for submontane localities. Most Sarawak Museum specimens come from the mountains at 2,000–5,000 feet, but there are a few from low levels. On Kinabalu, Whitehead found it at 2,000–4,000 feet in true forest, frequenting thick bamboo-jungle.

DESCRIPTION. 6". Unmistakable. Iris pale grey ; upper mandible black except tip which has reddish tinge, lower mandible dirty reddish all over with some blackish just before the tip ; feet and claws pale horn or bluish-slate.

VOICE. Shelford described its note as a melancholy whistle, constantly heard on Mt. Penrissen.

FOOD. Ants.

NEST AND EGGS. Hose found it nesting on Mt. Dulit in September, and Shelford found a nest with eggs on Mt. Penrissen ; the eggs were white spotted with grey and brown.

318. GARNET PITTA PLATE XXV, 4

Pitta granatina Temminck 1830

Malaya, Sumatra, Borneo.

Resident throughout the lowlands in primary forest, and locally common.

DESCRIPTION. 6". Unmistakable. Iris dark brown ; bill black ; feet dark grey, claws dark horn.

VOICE. According to Whitehead the note is peculiar, being a prolonged whistle, gradually rising in power, and suddenly ceasing when it reaches its highest pitch. Adams reported that " This beautiful species was sometimes found sitting on a log, with point of beak elevated, softly whistling a very mellow and musical strain."

HABITS. " Generally observed on the ground, but sometimes perched on the twig of a fallen branch or hopping lightly along a log.

The flight, as of the other species, is usually quite short, consisting merely of passing near the ground from one slightly elevated position across pools of water to another" (Adams). According to Bartlett, "Ordinarily it ran about, stopping every now and then, bobbing its head up and down, flirting its tail meanwhile like a moorhen."

FOOD. Wood grubs, scarabs, molluscs, ants, crickets, beetles, hard round large seeds (Harrisson).

NEST AND EGGS. The nest and eggs are typical of the family, and have been described by several authors, including Beccari, Bartlett, and Gibson-Hill (references in Checklist). Gibson-Hill describes eggs taken by Ryves at Kiau as "egg-shaped. Surface smooth. Ground-colour white, finely and fairly thickly spotted with light violet-grey and drab. 17×13 mm."

RACES. (*a*) *P. g. granatina*, with a crimson crown, in S. Borneo and Sarawak; (*b*) *P. g. ussheri* Gould 1877, with a black crown, in N. Borneo. On the west side the dividing line between the two races is roughly the watershed between the Lawas and Merapok rivers.

319. BLUE-HEADED PITTA PLATE XXV, 3

Pitta baudi Müller & Schlegel 1840

Confined to Borneo, where it occurs throughout the lowlands in primary forest and is locally common.

DESCRIPTION. 7". Sexes differ, the female being brick-red above and pale brown below, but with the tail blue as in the male. Bill black; feet and claws pale horn.

HABITS. Similar to those of the Garnet Pitta.

NEST AND EGGS. Unknown.

320. BANDED PITTA PLATE XXV, 6

Pitta guajana (P. L. S. Müller) 1776

Malaysia.

A submontane resident in Borneo, confined to old jungle and distinctly local. On Kinabalu one of Whitehead's native collectors obtained two at 5,000 feet, but most records are at altitudes of 2,000–4,000 feet, and in a few spots it has been obtained near sea level.

DESCRIPTION. 8". Unmistakable. Yellow eyebrows conspicuous. Sexes differ slightly, the female being less richly coloured and lacking

the blue patch on the belly. Iris brown ; bill black ; feet greenish-horn, claws pale horn.

VOICE. Not described.

HABITS. Hops extremely fast, and with a rather different stance from other pittas ; often settles on low branches. In the Kelabit uplands it is regularly found in secondary jungle round longhouses (Harrisson).

FOOD. Ants, soft insects, and cockroaches (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *P. g. schwaneri* Bonaparte 1850.

PLATE XXV, 7 **321. BLUE-WINGED PITTA** PHOTO PLATE 36

Pitta brachyura (Linnaeus) 1766

Widespread in S. and E. Asia, extending to Japan. One race breeds in western Borneo, one is a passage migrant and winter visitor, and a third has been collected once.

DESCRIPTION. 7". When flying away it appears dark blue with conspicuous white wing-patches. Iris dark brown ; bill very dark horn ; feet and claws grey-horn or pale flesh.

VOICE. They utter loud and frequent cries before rain and are therefore called *ujan ujan* (rain, rain) by the Malays (Motley and Dillwyn). Whitehead describes the note as a short whistle uttered sharply three times, the first note being the shrillest.

HABITS. Frequents primary and secondary forest. " Takes flight more often when alarmed than other species of this genus I have met with " (Whitehead). Flies with a quail-like whirr and often settles two or three feet from the ground (Harrisson).

FOOD. One bird's stomach was full of small shrimps (Motley and Dillwyn). Spiders, insects, large hornets, scarabs (Harrisson).

NEST AND EGGS. Coomans de Ruiter (1938) found it breeding in W. Borneo.

RACES. (*a*) *P. b. moluccensis* (P. L. S. Müller) 1776, formerly known as *P. cyanoptera* (Temminck), is the common form in Borneo. Hose found it all the year round in Baram district but did not discover it breeding there. Whitehead reported that it was fairly plentiful in Labuan in some seasons, but at other times was not to be met with. On Pulau Tiga he found it in numbers in April 1886, but a year later it was not there. Harrisson saw many in the Kelabit uplands and also found the dried skins used as children's toys in Kelabit houses. This race breeds also in Thailand and Indo-China.

(*b*) *P. b. nympha* Temminck and Schlegel 1850, breeds in Korea and Japan, and is an occasional visitor to Borneo, where six specimens have been collected ; dirty-looking underparts with a slight greenish tinge distinguish it ; (*c*) *P. b. megarhyncha*, Schlegel 1863 with a longer bill (1·5–1·6 inches from gape as against 1·2 inches) breeds in the mangrove forests of Malaya and Sumatra, and has been collected once in Borneo (Baram district), 1891.

322. GREEN-BREASTED PITTA PLATE XXV, 5

Pitta sordida (P. L. S. Müller) 1776

Widespread in S.E. Asia, extending to New Guinea.

Resident throughout Borneo in the lowlands in primary forest ; locally common.

DESCRIPTION. 6". In flight there is a large white patch on the wings. Iris dark brown ; bill black ; legs flesh.

VOICE. Von Berchtold says that except during the heat of the day its note *fih fih* repeated at short intervals draws attention to its presence. Fischer recorded two equally loud notes one after the other, repeated several times. Williams noted : " One shot in Samarahan was sitting in a low tree, where it was whistling like a Common Thrush."

HABITS. I have several times seen it flying across a stream in primary or secondary forest, and Harrisson notes it as quite common in the very extensive scrub and secondary forest of the densely cultivated Niah River, where he has also seen it quite in the open. Banks found it not infrequently on the edge of mangrove swamps.

NEST AND EGGS. Fischer described a nest in S. Borneo, which was very large, built on the ground, and covered with bamboo leaves. Eggs collected by Low on Labuan are described by Sharpe as " ground-colour creamy-white rather thickly scribbled over with reddish-brown lines and spots, and plentifully varied with underlying spots of light purple." About 25 × 20 mm.

RACE. *P. s. mulleri* Bonaparte 1850.

LARKS : Alaudidae

Larks are found all over the world, but only two species occur in Borneo. They closely resemble pipits, but can be distinguished in the field by their weaker flight.

322a. SKYLARK

Alauda arvensis Linnaeus 1758

Palaearctic and Oriental Regions. Not so far recorded in Malaya.

A rare vagrant in Borneo. On 23 November 1950, driving home from the Museum past the Kuching golf course, Harrisson saw six on the fairway. One was collected on 25 November for identification. On 4 December Harrisson saw twenty.

DESCRIPTION. 6½". Upperparts brown, strongly streaked blackish; underparts whitish with boldly streaked breast. Long tail with conspicuous white on outer feathers. Flight over short distances rather fluttering and wavering, in contrast to pipits. Iris brown; bill dark horn above, whitish along edge and below; legs pale flesh.

FOOD. Small insects and grass seed (Harrisson).

RACE. Uncertain. Matches worn winter birds from N. Kansu.

323. BUSH LARK

Mirafra javanica Horsfield 1820

Widespread in S.E. Asia, extending to Australia, but absent from Malaya and Sumatra.

Resident in S. Borneo.

DESCRIPTION. 5". Wing 70–75 mm. Reddish-brown above, heavily mottled with blackish; pale below streaked with black; wing-feathers bordered with reddish-brown.

HABITS. Not described from Borneo.

RACE. *M. j. javanica*.

SWALLOWS: Hirundinidae

Swallows are found all over the world, and are so well known that description is hardly necessary. Many people confuse swallows and swifts, but they are not closely related. Both are graceful fliers, but swifts fly faster and have narrower sickle-shaped wings. Swallows perch freely on telephone wires, bushes, sometimes trees; tree swifts perch on trees; other swifts *never perch* but rest between flights by clinging to cliffs, cave walls, palm fronds, or other vertical surfaces with their claws.

A general Malay name for both swifts and swallows is *layang-layang* or *delayang*.

324. SAND MARTIN

Riparia riparia Linnaeus 1758

Holarctic.

One was picked up dead on the verandah of the Sarawak Museum in Kuching on 3 November 1893—the only record for Borneo.

DESCRIPTION. 4½". Small size, pale grey-brown upperparts, and brown breast band separating white throat from white belly are diagnostic.

RACE. *R. r. ijimae* (Lönnberg) 1908.

325. ASIATIC HOUSE MARTIN

Delichon dasypus (Bonaparte) 1850

Breeds in E. Asia and Japan, wintering in Malaysia.

Rare vagrant in Borneo. Diard collected the two type specimens at Pontianak in 1826. There was no subsequent record until recently, when it was seen at Santubong on 20 October 1956 (Harrisson), near Mt. Matang in early November 1956 (Allen) and at Kuching airport on 17 October 1957 (Harrisson).

DESCRIPTION. 5". White rump and underparts contrast with black upperparts.

RACE. Some authorities regard this bird as a race of the European House Martin *D. urbica* Linnaeus 1758.

PLATE XVII, 9 **326. PACIFIC SWALLOW** PHOTO PLATE 37

Hirundo tahitica Gmelin 1789 *Layang-Layang* (M)

S. India to Polynesia.

An abundant resident in open country throughout Borneo, and occurs in the Natunas, Karimatas, and North Bornean islands.

DESCRIPTION. 5". Not easy to distinguish from the next species in the field, except when perched, when the absence of any black between chestnut throat and greyish abdomen can be seen. Iris black.

VOICE. The usual note, especially on the wing, is *twsit-twsit-twsit*, often run together into a regular twitter, with variant *titswee*, the second syllable higher than the first. A loud note is uttered as it stoops to attack birds, animals, or even human beings near its nest.

HABITS. In Borneo wherever the forest has been cleared for cultivation, the swallows (Pacific and Common) weave a continuous pattern back and forth low over the padi fields, grasslands, towns, and pepper gardens ; after a time the eye ceases to register them any longer, and it is only now and again, perhaps in the heat of the day when no other bird is in sight, that one notices the swallows are tirelessly flying, flying. The flight is marked by graceful irregularity, with constant swerving or banking, but always with a sweep or elegance that are characteristic. The wing-beats are easy and regular, with frequent interludes of gliding with extended or nearly closed

PLATE XXV

Page

1. BLUE-BANDED PITTA 346
Pitta arcuata.

2*a*. GIANT PITTA (♂) 344
Pitta caerulea hosei.

2*b*. GIANT PITTA (♀) 344
Pitta caerulea hosei.

3*a*. BLUE-HEADED PITTA (♂) 347
Pitta baudi.

3*b*. BLUE-HEADED PITTA (♀) 347
Pitta baudi.

4. GARNET PITTA 346
Pitta granatina ussheri.

5. GREEN-BREASTED PITTA 349
Pitta sordida mulleri.

6. BANDED PITTA 347
Pitta guajana schwaneri.

7. BLUE-WINGED PITTA 348
Pitta brachyura moluccensis.

1
2a
2b
3a
3b
4
5
6
7
0"
3"
6"
0
50
mm
100
150
A. M. Hughes
1957

wings. They often hover or skim low over water, picking insects off the surface or sipping water as they skim.

NEST AND EGGS. The nest is familiar in Borneo because it is usually built in a house up in the rafters. It is a saucer of hardened mud, but unlike the nest of the House Swift, which is plastered on a vertical surface, it is nearly always built on a support, such as a beam. "I once saw a nest in an old tree-stump, which was standing up in the middle of a river" (Whitehead). Harrisson found one in the mouth of a cave used by *C. francica*, within three feet of high-water mark. Gibson-Hill describes two eggs collected by Ryves on 4 April as "Egg-shaped. Surface smooth. Ground-colour white, finely and fairly thickly spotted with light violet grey and drab." About 17×13 mm.

RACE. *H. t. abbotti* Oberholser 1917.

327. COMMON SWALLOW

Hirundo rustica Linnaeus 1758 *Layang-layang* (M)

Holarctic. The race wintering in Borneo breeds in Siberia and Japan. It is very abundant in open country as a passage migrant and winter visitor, and may be seen in almost every month of the year (? June); the earliest date recorded is 8 July (one seen by Harrisson out of about 500 carefully examined 1–12 July), but I have not been able to trace the latest date on which it has been collected in May or June.

DESCRIPTION. Very like the Pacific Swallow, but has a black collar, interrupted in the middle, below the rufous throat. In adults the outer tail-feathers are longer, giving a deeply forked appearance to the tail.

HABITS. Those of the Pacific Swallow.

RACE. *H. r. gutturalis* Scopoli 1786.

328. STRIATED SWALLOW

Hirundo striolata Temminck & Schlegel 1847

Widespread in S.E. Asia, but not in Sumatra. An occasional visitor to Borneo; there are two specimens and two sight records—all from S.W. Sarawak.

DESCRIPTION. 7". Large size, rufous rump, and black streaks on the underparts are diagnostic.

RACE. *H. s. striolata.*

WAGTAILS AND PIPITS: Motacillidae

This family is world-wide in distribution, though poorly represented in the Americas. All the species found in Borneo are winter visitors.

The actions of all species of wagtail other than the strange Forest Wagtail on the ground and in the air are similar. The gait is a brisk walk or run, with a backward and forward motion of the head and a constant up and down movement of the tail; little flutters are frequently made into the air after a passing insect. The flight is strongly undulating, in long curves. They perch freely on bushes and trees. On first arrival in Borneo, and again just before they leave, the plumage may be close to the full breeding plumage, markedly different from the winter dress which they wear for most of their stay. A general Malay name for wagtails is *beras-beras*. "Beras" is "rice" in Malay, and as wagtails visit Borneo in swarms during the rice-planting season and frequent the fields when the grain first springs up, the native name is derived from this circumstance (Whitehead). This name is not given in Wilkinson's Dictionary.

The pipits have nothing to do with the *burong pipit* of the Malays and Ibans, a term given to the munias; they are streaky-brown birds and the various species can only be distinguished in the field with practice. The Malay name is *burong padang*, from the habitat.

329. WHITE WAGTAIL

Motacilla alba Linnaeus 1758 *Beras-beras* (M)

Europe, Asia, parts of Africa.

A regular passage migrant to Borneo in small numbers; most pass down and up the coastal districts, but odd ones have been collected in the interior, including the Kelabit uplands. Recorded also from Banggi Island.

DESCRIPTION. 8". The only grey and white wagtail in our area; adults have some black on the hind crown and breast. Yellow tinge on cheeks, chin and forehead fades after death.

VOICE. The note is *chiz-zit*.

HABITS. Those of the family. They frequent open country.

RACE. *M. a. ocularis* Swinhoe 1860.

330. GREY WAGTAIL

Motacilla caspica (S. G. Gmelin) 1774 *Beras-beras* (M)

(Tunstall's name *M. cinerea* has been declared invalid.)

Palaearctic and Ethiopian Regions.

Passage migrant and winter visitor, abundant in the interior, scarce on the coast, where it probably lands only to refuel (early date 9 August 1958 on Satang Island, Harrisson).

DESCRIPTION. 7". Distinguish from next species by yellowish rump contrasting with grey upperparts, longer tail showing more white at the sides, and yellow under tail-coverts. Also marked difference in habitat.

VOICE. The usual note is a rather shrill *tzit-zee* uttered on the wing.

HABITS. It looks for damp gritty sand and gravel, which it finds along the beds of the rocky mountain torrents and along the mountain bridle paths. Usually seen singly.

RACE. *M. c. melanope* Pallas 1776.

331. YELLOW WAGTAIL

Motacilla flava Linnaeus 1758 *Beras-beras* (M)

Palaearctic Region and Alaska.

Two races are abundant passage migrants in Borneo, chiefly through the coastal districts. Numbers winter in the Kelabit uplands, September to March, and on sandy grasslands of the west coast (Harrisson).

DESCRIPTION. 7". Upperparts olive-green or olive-brown, not grey as in Grey Wagtail ; tail shorter. Occurs mostly in the immature plumage, which is whitish below, with some yellow patches, not deep yellow as in the adult.

VOICE. The note is described as a shrill musical *tsweep*.

HABITS. Frequents roadsides, areas of short grass, open sandy spaces in the lowlands. A conspicuous bird of the few motor roads that exist, single birds being passed at short intervals when the migration is in full swing in September and April.

FOOD. " I saw this species in thousands on the Tampassuk plains, where they were busily engaged in following up the grass-fires, feeding on singed grasshoppers " (Whitehead).

RACES. (*a*) *M. f. simillima* Hartert 1905 ; (*b*) *M. f. taivana* (Swinhoe) 1863. In *simillima* in good plumage the crown is grey

contrasting with the olive-green back, whereas in *taivana* the crown is the same colour as the back. See addenda.

332. FOREST WAGTAIL

Dendronanthus indicus (Gmelin) 1789

Breeds in N.E. Asia and winters in S.E. Asia.

Harrisson collected one on Satang Island, 18 September, and saw another on 6 February 1952 at 3,000 feet on Kinabalu.

DESCRIPTION. 6". Prominent buff and black markings on the closed wing prevent confusion with the White Wagtail. Underparts whitish with a broad black collar on the breast and an interrupted collar on the lower breast.

VOICE. The note is a loud *chirrup*, frequently uttered when flying, running or perching.

HABITS. A curious forest bird half wagtail half pipit, freely perching on trees, where it slowly sways the whole body and tail stiffly from side to side (Smythies). The bird collected on Satang Island behaved like a White Wagtail (Harrisson).

332a. TREE PIPIT

Anthus hodgsoni Richmond 1907

Breeds from Central Asia and the Himalayas to Formosa, wintering further south.

A stray in Borneo, once collected on Talang Talang Island 4 April.

DESCRIPTION. In the field best distinguished from other pipits by habit of perching in trees. In the hand the greenish tinge of the upperparts and the fact that the hind claw does not exceed the hind toe in length are diagnostic.

RACE. *A. h. yunnanensis* Uchida & Kuroda 1916.

333. SIBERIAN or PETCHORA PIPIT

Anthus gustavi Swinhoe 1863

Breeds in E. Siberia and Kamchatka, wintering in S.E. Asia.

Passage migrant to Borneo in small numbers, not yet recorded south of Miri on the west and Darvel Bay on the east.

DESCRIPTION. A dark pipit, heavily blotched and spotted with black on the upperparts and heavily streaked on the breast; throat white. In the hand distinguish by wing formula, primaries 1, 2, 3 equal, 4 shorter (see *cervinus*).

HABITS. All except the Marudi specimen have been collected in coastal districts. "This species prefers the forests to the open places, and frequents the ground" (Whitehead).

334. RED-THROATED PIPIT

Anthus cervinus (Pallas) 1811

N. Palaearctic, with an extensive range in winter from Africa to Malaysia.

Passage migrant and winter visitor in Borneo, possibly the commonest representative in our area of a distinctly scarce group.

DESCRIPTION. The pale reddish wash on the throat and breast of birds in spring plumage is distinctive, and birds have been collected in this plumage on 21 February; in winter this plumage is lost or much reduced and it is then difficult to distinguish from the preceding species, except in the hand when wing-formula (primaries 1, 2, 3, 4 all equal or sub-equal) prevents confusion. Iris dark; bill flesh, yellow at base and dark at tip; legs very pale flesh.

VOICE. The note is said to be quite distinct from that of other pipits, a full, musical, rather abrupt *chup* (*Popular Handbook of British Birds*).

HABITS. It abounds all winter throughout the open grasslands of the Kelabit uplands and adjacent areas of Indonesian Borneo and is commonly seen on the coast. Harrisson has seen a party of fifty or so in March or early April on almost sand-bare lawn patches in the Shell Company land at Miri; in this setting, in flight, the red colour really *glows*, especially near sunset when they are particularly active and noisy and restless.

FOOD. Small insects and also small seeds (Harrisson).

335. RICHARD'S PIPIT

Anthus novaeseelandiae Gmelin 1789

Ethiopian, E. Palaearctic, Oriental and Australasian regions (if *A. richardi* and *A. novaeseelandiae* are regarded as conspecific).

Resident and migrant races in Borneo.

DESCRIPTION. Larger (wing 86–102 mm.) than the Red-throated Pipit and only faintly streaked on the breast. In the hand the sides of the body are seen to be faintly streaked, whereas in the Red-throated Pipit they have coarse dark streaks.

VOICE. On leaving the ground this species utters a loud, rapid and harsh note, *r-r-ruup*.

RACES. (*a*) subsp. This form is resident round Sandakan Airport, where the British Museum (1956) expedition obtained one and saw others on 1 June; the specimen was too worn to determine whether it belonged to *A. n. malayensis* Eyton 1839 or to the Philippine race *A. n. lugubris* Walden 1877. There are also one or two specimens in the Museum of Comparative Zoology at Harvard, collected by Deignan on the padang at Tawau in the summer of 1937, and likewise not identified subspecifically (Deignan, *in litt.*). (*b*) *A. n.*

richardi Vieillot 1818, to which race a bird obtained by Whitehead on Labuan is ascribed by Amadon (1943 : 215) ; (*c*) *A. n. dauricus* Johansen 1952, to which race a bird from Batu Lintang, Kuching, collected on 22 November 1951 is ascribed by Mrs. Hall. The specimen from Sadong mentioned by Moulton under *A. rufulus* (1914 b: 204) proves on examination to be an example of *A. cervinus*.

GREYBIRDS, TRILLERS, FLYCATCHER-SHRIKES AND MINIVETS : Campephagidae

This family is confined to the Old World. The flycatcher-shrikes are shrike-like birds of arboreal habits, as their name implies, and they form a connecting link between the true shrikes (from which their small feet and soft plumage separate them) and such groups as the minivets and cuckoo-shrikes. The minivets comprise a large number of birds, which are remarkable for their brilliant plumage, with red (males) and yellow (females) as the dominant colour in most species. They are essentially birds of the tree-tops and are usually seen in parties, the members of which communicate with soft and musical call-notes as they flit from tree to tree in follow-my-leader fashion and search the foliage for insects. In Borneo this group is poorly represented. The greybirds (in some countries known as cuckoo-shrikes) are not related to the cuckoos or to the shrikes, although they bear a superficial resemblance to the latter in colour and shape of bill. A general Malay name is *burong abu* from the ash-grey colour.

336. HOOK-BILLED GREYBIRD PLATE XXVI, 4

Tephrodornis gularis (Raffles) 1822

Widespread in S.E. Asia.

Resident and sparingly distributed through the lowlands of Borneo.

DESCRIPTION. 7". Sexes differ, the female being browner above than the male. Iris dark greenish-brown or greenish-yellow ; bill horn or blue-grey, lighter at base ; feet and claws lead-blue or horn.

VOICE. A noisy bird, the members of a party calling to each other with harsh notes.

HABITS. Whitehead collected it on Kinabalu at 3,000 feet and noted that it is fond of sitting about in open places, hawking for insects, but it is also sometimes observed hopping about in the high

trees. Hose in the Baram district thought it common in gardens, especially along the coast, but this has not since been confirmed. The only pair I have come across in nine years were flycatching over a stream and swooping down to the surface of the water.

FOOD. Beetles and other hard insects (Harrisson), dragonflies, grasshoppers.

NEST AND EGGS. Eggs sent by Low from Lumbidan were described by Sharpe as creamy-buff, with large blotches of rufous-brown, and underlying spots of purplish-grey, 25 × 20 mm.

RACE. *T. g. frenatus* Büttikofer 1887.

337. BARRED GREYBIRD PLATE XXVI, 1

Coracina striata Boddaert 1783

Malaya, Sumatra, Borneo, Philippines.

Resident throughout the lowland forests of Borneo, but not common.

DESCRIPTION. 10". Sexes differ, the female having the rear half of the body barred black and white above and below, and not plain grey with faint barring on the flanks and rump as in the male. Iris very pale yellowish-white ; bill and legs black.

HABITS. Whitehead described it as always flying very high, and frequenting very tall trees.

FOOD. Beetles, grasshoppers (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. (*a*) *C. s. bungurensis* Hartert 1894, in the North Natunas ; (*b*) *C. s. sumatrensis* (S. Müller) 1843, elsewhere.

338. BLACK-FACED GREYBIRD PLATE XXVI, 3

Coracina larvata (S. Müller) 1843

Sumatra, Java, Borneo.

A montane resident, extremely common at the higher levels, ranging from Kinabalu along the spinal chain to the Usun Apau Plateau and Mt. Dulit ; also on Mt. Mulu. Altitude range about 3,000 to 7,000 feet.

DESCRIPTION. 9". Sexes differ, the female having the crown and throat grey, not black as in the male ; she is not barred below like the female of the preceding species. Iris very dark brown ; bill and feet black.

VOICE. A long whistling call, irregularly delivered (Harrisson).

HABITS. Conspicuous at high altitudes in moss forest, where it is one of the largest common *tree* birds (Harrisson).

FOOD. Caterpillars, beetles, insects, ants, grasshoppers, crickets, spiders, locustids (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *C. l. normani* (Sharpe) 1887.

339. LESSER GREYBIRD PLATE XXVI, 6

Coracina fimbriata (Temminck) 1824

Widespread in S.E. Asia.

A locally common resident throughout the lowland forests of Borneo.

DESCRIPTION. 7". Sexes differ slightly, the female being paler and usually with some barring on the underparts. Young birds are barred with grey and white from chin to tail. Iris dark brown ; bill black ; feet grey-blue.

VOICE. I have recorded the call as a loud whistle of 7 to 8 notes all on one pitch, uttered while feeding in the tree-tops.

HABITS. It is not confined to primary forest but may be met with in cultivated areas where there are some tall trees.

FOOD. An exceptionally liberal diet includes tiny flower-spiders and insects, eggs of butterflies, caterpillars, flies, beetles, locustids, fruit, seeds (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *C. f. schierbrandi* (Pelzeln) 1865.

340. BLACK-WINGED FLYCATCHER-SHRIKE

PLATE XXVI, 5

Hemipus hirundinaceus (Temminck) 1822

Malaysia.

A common resident throughout the lowlands of Borneo, both in old jungle and in more open country and cultivated areas. Occurs on Banggi Island.

DESCRIPTION. 5". Sexes differ, the female being dark brown above, not shiny black like the male. Iris brown ; bill and feet black.

HABITS. There are three black-and-white birds whose habitats overlap : this, Magpie-Robin, and Pied Triller.

FOOD. Small insects.

NEST AND EGGS. In the nipa-mangrove area at Pending near Kuching, Allen found two young birds being fed by both parents in the first week of September.

A. Hughes
1957

PLATE XXVI

Page

1. BARRED GREYBIRD 359
Coracina striata sumatrensis.

2. BAR-WINGED FLYCATCHER-SHRIKE 362
Hemipus picatus intermedius.

3. BLACK-FACED GREYBIRD 359
Coracina larvata normani

4. HOOK-BILLED GREYBIRD 358
Tephrodornis gularis frenatus.

5. BLACK-WINGED FLYCATCHER-SHRIKE 360
Hemipus hirundinaceus.

6. LESSER GREYBIRD 360
Coracina fimbriata schierbrandi.

7. BROWN SHRIKE 367
Lanius cristatus confusus

8. PIED TRILLER 362
Lalage nigra nigra.

9. GREY-BACKED SHRIKE 367
Lanius schach nasutus.

10. THICK-BILLED SHRIKE 369
Lanius tigrinus.

341. BAR-WINGED FLYCATCHER-SHRIKE

PLATE XXVI, 2

Hemipus picatus (Sykes) 1832

Widespread in S.E. Asia.

A montane resident throughout the mountains of Borneo at 3,000 to 6,000 feet.

DESCRIPTION. Resembles the preceding species, but has much white on the wings (as the name implies), and the tail-feathers are tipped with white. Iris brown ; bill and feet black.

VOICE. Not described from Borneo. In Burma the call-note is a high-pitched *chir-rup, chir-rup* and it behaves like a flycatcher, frequenting mainly old jungle.

HABITS. " Found on Kinabalu from 3,000 to 4,000 feet, frequenting the lower growth in search of food. It is not a flycatcher in its habits, but is a thorough Wood Shrike, like *Tephrodornis*. I noticed them in small families of four or five together, but they were not met with above 4,000 feet altitude " (Whitehead).

FOOD. Beetles and other insects, with a noticeable liking for *black* ones (many examined, Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *H. p. intermedius* Salvadori 1879.

PLATE XXVI, 8 **342. PIED TRILLER** PHOTO PLATE 38

Lalage nigra (Forster) 1781

Malaysia, Philippines, Celebes.

A common resident in the lowlands of Borneo in cultivated country, and a familiar garden bird. Occurs in the North Bornean islands and Maratuas.

DESCRIPTION. 6½". White forehead and eyebrows distinctive. Sexes differ, the female being duller, browner above and lightly barred below. Young birds are streaked below and mottled above. Iris brown ; bill black ; feet blackish-grey, soles pale yellow.

VOICE. Utters a double note not unlike the croak of a frog (Banks). According to Whitehead the note is a kind of chipping sound like that of a Fieldfare.

HABITS. On Labuan he found it assembling in large flocks towards evening to roost in mango trees. Often seen in a low tree in the garden or on the lawn hunting for insects.

FOOD. Caterpillars, hard insects (Harrisson); green fruit (Boys).

NEST AND EGGS. Bartlett describes the nest as a compact cup-shaped structure built in the fork of a low tree, and composed of fine roots and fibres. Two eggs taken by Ryves on 5 June in North Borneo are described by Gibson-Hill as "Egg-shaped. Surface smooth. Ground-colour yellowish-glaucous, with a few spots of gull-grey (underneath) and thickly flecked with olive-brown (above)." About 23×17 mm.

RACE. *L. n. nigra.*

343. BLACK-BREASTED TRILLER PLATE XXXII, 11

Chlamydochaera jeffreyi Sharpe 1887 *Tawau* (M)

Confined to Borneo. A decidedly local montane species of old jungle, ranging from Kinabalu along the spinal chain to Mt. Mulu and Mt. Dulit (where it is common), but there are gaps in its distribution (e.g. Kelabit uplands).

DESCRIPTION. 9". The black and buff pattern of the head is diagnostic. Sexes differ, the female being reddish-brown where the male is grey, and having the buff parts deeper in colour.

HABITS. Behaves much like a pigeon (Harrisson).

FOOD. Both Whitehead and Banks insisted it eats nothing but fruit.

NEST AND EGGS. Unknown.

344. ASHY MINIVET PLATE XXVII, 1

Pericrocotus roseus (Vieillot) 1818

Breeds in E. Asia and Japan.

A scarce winter visitor to coastal districts in Borneo. Specimens have been obtained at Lamag (Kinabatangan River), Labuan and the mainland opposite, Bintulu, and Riam in S. Borneo.

DESCRIPTION. 7". The only minivet with no red (male) or yellow (female) in the plumage (except in the nominate race, which does not occur in Malaysia). Sexes differ, the female being greyer.

HABITS. Not described from Borneo.

RACE. *P. r. divaricatus* (Raffles) 1822.

345. SMALL MINIVET

Pericrocotus cinnamomeus (Linnaeus) 1766

Widespread in S.E. Asia.

A mystery in Borneo, where only one specimen has been collected (by Schwaner in S. Borneo).

PLATE XXVII

Page

1*a*. ASHY MINIVET (♂) 363
Pericrocotus roseus divaricatus.

1*b*. ASHY MINIVET (♀) 363
Pericrocotus roseus divaricatus.

2*a*. MOUNTAIN MINIVET (♂) 365
Pericrocotus solaris cinereigula.

2*b*. MOUNTAIN MINIVET (♀) 365
Pericrocotus solaris cinereigula.

3*a*. FIERY MINIVET (♂) 365
Pericrocotus igneus igneus.

3*b*. FIERY MINIVET (♀) 365
Pericrocotus igneus igneus.

4*a*. SCARLET MINIVET (♂) 366
Pericrocotus flammeus insulanus.

4*b*. SCARLET MINIVET (♀) 366
Pericrocotus flammeus insulanus.

5. WHITE-BREASTED SWALLOW-SHRIKE 369
Artamus leucorhynchus leucorhynchus.

2b
3b
3a
4b
4a
5
0"
1"
2"
3"
0
25 mm
50
75

DESCRIPTION. 6". A small long-tailed minivet, dull-coloured except for a conspicuous flame-coloured patch on the rump and wing, and in the male on the breast also.

HABITS. Not described from Borneo. Elsewhere partial to the fringing forests of tidal creeks.

RACE. *P. c. saturatus* Baker 1920.

346. MOUNTAIN MINIVET PLATE XXVII, 2

Pericrocotus solaris Blyth 1846 *Selasih* (M) ; *telassi* (I)

Widespread in S.E. Asia.

In Borneo a very common montane resident with a restricted range from Kinabalu along the spinal chain to Mt. Mulu and Mt. Dulit, and one of the conspicuous birds of the 3,000 to 7,000 feet zone.

DESCRIPTION. 6½". Sexes differ. The only montane minivet. Male is distinguished from next two species by dark grey (not jet-black) throat. Young birds resemble the female but are barred. Iris dark brown ; bill and feet black.

VOICE. Soft and musical call-notes.

HABITS. They travel about in small flocks, often in the mixed hunting parties so characteristic of montane forests, and perch conspicuously on the tops or outer twigs of the forest trees. These hunting parties include Shrike-Babblers, Flycatcher-Shrikes, Fantail Flycatchers, etc.

NEST AND EGGS. Not described from Borneo.

RACE. *P. s. cinereigula* Sharpe 1889.

347. FIERY MINIVET PLATE XXVII, 3

Pericrocotus igneus Blyth 1846
Selasih (M) ; *kunchil berapi* (I)

(Deignan, *in litt.* considers this to be conspecific with *P. cinnamomeus*.)

Malaya, Sumatra, Borneo, Simalur.

Resident in Borneo, chiefly in coastal districts, and not common.

DESCRIPTION. 5½". Not easily distinguished from the next species. Smaller size (wing 2·9 inches as against 3·4 inches) and the fact that the coloured bar across the inside surface of the wing is yellow, not red as in *flammeus*, distinguish the male in the hand. The female has the rump reddish-orange, not greenish-yellow as in *flammeus*.

HABITS. Both Whitehead and Banks noted its partiality for Casuarina trees along the shore, and the latter often saw flocks comprised of one sex only.

NEST AND EGGS. Not described from Borneo.

RACE. *P. i. igneus.*

348. SCARLET MINIVET PLATE XXVII, 4

Pericrocotus flammeus (Forster) 1781
Selasih (M) : *telassi* (I)

Widespread in S.E. Asia.

Resident in Borneo but patchy in distribution and not common. Whitehead noticed them only on Kinabalu at 3,000 to 4,000 feet, in mixed flocks with *P. solaris*, and Harrisson found them fairly common in the Kelabit uplands at the same altitude, but in Sarawak numerous specimens have been obtained in the lowlands.

DESCRIPTION. 6". See under preceding species.

VOICE. *Sigit, sigit, sigit* (Harrisson).

HABITS. Frequents primary and secondary forest.

FOOD. Hard insects, crickets, locustids, caterpillars, berries (Harrisson).

NEST AND EGGS. Harrisson flushed a male in scarlet plumage off a nest built on the side of a rock deep in the forest at 4,000 feet on 7 January. The nest was of soft green moss, thickly padded with a lining of green fibre, beautifully made and coloured. A single egg, white heavily marked with rufous, was nearly hatching.

RACE. *P. f. insulanus* Deignan 1946.

SHRIKES : Laniidae

Shrikes are found in most parts of the Old World and in North America. Three species visit Borneo in winter. Generally speaking shrikes are medium-sized, trimly-built birds of predatory habits and fierce aspect, with a hooked and hawk-like bill and a long graduated tail ; most species have a broad black band through the eyes and perch conspicuously in open country slowly swaying their tails (no other birds *wave* their tails about like the shrikes) ; at intervals they fly down to seize a morsel on the ground, or fly off to another perch with a characteristic harsh swearing note.

349. GREY-BACKED SHRIKE PLATE XXVI, 9

Lanius schach Linnaeus 1758

Widespread in S.E. Asia.

A rare vagrant in Borneo ; for records see below under race.

DESCRIPTION. 9". Strong hooked bill, black or grey crown and nape, rufous lower back and flanks and long narrow tail are distinctive features.

HABITS. The only one I have ever seen in Borneo was in a hill padi field several hundred feet above the Rajang River, opposite the mouth of its tributary the Pelagus River. It perched on low stumps amongst the growing padi and pounced on insects on the ground.

RACE. (*a*) *L. s. nasutus* Scopoli 1786, with whole crown and hind-neck black, breeds in the Philippines, and Pryer obtained two specimens at Sandakan ; (*b*) *L. s. bentet* Horsfield 1821, with fore-crown and sides of head black, nape and hind-neck grey, is found in most parts of Malaysia. Croockewit collected one in S. Borneo and there are sight records of individuals from the Rajang River (as stated above) and from Labuan (Harrisson, 3 February 1957).

350. BROWN SHRIKE PLATE XXVI, 7

Lanius cristatus Linnaeus 1758 *Ketek* (M), a ticking sound

(Meinertzhagen, *Birds of Arabia*, makes this conspecific with *L. collurio*).

Breeds in central, northern, and eastern Asia, wintering in S.E. Asia.

Winter visitor to coastal districts, abundant in the north, less common further south, and not as yet recorded anywhere in S. Borneo.

DESCRIPTION. 7". First-year birds show crescentic markings on the breast. Iris dark brown ; eyelid pale blue ; bill black with base pale bluish or pale horn, upper mandible and tip of lower mandible darker ; feet blue-grey or blackish, claws horn.

VOICE. The harsh swearing chatter of this bird at once attracts attention ; it is particularly noisy on first arrival in winter quarters.

HABITS. A familiar garden bird in coastal areas, keeping to open country.

FOOD. Spiders, crickets, beetles, wasps, ants, caterpillars (Harrisson).

RACES. (*a*) *L. c. confusus* Stegmann 1929 (*Journ. f. Ornith.* 1929, 77 (2) : 248) KUMARA, Khabarovsk, Russian S.F.S.R. is the common form ; (*b*) *L. c. lucionensis* Linnaeus 1766, browner in colour, breeds in E. Siberia, Korea and Manchuria ; it is represented by a few specimens from the lowlands and is the common (in fact, *only*) race in the Kelabit uplands, where it is so characteristic that the people name one month for its arrival (Harrisson).

[NOTE.—*L. c. cristatus* probably does not occur south of Bangkok, Deignan *in litt.* *L. c. superciliosus* Latham 1801, redder in colour, breeds in Sakhalin

PLATE XXVIII

Page

1. GREEN IORA 370
Aegithina viridissima viridissima.

2. COMMON IORA 371
Aegithina tiphia viridis.

3*a*. GREATER GREEN LEAFBIRD (♂) 372
Chloropsis sonnerati zosterops.

3*b*. GREATER GREEN LEAFBIRD (♀) 372
Chloropsis sonnerati zosterops.

4*a*. LESSER GREEN LEAFBIRD (♂) 372
Chloropsis cyanopogon cyanopogon.

4*b*. LESSER GREEN LEAFBIRD (♀) 372
Chloropsis cyanopogon cyanopogon.

5*a*. BLUE-WINGED LEAFBIRD (♂) 373
Chloropsis cochinchinensis viridinucha.

5*b*. BLUE-WINGED LEAFBIRD (♀) 373
Chloropsis cochinchinensis viridinucha.

6*a*. FAIRY BLUEBIRD (♂). 373
Irena puella criniger.

6*b*. FAIRY BLUEBIRD (♀) 373
Irena puella criniger.

1
2
3b
4a
5b
5a
6b
6a
1957
0"
3"
6"
0
50
mm
100
150

and Japan, and was described from a bird wintering in Java, but there is no definite record of it from Borneo.]

351. THICK-BILLED SHRIKE PLATE XXVI. 10

Lanius tigrinus Drapiez 1828

Breeds in Japan and N.E. Asia, wintering in Malaysia.

Winter visitor in small numbers to all parts of Borneo.

DESCRIPTION. Slightly smaller than Brown Shrike and differs in having the mantle and back reddish-brown mottled with black. Iris dark brown, eyelid blue ; bill bluish, tip black ; legs pale lead.

HABITS. Those of the family.

FOOD. Crickets, beetles.

SWALLOW-SHRIKES : Artamidae

The swallow-shrikes or wood swallows are found in S.E. Asia and Australia, and are represented by one species in our area. They resemble the shrikes in having the young barred both above and below, and also in their strong bill, which is gently curved, though neither hooked nor notched.

352. WHITE-BREASTED SWALLOW-SHRIKE

PLATE XXVII, 5

Artamus leucorhynchus (Linnaeus) 1771 *Delayang hujan* (M) ; *entelah* (I)

Philippines and Malaysia to Australia and Fiji.

A common resident in Borneo in open country, especially in coastal districts and in the Kelabit uplands to 4,000 feet. Recorded from the North Bornean islands, Mantanani Island, Natunas, and Maratuas.

DESCRIPTION. 7". Distinctive habits and appearance. Iris dark brown ; bill pale blue with black tip ; feet dark grey, claws black.

VOICE. " Their note is a ceaseless disagreeable sharp chatter " (Whitehead).

HABITS. " They are most disagreeable little birds ; they sit in families of four or five, huddled close together on the bare branches of some dead tree, and attack every other species that come near the spot " (Whitehead). This is confirmed by Harrisson who has seen them attack harriers, laughing-thrushes, kingfishers, and crows

on sight, sometimes pecking their heads violently. They are partial to the bare blackened trees left standing in hill padi fields, and to Casuarina trees fringing the beach. Harrisson has noted them skimming over estuarine waters in S.W. Sarawak, and even out to sea off the Turtle Islands. Their habit of huddling close together in rows is a most characteristic one that enables them to be identified at a great distance; and their flight is graceful, with frequent gliding or soaring on broad triangular wings, as they seek after insects in the air.

FOOD. Large black carpenter bee, small black beetles (Harrisson); large insects (Medway).

NEST AND EGGS. Regularly nests October to April (c/2–3), more than one brood being reared (Harrisson). I have seen nests containing young at Kapit, upper Rajang River, in March, and on the coast near Brunei in April. The first was built in the fork of a tree under the District Officer's eye, the latter in the top of a sapling, the head of which had been broken off. Whitehead described it as follows:

"The nest is composed of light grey stalks and small roots, which assimilate well with the bleached trees on which they are built; it is lined with finer roots and grasses. Eggs three, laid in June, creamy-white in colour, slightly spotted with grey and light brown, especially at the larger end, where a zone is formed with blotches of the same colour." 23×18 mm.

RACE. *A. l. leucorhynchus*.

IORAS, LEAFBIRDS AND BLUEBIRDS: Aegithinidae

This family is widespread in the Oriental Region and well represented in Borneo; it comprises three groups, the general colour being black and blue in *Irena*, yellow-green or olive-green and black in *Aegithina*, and bright grass-green in *Chloropsis*. They are forest birds, though some of the ioras also frequent cultivated country and gardens, and feed mainly on fruit. The nests are neat and cup-shaped.

353. GREEN IORA PLATE XXVIII, 1

Aegithina viridissima (Bonaparte) 1850

Malaya, Sumatra, Borneo.

A common resident throughout the lowlands of Borneo. Occurs in the North Natuna Islands.

DESCRIPTION. 5". Distinguish male from the Common Iora by dark green as against canary-yellow underparts. Sexes differ, the male having conspicuous yellow patches above and below the eye. Female closely resembles female Common Iora, but has wing-bar pale yellow, not white. Iris whitish; bill black above, bluish below; feet bluish.

VOICE. I have recorded a trilled note followed by a double note dropping in pitch; and a run of six to seven notes on a monotone.

HABITS. It frequents tall trees or bushes in old or secondary jungle; Shelford commented on its abundance along the banks of rivers in their upper reaches.

FOOD. Caterpillars, beetles.

NEST AND EGGS. Not described from Borneo.

RACE. *A. v. viridissima.*

354. COMMON IORA PLATE XXVIII, 2

Aegithina tiphia (Linnaeus) 1758 *Pito* (M); *tandok ulat* (I)

Widespread in S.E. Asia.

A common resident in the lowlands of Borneo in open country, and a familiar garden bird. Occurs in the North Bornean islands and the Maratuas.

DESCRIPTION. Lighter and yellower than the preceding species, with a different note. There is considerable variation in colour according to age and season. Sexes differ, the female being duller. Iris white; upper mandible black, lower pale blue-grey; feet pale blue-grey.

VOICE. Its distinctive note sounds much the same in Borneo as in Burma; it consists of two notes, of which the first is an extraordinarily long drawn-out high, sweet-toned whistle, almost as if the note were produced and held at the same pitch for a very long time by an intake of air, and the second (often omitted) is a short sharp accentuated whistle commencing at the same pitch as the first but speedily gliding down to a lower tone: *weeeeeeeee-tu*. Another common call is *chi-chi-whit*, dropping slightly in pitch, and it utters a number of other mellow whistles and chirrups.

HABITS. It is usually solitary, or in pairs, hopping about in trees and shrubs and keeping out of sight in the foliage.

FOOD. Caterpillars, seeds (Harrisson), wingless ants, beetles.

NEST AND EGGS. An egg sent by Low is described as a very beautiful one; " the ground-colour is white, obscured, however, by reddish spots, which are much more thickly distributed towards the

larger end . . . these reddish dots and blotches are interspersed by a few spots of purplish grey, which are more apparent towards the thin end of the egg." 20 × 16 mm.

RACES. (*a*) *A. t. viridis* (Bonaparte) 1850, in S. Borneo and Sarawak; (*b*) *A. t. aequanimis* Bangs 1922, yellower, in N. Borneo. The boundary coincides roughly with the Sarawak-British North Borneo boundary.

355. LESSER GREEN LEAFBIRD PLATE XXVIII, 4

Chloropsis cyanopogon (Temminck) 1829 *Pantak daun* (M, I)

Thailand, Malaya, Sumatra, Borneo.

A common resident throughout the lowland forests of Borneo. Occurs on Banggi Island.

DESCRIPTION. 6½". Wing ♂ 3·2–3·4, ♀ 3·0–3·2 ins. This and the next species are so alike except in size that it would be difficult to be certain of identity in the field unless both are seen together. Sexes differ, only the male having throat and sides of head black. Iris light brown; bill black; feet blue-grey.

HABITS. Those of the family.

FOOD. Berries, caterpillars (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *C. c. cyanopogon.*

356. GREATER GREEN LEAFBIRD PLATE XXVIII, 3

Chloropsis sonnerati Jardine & Selby 1826 *Pantak daun* (M, I)

Malaysia.

A common resident in the lowland forests of Borneo and in the Kelabit uplands to 4,000 feet. Occurs in the North Natuna Islands.

DESCRIPTION. 7½". Wing ♂ 3·75–4·1, ♀ 3·6–3·8 inches. See preceding species. Sexes differ, only the male having sides of head and throat black. Iris brown; bill black, paler below; feet bluish-grey.

VOICE. *chik chik.*

HABITS. Those of the family. Found in primary and secondary forest.

FOOD. Harrisson examined a series and found them about equally divided between fruit and insect eaters, but in no bird was the diet mixed.

NEST AND EGGS. Not described from Borneo.

RACE. *C. s. zosterops* Vigors 1830.

357. BLUE-WINGED LEAFBIRD PLATE XXVIII, 5

Chloropsis cochinchinensis (Gmelin) 1788 *Pantak daun* (M. I)

Widespread in S.E. Asia.

A common resident throughout Borneo, represented by different lowland and montane races.

DESCRIPTION. 7". Easy to recognize by the blue on the wings. Iris brown ; bill black ; feet grey-brown or green-blue.

HABITS. Those of the family. In primary and secondary forest.

FOOD. Grasshoppers, insects, small molluscs, ants, spiders, locustids, crickets, longicorns, cockchafers, caterpillars, soft berries (Harrisson).

NEST AND EGGS. A female at Bario 21 November had an egg in the oviduct.

RACES. (*a*) *C. c. icterocephala* Lesson 1840, in the North Natunas ; (*b*) *C. c. viridinucha* (Sharpe) 1877, in the lowlands ; (*c*) *C. c. flavocincta* Sharpe 1887, the female of which has a black throat, is an abundant montane form from Kinabalu along the spinal chain to the Usun Apau Plateau and Mt. Dulit ; some authorities consider that it is a distinct species.

358. FAIRY BLUEBIRD PLATE XXVIII, 6

Irena puella (Latham) 1790 *Empuru arang* (M, I)

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo, confined to primary forest ; occasionally up to 5,000 feet on mountains.

DESCRIPTION. 9". Sexes differ markedly. Iris reddish-brown ; bill and feet black.

VOICE. " It flies as a rule very straight but undulating, giving a few beats with the wings and then closing them, at the same time uttering its sharp *twing, twing* " (Williams).

HABITS. Davison, who knew it well in Tenasserim, describes it thus :

" 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. They live on fruit exclusively, I believe, and are especially fond of figs, and where a fig tree is in fruit great numbers congregate in company 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."

FOOD. Fruit with large stones (Harrisson), fruit and insects (Chavasse).

NEST AND EGGS. Not described from Borneo.

RACE. *I. p. criniger* Sharpe 1877.

BULBULS: Pycnonotidae

The bulbuls are a large tropical family of Africa and southern Asia, and are richly represented in Borneo, where they are mostly forest birds. They do not migrate, the sexes are alike, and the immature birds only differ from the adults in being duller; most bulbuls are perky self-confident birds, which perch conspicuously and do not hide themselves away in bushes like most of the small forest birds of Borneo. The nests are cup-shaped, carelessly constructed as a rule.

A general Malay and Iban name is *empuru*, usually qualified by the word *lilin* (wax) if there is some yellow in the plumage.

359. CRESTED BROWN BULBUL PLATE XXX, 1

Pycnonotus eutilotus (Jardine & Selby) 1837

Malaya, Sumatra, Borneo, Banka.

Sparsely distributed and resident in the lowlands throughout Borneo; confined to old jungle.

DESCRIPTION. 8". General colour olive-brown above, whitish below with narrow white tips to lateral tail-feathers; in the hand the long thick feathers of the rump, tipped with buff at the sides under the closed wings, are noticeable. Iris red; bill black; feet grey.

HABITS AND NEST. Not described from Borneo.

360. NIEUWENHUIS'S BULBUL PLATE XXX, 2

Pycnonotus nieuwenhuisi (Finsch) 1902

Sumatra and Borneo, but known from one specimen only in each. The Borneo specimen was collected in the upper Kayan at 2,000 feet in 1900.

DESCRIPTION. Smaller than the preceding species, with broader white tips to the tail-feathers, blackish head, and pale blue fleshy eyelids.

HABITS AND NEST. Unknown.

RACE. *P. n. nieuwenhuisi.*

361. BLACK-AND-WHITE BULBUL PLATE XXX, 3

Pycnonotus melanoleucos (Eyton) 1839 *Sakit tuboh* (M)

Malaya, Sumatra, Borneo.

Resident throughout the lowlands of Borneo in primary and secondary forest, and occurs at Bario, but patchy and uncommon.

DESCRIPTION. 6½". The only pied bulbul; young birds are rich dark brown with no visible white on the wing. Iris whitish; bill black; feet black or bluish-grey.

HABITS. Those of the family. It has a rather odd flight, keeping low and fast (Harrisson).

FOOD. Berries.

NEST AND EGGS. Described by Bartlett as follows:

"The nest is cup-shaped; it is composed chiefly of sticks bound together with pieces of climbing plants, and lined with the same mixed with a few black fibres. The eggs are pale fawn colour, faintly freckled with darker fawn, with a slight ring at the larger end."

362. BLACK-HEADED BULBUL PLATE XXIX, 1

Pycnonotus atriceps (Temminck) 1822 *Empuru lilin* (M, I)

Widespread in S.E. Asia.

A common resident in the lowlands of Borneo in primary and secondary forest, and in the Kelabit uplands.

DESCRIPTION. 6". Golden-yellow tail with broad subterminal black band is distinctive. Iris pale blue; bill and feet black.

HABITS. Those of the family. They are very restless, never settling long in one place, and continually utter a sharp clicking note as they fly (Everett).

FOOD. Berries, fruit; a few ants (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. a. atriceps*, in Borneo; (*b*) *P. a. hodiernus* (Bangs & Peters) 1927, in the Maratuas. "A striking mutation or 'sport' of this species is not rare in some parts of its range; in it the yellow and greens of the normal plumage are replaced by pale grey. On

the main island of Borneo there is no record of these sports but on the Maratua Islands only grey birds are known " (Chasen).

363. BLACK-CRESTED YELLOW BULBUL PLATE XXIX, 2

Pycnonotus dispar (Horsfield) 1820

Widespread in S.E. Asia.

An abundant montane resident in Borneo, from Kinabalu to the upper Kayan and Mt. Liang Kubung, but absent from Mt. Penrissen and the Poi range.

DESCRIPTION. 7". Unmistakable. Iris reddish-brown ; bill black ; feet blackish or pale bluish or coppery-brown.

VOICE. According to Büttikofer it is a very lively and noisy bird, continually moving its long black crest up and down when excited. Harrisson also describes it as a very active garrulous bird, seldom silent for long, drawing attention to itself by the sharp call *yek, yek*.

HABITS. A common and conspicuous bird of secondary forest and hill padi farms in the mountains throughout most of its range, but round Kinabalu Whitehead described it as decidedly scarce.

FOOD. Berries are generally swallowed whole, unlike some bulbuls ; it also regularly takes insects on the wing, a habit not noted for any other member of the genus (Harrisson).

NEST AND EGGS. A looser version of the Yellow-vented Bulbul's. One found by Harrisson at 4,000 feet contained two fresh eggs on 28 January ; dark reddish speckles concentrated at the broad end, mixed with heavy splodges of bluish-green .

RACE. *P. d. montis* (Sharpe) 1879.

364. SCALY-BREASTED BULBUL PLATE XXIX, 3

Pycnonotus squamatus (Temminck) 1822

Malaya, Sumatra, Borneo.

A rather rare submontane resident of primary forest.

DESCRIPTION. 6". A beautifully marked little bulbul. Iris red.

VOICE. They have a cheerful whistling song and babbling calls (Boys).

HABITS. They inhabit the tops of small bushes and are sociable (Boys).

NEST AND EGGS. Not described from Borneo.

RACE. *P. s. borneensis* Chasen 1941.

PLATE XXIX

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1. BLACK-HEADED BULBUL 375
Pycnonotus atriceps atriceps.

2. BLACK-CRESTED YELLOW BULBUL 376
Pycnonotus dispar montis.

3. SCALY-BREASTED BULBUL 376
Pycnonotus squamatus borneensis.

4. GREY-BELLIED BULBUL 378
Pycnonotus cyaniventris paroticalis.

5. YELLOW-CROWNED BULBUL 378
Pycnonotus zeylanicus.

6. PALE-FACED BULBUL. 379
Pycnonotus flavescens leucops.

7. YELLOW-VENTED BULBUL 379
Pycnonotus goiavier gourdini.

8. OLIVE WHITE-THROATED BULBUL 383
Criniger bres gutturalis.

9. CRESTLESS WHITE-THROATED BULBUL 384
Criniger phaeocephalus diardi.

10. FINSCH'S BULBUL 385
Criniger finschi.

11. BROWN WHITE-THROATED BULBUL 383
Criniger ochraceus ruficrissus.

365. GREY-BELLIED BULBUL PLATE XXIX, 4

Pycnonotus cyaniventris Blyth 1842

Malaya, Sumatra, Borneo.

An uncommon lowland resident in primary forest throughout Borneo.

DESCRIPTION. 6". Colouring distinctive.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *P. c. paroticalis* (Sharpe) 1878.

366. YELLOW-CROWNED BULBUL PLATE XXIX, 5

Pycnonotus zeylanicus (Gmelin) 1789 *Empuru buaya* (I)

Malaysia.

Abundant resident in the lowlands, in old and secondary jungle, and to 3,500 feet in the Kelabit uplands.

DESCRIPTION. 10". Large size and voice distinctive. Iris red ; bill and feet black.

VOICE. Constantly utters a prolonged series of magnificently warbled notes, richer and more powerful by far than the songs of such celebrated performers as the Nightingale and Blackbird, but lacks variety and is always sung *fortissimo*.

HABITS. Travellers along the rivers will see and hear this bird constantly as it flies about the bushes that line the banks. Malays say that it only ascends the main rivers as far as crocodiles are found, but this is incorrect ; it is found along small streams covered over with jungle, and I have noted it in ravines on the lower slopes of Kinabalu.

FOOD. A very catholic feeder—figs and other fruits, small seeds, rush heads, etc., small riverine snails (taken off the edge of brooks), small beetles, and large carpenter bees (Harrisson).

NEST AND EGGS. In the Kelabit uplands breeds regularly December–March and Harrisson has examined several nests (c/2) of rough grass and weeds, usually placed five to fifteen feet above the ground. A single egg taken by Ryves at Kiau on Kinabalu on 10 March is described by Gibson-Hill as " Egg-shaped. Surface smooth, very slightly glossy. Ground-colour off-white, speckled and spotted with gull-grey, russet and burnt umber, the markings light neutral grey and claret-brown or maroon being thicker at the broader end." 25×19 mm.

367. PALE-FACED BULBUL PLATE XXIX, 6

Pycnonotus flavescens Blyth 1845

Assam, Burma, Thailand, Indo-China, Borneo.

A common higher montane resident of the moss forest, with a restricted range from Kinabalu along the spinal chain to Mt. Murud and Mt. Mulu. It ranges from a little over 3,000 feet to 11,500 feet.

DESCRIPTION. 7". Superficially resembles the common Yellow-vented Bulbul, but the under tail-coverts are a deeper richer yellow.

VOICE. A noisy churring alarm (Boys). A short double alarm call, seldom heard (Harrisson).

HABITS. It behaves much like the Yellow-vented Bulbul but tends to fly higher and further, and in flight the vent shows brilliant and almost golden. It is nearly always in pairs, but on Kinabalu it comes high in the morning in parties to feed on the heath berries there (Harrisson).

FOOD. Fruit (Boys).

NEST AND EGGS. Not described from Borneo.

RACE. *P. f. leucops* (Sharpe) 1888.

PLATE XXIX, 7 **368. YELLOW-VENTED BULBUL** PHOTO PLATE 39

Pycnonotus goiavier (Scopoli) 1786 *Empuru lalang* (M)

S. Indo-China, Philippines, Malaysia.

Abundant lowland resident throughout Borneo in open cultivated country and secondary jungle, and in the Kelabit uplands to 3,700 feet. Also occurs in the Maratuas.

DESCRIPTION. 7". The white about the head prevents confusion with any species other than the preceding one. Iris brown or scarlet ; feet bluish-black.

VOICE. The bird has no distinctive song or calls, and its notes are cheery rather than musical.

HABITS. A perky self-confident bird, one of the best known in Borneo, and the *only* bulbul that lives in towns and gardens. Both Williams (in S.W. Sarawak) and Whitehead (in N. Borneo) noted that large numbers often roost together and make a great noise at dusk with their harsh bickerings, and Harrisson has seen the same thing at Bario : " at dusk about thirty collected in small trees below the house on the plain ; they called, swooped and dived at each other."

FOOD. Unlike other bulbuls it regularly feeds from the ground, taking large worms, scarabs, and crickets in this way; these are struck vigorously against the earth or a branch or post before being swallowed. Frequently also feeds in low bushes (one to four feet) and will take very large caterpillars and grasshoppers. Also eats berries, buds and fruit. When the figs are ripe it joins the Glossy Starling in the morning rush for the freshly edible fruit in the great fig trees, feeding to 150 feet from the ground. On Talang Talang Kechil Island seven or eight birds daily feed on the white sand beach, taking small flies mainly; but on Talang Talang Besar, only a mile away with plenty of bulbuls and a closely similar beach with the same flies, no bulbul has been seen on the beach during months of close observation 1947–58. This adaptability in diet probably accounts for the abundance of this species (Harrisson). Williams reported that it does a good deal of damage by eating pepper.

NEST AND EGGS. The nest and eggs have been described by a number of authors, and in the lowlands may be found in any month of the year. In the Kelabit uplands Harrisson made a special study of this bird's breeding and found most eggs were laid in January (earliest 7 January) and the young hatched mostly in February. The full clutch was always two eggs. The nest is of roots and fibres, lined with grass (Bartlett). Gibson-Hill describes eggs taken by Ryves as "Egg-shaped. Surface smooth and slightly glossy. Colour white or off-white, speckled with light neutral grey and claret-brown or maroon." 23×16 mm.

RACE. *P. g. gourdini* Gray 1847.

369. LARGE OLIVE BULBUL PLATE XXX, 4

Pycnonotus plumosus Blyth 1845

Malaysia.

A common resident in the lowlands of Borneo in primary and secondary forest.

DESCRIPTION. 7". Larger size and green wash on wings and tail distinguish it from the three following species. Iris dark red-brown; bill black; feet brown.

VOICE. "The normal note is not unlike that of the Yellow-vented Bulbul, but fuller, deeper, and a little more varied; it also utters a quiet *prr-prr*, and on occasion I have heard a very sweet little song, as if under its breath." Thus Edgar describes its voice in Malaya.

HABITS. In Borneo it is typically a bird of the forest edge, and does not normally enter parks or gardens.

PLATE XXX

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1. CRESTED BROWN BULBUL 374
Pycnonotus cutilotus.

2. NIEUWENHUIS'S BULBUL 374
Pycnonotus nieuwenhuisi nieuwenhuisi.

3. BLACK-AND-WHITE BULBUL 375
Pycnonotus melanoleucos.

4. LARGE OLIVE BULBUL 380
Pycnonotus plumosus insularis.

5. RED-EYED BROWN BULBUL 382
Pycnonotus brunneus brunneus.

6. LESSER BROWN BULBUL 383
Pycnonotus erythrophthalmos salvadori.

7. HOOK-BILLED BULBUL 385
Setornis criniger.

8. HAIRY-BACKED BULBUL 385
Microscelis criniger viridis.

9. STREAKED BULBUL 386
Microscelis virescens malaccensis.

10. CRESTED OLIVE BULBUL 386
Microscelis charlottae charlottae.

11. ASHY BULBUL 386
Microscelis flavalus connectens.

FOOD. Figs, berries, caterpillars.

NEST AND EGGS. According to Bartlett, the nest is similar to that of the Yellow-vented Bulbul, but the eggs are much darker, the spots and blotches being larger and redder and intermixed with bluish-grey blotches.

RACES. (*a*) *P. p. hutzi* Stresemann 1938, in E. Borneo; (*b*) *P. p. insularis* Chasen & Kloss 1929, elsewhere; *hutzi* is smaller than *insularis*, and has the underparts brighter, greyer, with less brown wash, especially on the centre.

370. RED-EYED BROWN BULBUL PLATE XXX, 5

Pycnonotus brunneus Blyth 1845

Malaya, Sumatra, Borneo.

A common resident in the lowlands in the same habitat as the Olive Bulbul and in the Kelabit uplands up to 3,300 feet. Occurs on Banggi Island and the Karimatas.

DESCRIPTION. 7". A plain brown bird, slightly smaller than the Olive Bulbul and without any olive-green tinge on wings and tail. Wing ♂ 80–90 mm. ♀ 77–85 (Chicago).

HABITS. Those of the family.

NEST AND EGGS. Not described from Borneo.

RACE. *P. b. brunneus.*

371. WHITE-EYED BROWN BULBUL

Pycnonotus simplex Lesson 1839

Malaysia.

A common resident in the lowlands in the same habitat as the two preceding species, but perhaps less common than they are, and with a preference for primary forest. Found in the Kelabit uplands to 4,200 feet.

DESCRIPTION. Very closely resembles the Red-eyed Brown Bulbul, and only to be distinguished by the paler, creamy-buff, under tail-coverts. The eye is no guide in Borneo, because it is red and not white as in the Malayan races of this species.

HABITS. Those of the family.

FOOD. Cockroaches, berries.

NEST AND EGGS. Gibson-Hill describes a single egg taken by Ryves at Kota Belud on 28 February as "Egg-shaped. Surface smooth and fairly glossy. Ground-colour white, finely and fairly evenly flecked with mouse-grey and mahogany-red." 18 × 14 mm

RACE. (*a*) *P. s. halizonus* Oberholser 1917, in the North Natunas ; (*b*) *P. s. oblitus* Deignan 1954, in the South Natunas ; (*c*) *P. s. perplexus* Chasen & Kloss 1929, in Borneo.

372. LESSER BROWN BULBUL PLATE XXX, 6

Pycnonotus erythrophthalmos (Hume) 1878

Malaya, Sumatra, Borneo.

A common resident in the lowlands of Borneo in primary and secondary forest and in the Kelabit uplands to 3,200 feet.

DESCRIPTION. Distinguish from the two preceding species by orange-yellow eyelids, sulphur-yellow under wing-coverts, ashy-white or buff throat (never tinged with brown or olive), shorter bill, and smaller size (wing ♂ 76–80 mm. ♀ 75–78 mm.). There is a slight overlap in size with the two preceding species, and old skins are very difficult to identify unless the colour of the eyelids has been noted on the label.

HABITS. Those of the family.

NEST AND EGGS. Not described from Borneo.

RACE. *P. e. salvadori* (Sharpe) 1881.

373. OLIVE WHITE-THROATED BULBUL PLATE XXIX, 8

Criniger bres (Lesson) 1832

Widespread in S.E. Asia.

Resident throughout Borneo in primary and secondary forest, and locally common.

DESCRIPTION. 8". The pure-white throat, usually puffed out in the field, and the crest are the distinguishing characters of this and the next species. Iris red-brown ; upper mandible black, edges and tip paler, lower light horn ; feet light brown or yellowish-flesh.

HABITS. Those of the family.

NEST AND EGGS. Not described from Borneo.

RACE. *C. b. gutturalis* (Bonaparte) 1850.

374. BROWN WHITE-THROATED BULBUL
PLATE XXIX, 11

Criniger ochraceus Horsfield & Moore 1854 *Empuru ragum* (I)

Widespread in S.E. Asia.

A common montane resident throughout the mountain ranges of Borneo

DESCRIPTION. Closely resembles the preceding species, but darker and richer brown, especially on the under tail-coverts. Iris red-brown; upper mandible dark horn, lower grey; feet and claws pale horn.

VOICE. A garrulous bird with loud call-notes; " at times whistles prettily " (Whitehead).

HABITS. Harrisson found it common, conspicuous and tame. The few I have seen were down in the understorey, whereas Whitehead found it generally searching about high up in the trees.

FOOD. Berries mainly and almost exclusively; some insects; hornet larvae also recorded (Harrisson).

NEST AND EGGS. Gibson-Hill describes a clutch of two eggs taken by Ryves (at Kiau, *not* Kota Belud) on 30 March as " egg-shaped, rather elongated. Surface smooth and slightly glossy. Ground-colour white, finely and rather sparsely spotted with light violet-grey (underneath) and mahogany-red (above), the markings being thicker at the broad end, where the ground-colour is almost completely obscured." 25×16 mm.

RACES. (*a*) *C. o. ruficrissus* Sharpe 1879, on Kinabalu; (*b*) *C. o. fowleri* Amadon & Harrisson 1957, greyer, less rufous on the upper-parts and breast, elsewhere in Borneo.

375. CRESTLESS WHITE-THROATED BULBUL

PLATE XXIX, 9

Criniger phaeocephalus (Hartlaub) 1844

Malaysia.

A common resident in the lowland forests.

DESCRIPTION. Combination of white throat, yellow underparts and absence of crest diagnostic. Iris reddish-brown; bill black above, grey below, edge pale bluish; feet pale pink, claws darker.

HABITS. A shy bird of the primary forest.

FOOD. Berries, small bright beetles (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *C. p. phaeocephalus*, in the North Natunas; (*b*) *C. p. diardi* Finsch 1867, in western Borneo from the Baram River southwards; (*c*) *C. p. connectens* (Chasen & Kloss) 1929, without yellow tips to the tail-feathers, in northeastern Borneo; (*d*) *C. p. sulphuratus* Bonaparte 1850, a variably intermediate population occupying an ill-defined zone extending from eastern Sarawak and western North Borneo to southeastern Borneo (Deignan, *in litt.*).

376. FINSCH'S BULBUL PLATE XXIX, 10

Criniger finschi Salvadori 1871

Malaya, Sumatra, Borneo.

Sparsely distributed resident in primary forest, with a preference for submontane localities; there is no formal record for British North Borneo.

DESCRIPTION. 6½". Small size and yellow throat, centre of belly, and under tail-coverts distinguish it.

HABITS, ETC. Not described from Borneo.

377. HOOK-BILLED BULBUL PLATE XXX, 7

Setornis criniger Lesson 1839

Borneo and Banka.

A locally common resident in the lowlands, but restricted to primary forest.

DESCRIPTION. 7½". White tips to lateral tail feathers and white underparts washed with grey on the sides, and buff down the middle diagnostic. Iris brown; bill black.

HABITS. Not described from Borneo.

FOOD. Dragonfly nymphs, beetles, small pulpy berries (Harrisson).

NEST AND EGGS. Not described from Borneo.

378. HAIRY-BACKED BULBUL PLATE XXX, 8

Microscelis criniger (Blyth) 1845

Malaya, Sumatra, Borneo.

Resident in the lowlands in primary and secondary forest. Locally common.

DESCRIPTION. 6". Small size and yellow underparts, faintly mottled brownish on the breast, distinctive. It derives its name from fine hairs on the back; these are not visible in the field, and have to be looked for in the hand. Iris brown; bill bluish; legs brown or bluish.

HABITS AND NEST. Not described from Borneo.

FOOD. Berries, beetles, and small locustids (Harrisson).

RACES. (*a*) *M. c. criniger*, in the North Natunas; (*b*) *M. c. viridis* (Bonaparte) 1854, in Borneo. See addenda.

379. STREAKED BULBUL PLATE XXX, 9

Microscelis virescens (Temminck) 1825

Widespread in S.E. Asia.

Resident in Borneo in the lowlands in primary and secondary forest, and locally common.

DESCRIPTION. 8". The only bulbul with boldly streaked underparts. No yellow in plumage. Iris reddish-brown ; bill dark horn above, paler below ; feet and claws dark horn, soles pale yellow.

HABITS. Those of the family.

NEST AND EGGS. Eggs collected by Low on Labuan many years ago were described by Sharpe as very variable, the ground-colour being pinky-white, blotched and spotted with maroon or chestnut, the spots being small in some, large and smudgy in others. 20 × 16 mm.

RACE. *M. v. malaccensis* (Blyth) 1845.

380. CRESTED OLIVE BULBUL PLATE XXX, 10

Microscelis charlottae (Finsch) 1867

Widespread in S.E. Asia.

Resident in the lowlands of Borneo, and locally common.

DESCRIPTION. 7". Easily confused in the hand with the olive bulbuls, but the long slender bill (characteristic of the genus Microscelis) and the pointed feathers of the forehead distinguish it. The wings are a deeper brown. In the field the whitish iris is distinctive ; bill dark brown above, whitish horn below ; feet brown.

HABITS AND NEST. Not described from Borneo.

RACES. (*a*) *M. c. charlottae* over most of Borneo except in the east ; (*b*) *M. c. perplexus* (Riley) 1939, with dull yellowish tinge on underparts and lighter upperparts, in E. Borneo ; (*c*) subsp., in the Natunas, probably *M. c. cryptus* (Oberholser) 1918.

381. ASHY BULBUL PLATE XXX, 11

Microscelis flavalus (Blyth) 1845

Widespread in S.E. Asia.

Montane resident, abundant throughout the mountains of Borneo, occasionally found at low altitudes, e.g. at Niah caves where it is resident.

DESCRIPTION. 8". Contrast of yellowish-green wings and tail with white throat, grey breast and bright yellow under tail-coverts diagnostic. The white feathers of the throat are often puffed out in display, as in some of the crinigers. Iris dark red, pale cinnamon-brown, or greyish-olive ; bill black ; feet blackish or flesh (Harrisson).

VOICE. Generally quiet and silent but has the following notes : (1) a harsh *trrk* (2) a low reedy *di-deet di-deet*, rather warbler-like (3) a low throaty *to' to' to'* (Harrisson).

HABITS. Found in primary and secondary forest.

FOOD. Berries, seeds, cicadas, crickets (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *M. f. connectens* (Sharpe) 1887.

ROBINS, FORKTAILS, CHATS AND THRUSHES: Turdidae

This family is world-wide in distribution and is divided into a number of well-defined subfamilies, all of which are linked by the fact that the plumage of the young is mottled to a greater or less degree. To it belong some of the best-known birds of Europe, such as the Robin, Song Thrush, and Blackbird.

I. ROBINS (subfamily Erithacinae)

The robins differ from the thrushes in being smaller in size and living under cover. After the Yellow-crowned Bulbul, the three best songsters in Borneo all belong to this subfamily.

382. SIBERIAN BLUE ROBIN

Erithacus cyane (Pallas) 1776

Breeds in E. Siberia and Japan, wintering in Malaysia.

A passage migrant and winter visitor to all parts of Borneo in small numbers.

DESCRIPTION. 5". Sexes differ, the male being dark blue above and white below, the female brown above and white below with a mottled breast. Shivering tail and ground habits most distinctive. Iris brown ; bill dark brown above, flesh below ; feet pale flesh.

VOICE. *Tek-tek-tek-*

HABITS. In Borneo a ground bird of primary and secondary forest, especially along the banks of streams and mountain brooks, from sea level to 5,500 feet (Harrisson).

FOOD. Small black insects (Harrisson).

RACE. *E. c. bochaiensis* (Shulpin) 1928, if recognizable.

383. BLUE SHORTWING PLATE XXXII, 7

Brachypteryx montana Horsfield 1821

Widespread in S.E. Asia.

Higher montane resident, at present recorded only from Kinabalu, Mt. Trus Madi and Mt. Mulu.

DESCRIPTION. 5½″. Sexes differ. Adult male is dark blue with concealed white eyebrows ; female reddish brown with only mantle blue. Best identified as a short-tailed long-legged bird of bare rock at high altitudes. Iris brown ; bill, feet and claws black.

HABITS. It likes bare rock faces, and is conspicuous on the summit slopes of Kinabalu above the tree-line, though found also down to 3,300 feet.

FOOD. Small insects only (Harrisson, Kinabalu birds). Beetles and other insects (Boys).

NEST AND EGGS. Not described from Borneo.

RACE. *B. m. erythrogyna* Sharpe 1888.

384. ORANGE-TAILED SHAMA PLATE XXXI, 1

Copsychus pyrrhopygus (Lesson) 1839

Malaya, Sumatra, Borneo.

Resident throughout Borneo in the lowlands, but confined to primary forest.

DESCRIPTION. 8″. Rather like the commoner White-rumped Shama, but has the rump and two-thirds of the tail orange, and the tail is not so long. Iris brown ; upper mandible black, lower pale horn ; feet and claws grey.

HABITS. Those of the White-rumped Shama.

FOOD. Insects.

NEST AND EGGS. Not described from Borneo.

PLATE XXXI, 3 **385. MAGPIE-ROBIN** PHOTO PLATE 40

Copsychus saularis (Linnaeus) 1758 *Murai* (M) ; *semalau* (I)

Widespread in S.E. Asia.

Very common resident throughout the cultivated lowlands of Borneo. Also in the Kelabit uplands to 3,700 feet.

DESCRIPTION. 8". Sexes differ, the female being grey below where the male is glossy black. Iris dark brown; bill and feet black.

VOICE. A pair of these birds lives in almost every garden in Borneo, and the cock bird sings brightly from a perch; his song is full and varied, but lacks the rich tones of the next species. Bartlett records that occasionally in the middle of a moonlight night it will keep up an endless conversation, or a kind of competition song which becomes increasingly monotonous; they are good mimics, imitating many of the native birds.

HABITS. "It is both confiding and unobtrusive, and as the lady of the house moves about the garden in the shade . . . she will see the little pied bird watching her from wall or bush with friendly and attentive scrutiny. And by way of shelter and protection (or so we like to think in spite of prosaic fact) the cock bird early in the morning and again in the evening mounts to the topmost bough of one of the garden trees and pours out his delicious song."

Thus (in part) Whistler's classic account of this bird; the "prosaic fact" is that it sings for the same reasons as the European Robin (see David Lack's *Life of the Robin*). On the ground it never tires of performing the tail trick; the tail is lowered and expanded into a fan, then closed and jerked up over the back, past the vertical.

FOOD. Insects, crickets, beetles, locustids, ants, scarabs, caterpillars, wasps (Harrisson).

NEST AND EGGS. The nest and eggs are well known and have been described by several authors. The nest is large, loosely made, of fine roots; hidden away amongst the overhanging roots of a tree, or in the branches (Whitehead), or in some sort of hole such as the English Robin would select (Bartlett). The eggs, (c/3 or c/4), are green in ground-colour (Bartlett and Gibson-Hill) or pale blue (Whitehead), thickly blotched all over with reddish-brown. 24 × 17 mm.

RACES. (*a*) *C. s. problematicus* Sharpe 1876, with white belly and under tail-coverts in the male, black upperparts in female, in S.W. Borneo and Sarawak; (*b*) *C. s. adamsi* Elliot 1890, with belly black and under tail-coverts white in the male, grey upperparts in female, in N. Borneo; (*c*) *C. s. pluto* Bonaparte 1850 all black in male and all grey in female, tail completely black in both sexes, in S.E. Borneo. From the Baram River north to somewhere near Kinabalu there is a wide zone of intergradation between the first two races. For detailed discussion see Chasen & Kloss 1930: 84–90.

386. WHITE-RUMPED SHAMA PLATE XXXI 2

Copsychus malabaricus (Scopoli) 1786 *Nendak* (I)

Widespread in S.E. Asia.

Resident throughout Borneo in old and secondary jungle in the lowlands, and common in most areas. It has been collected in the Kelabit uplands at 3,300 feet.

DESCRIPTION. 11". In size like the Magpie-Robin, but tail much longer. Sexes alike. Iris dark brown ; bill black ; feet whitish or grey-brown.

VOICE. Its powerful, varied and beautiful song, rivalling that of the Nightingale, may be heard at intervals in the mornings and evenings coming out of a thick patch of undergrowth. When singing the wings and tail are held stiffly, and somewhat bowed. A detailed description of the song, too long to quote here, is given by Von Berchtold (Büttikofer, 1900 : 255–6). Imitations of the songs of other birds are often heard. Motley records :

" Now and then it utters a chatter something like a Magpie, but possibly this is the note of the female only, as of two which we watched for a long time . . . one only uttered this note, and the other occasionally a few low notes like a Skylark when hovering near his nest."

Bartlett also refers to a rather unpleasant chattering, heard towards evening.

HABITS. In habits it is more of a forest bird than the Magpie-Robin and does not enter gardens unless there is some thick cover, for it shuns the open. Motley noted that the flight is short but rapid, and on alighting the bird flings up its tail two or three times, and then usually sings a few notes. It feeds chiefly on insects. One of the Iban omen birds.

FOOD. Ants, insects, caterpillars, grasshoppers, centipedes (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *C. m. eumesus* (Oberholser) 1932, in the Natunas ; (*b*) *C. m. tricolor* (Vieillot) 1818, in the Karimatas ; (*c*) *C. m. barbouri* (Bangs & Peters) 1927, in the Maratuas ; (*d*) *C. m. suavis* Sclater 1861, in S. Borneo and Sarawak ; (*e*) *C. m. stricklandi* Motley & Dillwyn 1855, with a white crown, in N. Borneo. The last two races overlap from Lawas to the Padas River on the west, and from the Indonesian border to Darvel Bay on the east.

II. FORKTAILS (subfamily Enicurinae)

The forktails are confined to S.E. Asia. In appearance they have a superficial resemblance to wagtails, but differ in structure and habits.

387. WHITE-CROWNED FORKTAIL PLATE XXXI, 4

Enicurus leschenaulti (Vieillot) 1818 *Ensieng batu* (I)

Widespread in S.E. Asia.

On jungle streams throughout Borneo ; one race in the lowlands and another montane.

DESCRIPTION. 8–9" (according to race). Identify by voice and habitat. Feet white.

VOICE. A very loud clear double whistle, much like a kingfisher, but sharper still and uttered very frequently, so that the bird can be found readily thereby (Harrisson).

HABITS. The montane race frequents only small clear-running forest streams and the rocky beds of mountain torrents and avoids large or muddy rivers but Whitehead records that he found the lowland race frequenting a deep muddy ditch in the tideway of a river not far from the coast. Whistler's admirable account of their habits is here summarised. They walk sedately over the stones along the margin of the water, feeding with a quick pecking motion rather similar to that of a chicken, and on rare occasions they may disappear completely under water like a dipper. They are extremely restless birds, frequently and unexpectedly turning at right angles or from side to side, and now and again advancing with little tripping runs. The flight is fairly fast, but dipping and singularly graceful, and when disturbed they flit ahead for 100 yards or so, uttering a sharp note (which Davison aptly compares with the noise of a glass stopper being turned sharply in the neck of a glass bottle), before settling again by the water ; this is repeated several times till one reaches the limit of their territory, when they leave the stream and by slipping through the forest at the side regain the water lower down, where they again start feeding. Occasionally they may perch on the bough of a tree for a few moments.

FOOD. They feed on insects obtained from the water and the stream bed. The insects include black beetles, water crickets, springtails and caterpillars (Harrisson).

NEST AND EGGS. The site chosen for the nest is always very damp, usually on the bank of a stream, but sometimes a short distance away; the nest is generally built on a ledge of rock, between boulders, amongst the roots of a tree, or even in a hollow under a bush. One nest found near Bario in the Kelabit uplands on 7 March was a cup made of wood fibres loosely woven together, and contained two white eggs marked with small reddish-brown spots.

RACES. (*a*) *E. l. borneensis* Sharpe 1889, with a longer tail, is found throughout the mountains of Borneo; on Kinabalu mostly at 1,000–4,000 feet; (*b*) *E. l. frontalis* Blyth 1847, with a shorter tail, in the lowlands; a single specimen has been taken on Mt. Penrissen at 3,500 feet. The relationship between these two races needs further study.

PLATE XXXI, 5 **388. CHESTNUT-NAPED FORKTAIL** PHOTO PLATE 41

Enicurus ruficapillus Temminck 1832

Malaya, Sumatra, Borneo.

Resident throughout Borneo in the lowlands along small shady streams of clear water running through old jungle, but erratic and patchy in distribution.

DESCRIPTION. 7". Sexes differ, the male having the mantle black and the female chestnut. Iris dark brown; bill black; feet pale flesh, claws horn.

HABITS. Those of the preceding species.

FOOD. Insects. One bird had swallowed an 8" yellow and black banded snake (Harrisson).

NEST AND EGGS. Not described from Borneo. See article and superb photographs by G. C. Madoc in *Malayan Nature Journal* 1957: 31–34.

III. CHATS (subfamily Saxicolinae)

The chats are world-wide in distribution, and are easily recognized in the field by their habit of flirting the tail and at the same time flicking it open fanwise for a moment; they also bob and flick their wings. They perch conspicuously and fly low with rapidly moving wings and jerky flight. In Borneo however they are represented only by three very rare visitors, and one regular visitor.

389. WHEATEAR

Oenanthe oenanthe (Linnaeus) 1758

Holarctic.

The population breeding in Siberia and Central Asia moves southwestwards on migration to winter in N.W. India and the Persian Gulf. Meinertzhagen has shown that individuals of a migrating bird occasionally get caught up in a party of some other species and are then led astray, finishing up far from their normal winter quarters. This accounts for the appearance of this bird in Borneo, several thousand miles out of place (there are no other records in all S.E. Asia).

Harrisson collected one at Pa Umur in the Kelabit uplands on 4 November. Another was taken by the lighthouse keeper at Cape Sirik on 30 October 1956. Both were immature males.

DESCRIPTION. 5¾". A ground bird with dark wings and tail contrasting strongly with sandy-buff colour; white rump and base of tail conspicuous. Young birds are spotted.

FOOD. Harrisson's bird was taking flies off buffalo droppings outside the longhouse.

RACE. *O. o. oenanthe.*

390. PIED CHAT

Saxicola caprata (Linnaeus) 1766

Widespread in S.E. Asia.

Rare vagrant in Borneo, where its occurrence rests on two specimens presented by Blasius's father to the Braunschweig Museum. They were obtained from the Maison Verreaux in Paris, and were said to have come from Borneo, but it is not known by whom they were collected or where (probably in S. Borneo).

DESCRIPTION. 5½". Sexes differ. In good plumage adult male affords a fine contrast of deep jet black and dazzling white; in flight the pure white upper tail-coverts and belly give him a more pied appearance. Female is dark brown with a rusty patch at the base of the tail. Young male is like female, but much darker, boldly streaked with very dark brown and with the white wing-patch well developed. Typical chat habits.

RACE. Uncertain, see Checklist.

391. STONE CHAT

Saxicola torquata (Linnaeus) 1766

Palaearctic and Ethiopian Regions.

Rare vagrant in Borneo. Collected near Kuching on 31 January 1898 and on Satang Island 2 December 1955. One seen by Harrisson 23 February 1958 at Kuala Niah.

DESCRIPTION. 5". Most likely to occur in the immature plumage, which has streaked brown upperparts and traces of a white shoulder-patch. Perches conspicuously on top of bushes and flicks tail in chat manner.

RACE. *S. t. stejnegeri* (Parrot) 1908.

392. BLUE ROCK THRUSH PLATE XXXI, 6

Monticola solitarius (Linnaeus) 1758

S. Palaearctic and Oriental Regions.

A passage migrant and winter visitor to North Borneo and Sarawak; almost certainly in Indonesian Borneo as well, but no formal record.

DESCRIPTION. 8". Sexes differ. The male is greyish-blue, mottled with black and grey with lower breast and belly chestnut; the female is duller, greyish above, paler below. Some chestnut on belly. Iris dark brown; bill very dark brown; feet and claws very dark horn. Perches conspicuously.

HABITS. This bird delights in perching on the roofs of buildings; one established its winter quarters in my garden in Brunei, arriving on 18 October and leaving on 19 April. I have seen it also in the interior, flying about in a hill padi field up the Baleh river on 7 April, a pair of birds presumably on passage. Banks noted:

"This bird occurs every year, singly or in twos and threes. . . . The seashore, not necessarily a rocky one, is the usual place to find them, and they may be seen hopping about the old tree stumps at high tide level, or resting on the roof of some building."

RACE. *M. s. philippensis* (P. L. S. Müller) 1776.

IV. THRUSHES (subfamily Turdinae)

The thrushes differ from the preceding subfamilies principally in their larger size, and in eating fruit as well as insects; berries form a considerable portion of their diet. They feed much on the ground, where their long legs enable them to hop with speed and facility. In Borneo, however, they are not familiar birds of the countryside as they are in England; we have one winter visitor from Siberia, one bird of the blackbird type found only on Kinabalu and Mt. Trus Madi, and several rare ground thrushes of old jungle.

393. MOUNTAIN BLACKBIRD PLATE XXXII, 10

Turdus poliocephalus Latham 1801 *Maludan* (M)

Widespread in the Pacific Islands, from Formosa and Sumatra east to Samoa; all the Malaysian races are birds of high mountains.

In Borneo found only on the higher levels of Kinabalu from 8,000 feet to the limit of vegetation, and on Mt. Trus Madi where Boys collected one (very large) specimen in 1957 (wing 113 mm.).

DESCRIPTION. 9". Sexes alike. Iris brown, eyelids yellow; bill and feet deep yellow.

VOICE. "I never heard it sing or utter any particular cry" (Whitehead).

HABITS. This and the Mountain Blackeye are much the commonest and most conspicuous birds of the upper slopes of Kinabalu until the bare rock is reached.

FOOD. Almost exclusively vegetarian (analysis of stomach contents of ten birds in Harrisson, 1955).

NEST AND EGGS. The nest is described by Ryves as a heavy and substantial structure, similar in type to that of the English Mistle Thrush. Outside measurement 6" across by 4" deep, egg cavity 3" across by 2" deep. Foundation of fine roots, fibres, blades and stems of grass, all compactly woven together and sparsely covered on the outside with moss and lichen. Thickly lined with blades of grass. Nest firmly placed at the junction of several small branches at about ten feet from the ground in a giant heather bush (*Leptospermum*). The normal clutch is one egg only. Harrisson found seven nests in February, Ryves found a nest with a single chick on 19 February, and eggs on 26 and 28 March.

RACE. *T. p. seebohmi* (Sharpe) 1888.

394. PALE THRUSH PLATE XXXI, 7

Turdus pallidus Gmelin 1789

E. Palaearctic.

Passage migrant and winter visitor to N. Borneo and Sarawak. Four specimens from Satang Island represent the most southerly record to date; not yet reported from Indonesian Borneo. Whitehead reported it as passing through Labuan every year in considerable numbers during the north-west monsoon and plentiful round Kinabalu up to 8,000 feet, going in flocks like Redwings. In the Kelabit uplands it arrives in great hordes in November.

DESCRIPTION. 10". Sexes differ. Male has a plain greenish back, a whitish eyestreak, a white patch beneath the eye, upper breast and flanks chestnut, remaining underparts white. Female differs in having the throat and foreneck white streaked with dark brown. Iris dark brown; base of upper mandible yellow, rest black, lower mandible yellow except for black tip; feet yellowish, claws horn.

VOICE. They have a chirpy contact note, one of the characteristic sounds of the Kelabit uplands in November–December, when they

PLATE XXXI

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1. ORANGE-TAILED SHAMA 388
Copsychus pyrropygus.

2. WHITE-RUMPED SHAMA 390
Copsychus malabaricus suavis.

3. MAGPIE-ROBIN 388
Copsychus saularis problematicus.

4. WHITE-CROWNED FORKTAIL 391
Enicurus leschenaulti borneensis.

5. CHESTNUT-NAPED FORKTAIL 392
Enicurus ruficapillus.

6*a*. BLUE ROCK THRUSH (♂) 394
Monticola solitaria philippensis.

6*b*. BLUE ROCK THRUSH (♀) 394
Monticola solitaria philippensis.

7. PALE THRUSH 395
Turdus pallidus obscurus.

8. SUNDA WHISTLING THRUSH 398
Myiophoneus glaucinus borneensis.

9. BLACK LAUGHING-THRUSH 420
Garrulax lugubris calvus.

10. CHESTNUT-CAPPED LAUGHING-THRUSH . . . 421
Garrulax mitratus treacheri.

11. GREY-AND-BROWN LAUGHING-THRUSH 421
Garrulax palliatus schistochlamys.

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1957

swarm in secondary forest for a mile or so round the longhouses (Harrisson).

HABITS. A typical thrush in habits, preferring secondary forest.

FOOD. Berries (Harrisson).

RACE. *T. p. obscurus* Gmelin 1789 (" The Dusky Thrush ").

395. SIBERIAN GROUND THRUSH PLATE XLV, 4

Zoothera sibirica (Pallas) 1776

Breeds in Siberia and Japan.

One was collected on Mt. Matang near Kuching, 26 October 1929, the only record for Borneo.

DESCRIPTION. 9". Sexes differ. Adult male is deep blue-black with a white tip to the outer tail-feathers, a white eyebrow, and the axillaries and under tail-coverts mostly white. Female is brown instead of black and has a narrow buff supercilium, and the underparts mostly buff. Young male has the slaty-blue upperparts of the adult male but otherwise resembles the female.

RACE. *Z. s. sibirica*.

396. ORANGE-HEADED GROUND THRUSH PLATE XLV, 5

Zoothera citrina (Latham) 1790

Widespread in S.E. Asia.

A rare submontane resident, at present known only from the lower slopes of Kinabalu, where Whitehead collected five at 3,000–4,000 feet (there are seven other skins in the British Museum without altitude data), and from Mt. Trus Madi, where the Cambridge Expedition obtained one at 4,700 feet. There seems to be no reason why it should not be discovered in other areas.

DESCRIPTION. 8". A distinctive and beautiful thrush with chestnut head, bluish-grey upperparts and a white patch on the shoulder of the wing. Young birds have the head and mantle either much the same colour as the back, or more rufous with rufous shaft stripes, and black marks on the breast and sides of head.

HABITS. The bird collected by Boys was calling in the canopy.

FOOD. Termites and insects (Boys).

NEST AND EGGS. Fully fledged young were obtained by Whitehead at the beginning of May.

RACE. *Z. c. aurata* (Sharpe) 1888. The nominate race is a winter visitor to Malaya and Sumatra, and might conceivably stray across to Borneo occasionally.

397. EVERETT'S GROUND THRUSH PLATE XLV, 8

Zoothera everetti (Sharpe) 1892

Confined to Borneo. A rare montane species ranging from Kinabalu along the spinal range to Mt. Mulu and Mt. Dulit, usually at 4,000 to 7,000 feet.

DESCRIPTION. 8". Chestnut breast and flanks contrast with dark upperparts and white throat and abdomen. Ear-coverts whitish. A black moustachial stripe. Bill from base of skull over 25 mm., long and hooked. Iris brown ; bill black ; feet and claws pale horn.

HABITS. Unknown.

FOOD. One examined from above Bario had fed entirely on small insects (Harrisson).

NEST AND EGGS. Unknown.

398. KUHL'S or CHESTNUT-HEADED GROUND THRUSH PLATE XLV, 6

Zoothera interpres (Temminck) 1827

Throughout Malaysia.

Resident in the lowlands of Borneo, but a rare and shy ground bird of primary forest.

DESCRIPTION. 6". Small size and distinctive coloration.

HABITS, ETC. Not described from Borneo.

RACE. *Z. i. interpres.*

V. WHISTLING THRUSHES (subfamily Myiophoneinae)

Whistling thrushes are found in E. and S.E. Asia ; they are large dark thrushes of semiaquatic habits, living along small streams and feeding mostly on snails. In contrast to all other thrushes, the young are only slightly or not at all spotted.

399. SUNDA WHISTLING THRUSH PLATE XXXI, 8

Myiophoneus glaucinus (Temminck) 1823

Sumatra, Java, Borneo.

A submontane resident. It is found throughout the mountains of Borneo, and Harrisson has found them resident in two localities at low altitudes : at Paiou cave, four miles from Long Malinau at the

foot of Mt. Mulu ; and again near sea level amongst the limestone hills of Bau and Tegora.

DESCRIPTION. 9". Sexes differ, the male being a dark purplish-blue with a strong metallic purple sheen on the upperparts, the female browner. Young birds are streaked with white below. Iris brown ; lower eyelid pale greenish ; bill black ; feet shiny black.

VOICE. A long chittering call and a pencil-on-slate screech (Harrisson). "This bird has a pleasant whistling note, which it utters when perched on the lower boughs of high trees" (Whitehead).

HABITS. "Frequents the borders of rocky streams, where it may be noticed most often in the early morning, hopping about on the large rocks, but disappearing at the least alarm into the thick forest. Met with sparingly at 2,000–9,000 feet on Kinabalu" (Whitehead). A striking feature of its behaviour in the Bau lowlands is that it not only regularly nests in cave mouths, but will readily fly off into the cave darkness if alarmed. Its absence from the apparently similar habitats at Niah and other large caves is remarkable (Harrisson).

FOOD. Frogs, crickets, beetles, shells, berries, wood lice (Harrisson)

NEST AND EGGS. "I saw a nest of this species which was placed in a crevice in some high and precipitous rocks over a small river, but it was impossible to reach the spot. The nest, I believe, contained young, judging by the frequent visits of the old bird; 23 April" (Whitehead). The nesting habits have been described also by Hose, Büttikofer, and Harrisson. Eggs (c/2), cream speckled with reddish.

RACE. *M. g. borneensis* Slater 1885.

BABBLERS : Timaliidae

This family contains a very large number of species, nearly all tropical or subtropical in distribution. They are termed "babblers" because they make a lot of noise, and most of the odd sounds and chatterings emanating from dense thickets or the undergrowth of the jungle can safely be attributed to a babbler of some sort. For they are poor flyers as a rule, with short and rounded wings, and spend much of their time on or near the ground, often in small parties. They live on insects, and the young are never spotted. Like the Turdidae, they can be grouped into a number of subfamilies with rather different habits.

PLATE XXXII

SOME BIRDS OF KINABALU

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1. SHORT-TAILED BUSH WARBLER 427
Cettia whiteheadi.

2. MOUNTAIN BLACKEYE 486
Chlorocharis emiliae emiliae.

3. MOUNTAIN BUSH WARBLER 427
Cettia fortipes oreophila.

4. MOUNTAIN FLYCATCHER-WARBLER 432
Seicercus trivirgatus kinabaluensis.

5. BORNEAN MOUNTAIN WHISTLER 459
Pachycephala hypoxantha hypoxantha.

6. YELLOW-BREASTED FLYCATCHER-WARBLER . . 432
Seicercus montis montis.

7. BLUE SHORTWING 388
Brachypteryx montana erythrogyna.

8. KINABALU FRIENDLY WARBLER 428
Bradypterus accentor.

9. PYGMY WHITE-EYE 486
Oculocincta squamifrons.

10. MOUNTAIN BLACKBIRD 394
Turdus poliocephalus seebohmi.

11. BLACK-BREASTED TRILLER 363
Chlamydochaera jeffreyi.

PLATE XXXII

I. GROUND BABBLERS (subfamily Cinclosomatinae)

This is a group of primitive insect-eaters of the Australo-Papuan region, with one species in Malaysia.

400. RAIL-BABBLER PLATE XXXIII, 1

Eupetes macrocerus Temminck 1831 *Gendang pelandok* (I)

Malaya, Sumatra, Borneo.

Resident but sparsely distributed through Borneo in primary forest, with a preference for submontane localities. Most of the specimens in museum collections have been taken at 2,000 to 4,000 feet, including one from Bario, but Bartlett records that two males and a young one were taken within three miles of Kuching on 2 October.

DESCRIPTION. 10". The comparatively large size, long legs, thin neck, and distinctive coloration identify it. Young birds are greyer with a white throat. Iris dark; vivid blue skin between red and black on throat; bill black; feet blue-black.

VOICE. A small ticking *tek*, also a louder *chekchekchek* fast repeated and rattling (Harrisson).

HABITS. Entirely a ground bird, it runs with great speed and is remarkable for the raised head, to which the prominent eyestripe draws attention (Banks). Often seen on fallen tree trunks and running over dead timber in gulleys and ravines of the hillsides; at a distance it can almost be mistaken for a baby ground squirrel. The tail is often carried slightly depressed and used as a balance and rudder much as in the Pen-tailed Tree Shrew (Harrisson).

FOOD. Cicadas, spiders, hard black beetles (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *E. m. macrocerus*, in the North Natunas; (*b*) *E. m. borneensis* Robinson & Kloss 1921, in Borneo.

II. JUNGLE BABBLERS (subfamily Pellorneinae)

This group is found in Africa and S.E. Asia. The representatives occurring in Borneo are rather nondescript in colour, and to try and identify them or watch them in the difficult conditions of a thick tropical forest is a time-consuming and unrewarding pastime.

Pellorneum has a long tail and long legs, and very short and inconspicuous rictal bristles, and is terrestrial; *malacopteron* has short wings, short tail, long legs, and is also terrestrial; *trichastoma* has long wings and short tail, and short legs, and is much more arboreal in habits. All make globular nests, placed on or near the ground, and lay spotted eggs.

401. BLACK-CAPPED JUNGLE BABBLER PLATE XXXIII, 2

Pellorneum capistratum (Temminck) 1823 *Tinjak pelandok* (I)

(A clap-type trap for mousedeer set on the ground and habitually invaded by this bird.)

Malaysia.

Resident throughout the lowlands of Borneo in primary forest, and found in the Kelabit uplands to 4,600 feet.

DESCRIPTION. 6". Iris brown; bill black above, whitish below; feet brown or flesh. On the only occasion when I have been able to watch them at close range in a good light they struck me as beautiful and charming little birds.

VOICE. According to Davison it utters a long-drawn single note.

HABITS. "This little bird frequents the same situations as the pittas, running along through dense brush, taking short flights only to re-alight on the ground" (Adams). "Found in thick jungle on the ground. This species walks on the ground, never hopping or climbing about amongst the low growth" (Whitehead). My single observation confirms its strictly terrestrial habits.

FOOD. Ants, caterpillars, grasshoppers.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. c. nigrocapitatum* (Eyton) 1839, in the North Natunas; (*b*) *P. c. capistratoides* (Strickland) 1849, in S. Borneo and Sarawak; (*c*) *P. c. morelli* Chasen & Kloss 1929, in North Borneo—like (*b*) but the underparts much paler, the breast yellower and less rufous, the flanks and upperparts less saturate, lores and ear-coverts paler, greyer, less black.

402. TEMMINCK'S JUNGLE BABBLER PLATE XXXIII, 3

Trichastoma pyrrhogenys (Temminck) 1827

Sumatra, Java, Borneo.

A montane resident, throughout the mountains of Borneo. Whitehead described it as fairly common on the lower slopes of Kinabalu 3,000–4,000 feet.

DESCRIPTION. 5½". Crown dark greyish-brown with pale shaft streaks ; lores and sides of head mottled brown and whitish ; upperparts rufous-brown, throat white ; breast more or less rufous according to race (see below) ; abdomen white, sides rufous. Iris light red-brown ; bill black, edges and base of lower mandible lighter, feet brown-flesh.

HABITS. Terrestrial, in primary forest.

NEST AND EGGS. The compact nest is built in the base of a shrub, tussock, or aerial root. The eggs (c/2) in the Kelabit uplands are laid in January–March ; the amount of reddish marking varies from almost nil to profuse (Harrisson). Eggs collected by Ryves at Kiau on Kinabalu in March are described by Gibson-Hill as egg-shaped, surface smooth and slightly glossy, ground-colour blue or dull green, fairly thickly spotted with brown and purplish-grey ; 20×15 mm.

FOOD. Ants, large insects.

RACES. (*a*) *T. p. canicapillum* (Sharpe) 1887, on Kinabalu only ; (*b*) *T. p. longstaffi* (Harrisson & Hartley) 1934, more rufous, with a well-defined rufous band across the breast, on the Tama Abo range, Mt. Dulit, Mt. Taman, and the upper Kayan ; (*c*) *T. p. erythrote* (Sharpe) 1883, with paler crown, on Mt. Penrissen and the Poi range.

403. SHORT-TAILED JUNGLE BABBLER

PLATE XXXIII, 4

Trichastoma malaccense (Hartlaub) 1844

Malaysia.

Resident and locally common throughout the lowlands of Borneo in primary forest.

DESCRIPTION. 5". Very short cocked-up wren-like tail, white throat and tawny underparts distinctive. Iris bright chestnut ; upper mandible black, lower bluish or pale orange with black tip ; feet pale pink, claws horn.

HABITS. Terrestrial.

FOOD. Insects and ants, black beetles, small grasshoppers.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *T. m. malaccense*, in the North Natunas ; (*b*) *T. m. feriatum* (Chasen & Kloss) 1931, with ochraceous throat, is known from one specimen only, and may be a distinct species (Deignan, *in litt.*) ; (*c*) *T. m. saturatum* (Robinson & Kloss) 1920, more richly coloured on the sides of the breast and with blacker ear-coverts than (*d*), in W. Borneo from the Baram River down to and including the Kapuas basin ; (*d*) *T. m. poliogenys* (Strickland) 1849, in Brunei,

North Borneo, all E. Borneo, and the Barito drainage in S. Borneo ; like (*a*) but the mantle and back greyish-olivaceous contrasting with the brown crown, and the rump less rusty.

404. BLYTH'S JUNGLE BABBLER PLATE XXXIII, 5

Trichastoma rostratum Blyth 1842

Malaya, Sumatra, Borneo.

Resident and locally common throughout the lowland forests of Borneo.

DESCRIPTION. 5½". Dark brown crown distinguishes it from the next species. Upperparts dark brown, underparts white down the centre, greyer at the sides. Upper tail-coverts redder. Iris brown ; bill black above, horn below ; feet greyish-brown.

VOICE. When travelling up the Bangkit River, a tributary of the Katibas, Kapit district, it attracted my attention with its loud three-note call, *minta duit*.

HABITS. In the Bangkit it was commonly seen, usually in pairs, hopping about the rocks along the river bank and making short fluttering flights after insects. Morrison, in the neighbouring Kanowit district, also recorded it as often seen by the stream sides when canoeing in the upper reaches of rivers.

FOOD. Grubs, insects.

NEST AND EGGS. Not described from Borneo.

RACE. *T. r. macropterum* (Salvadori) 1868.

405. FERRUGINOUS JUNGLE BABBLER PLATE XXXIII, 6

Trichastoma bicolor (Lesson) 1839

Malaya, Sumatra, Borneo.

A locally common resident throughout Borneo in the lowlands in primary forest. Also regular in the Kelabit uplands, where it frequents the open grassland and scrub parkland above 3,000 feet.

DESCRIPTION. 6½". Coloration distinctive, bright rufous upperparts and long reddish tail contrasting with white underparts. Iris brown ; bill black or pale brown, whitish below ; feet light brown.

VOICE. A churring note (Harrisson).

HABITS. Harrisson watched a loose flock of four or five birds feeding from ground level to twelve feet. The birds concentrated on working large dead leaves and dead twigs and tips of small branches, poising very lightly and delicately, the head looking around and pecking at bark, etc.—rather like versatile nuthatches.

FOOD. Ants.

NEST AND EGGS. Bartlett describes the nest as similar to that of *M. g. borneensis* but much smaller, composed entirely of dry bamboo leaves and placed in a bank. The eggs are more elongated and sharper at the small end, very pale pink with a pale ring of reddish-brown spots at the larger end.

406. HORSFIELD'S JUNGLE BABBLER PLATE XXXIII, 7

Trichastoma sepiarium (Horsfield) 1821

S. Indo-China and Malaysia.

Resident in the lowland forests throughout Borneo, and locally common.

DESCRIPTION. 5½". Crown blackish; upperparts olive-brown, browner on upper tail-coverts; indistinct white stripe from lores to above eye; chin and upper throat white, lower throat and breast grey; centre of abdomen whitish, remainder rufous. Iris rich brown; bill black horn above, bluish below; feet flesh.

HABITS. Similar to those of the next species.

FOOD. Ants, grubs. Small locustids, etc. (Harrisson).

NEST AND EGGS. Barlett described the cup-shaped nest as a very slight structure of fine black rootlets, placed on a lot of dry leaves forming the base.

RACES. (*a*) *T. s. harterti* (Chasen & Kloss) 1929, in N. Borneo; (*b*) *T. s. rufiventre* (Salvadori) 1895, in S. Borneo. (*a*) has the underparts rather less richly coloured, less generally suffused with ochraceous-tawny, and the crown and nape averaging slightly less grey.

406a. BLACK-BROWED JUNGLE BABBLER PLATE XLV, 7

Trichastoma perspicillatum (Bonaparte) 1850

Known only from one type specimen from Sumatra (race *vanderbilti* de Schauensee and Ripley 1940) and one type specimen collected by Schwaner somewhere in S. Borneo.

DESCRIPTION. 6". Differs from preceding species in larger size and in having forehead and supercilia black.

RACE. *T. p. perspicillatum.*

407. ABBOTT'S JUNGLE BABBLER PLATE XXXIII, 8

Trichastoma abbotti (Blyth) 1845

Widespread in S.E. Asia.

Resident in the lowlands of Borneo in primary forest; rather scarce in collections, but perhaps overlooked.

DESCRIPTION. 5½". Very like *T. sepiaria* but has a longer tail (2¼ inches as against 1½–1¾ inches). Crown not markedly darker than back; underparts dirty greyish-white washed with brownish and entirely without rufous except on the under tail-coverts; a much duller bird with a larger bill.

VOICE. Notes heard in Burma, which need to be confirmed for Borneo are (1) a loud distinctive call of three notes, dropping in pitch on the middle note, (2) four notes, the first is low, the other three higher but all on the same pitch. The bird calls persistently, especially at dawn.

HABITS. A skulker in dense thickets.

NEST AND EGGS. Not described from Borneo.

RACE. *T. a. sirense* (Oberholser) 1917 (*Proc. U.S. Nat. Mus.* liv: 195). (Material from Borneo, Billiton, and Pulau Mata Siri is inseparable, Deignan *in litt.*)

408. GREATER RED-HEADED BABBLER PLATE XXXIV, 1

Malacopteron magnum Eyton 1839.

Malaya, Sumatra, Borneo, Palawan.

A common resident in the lowland forests throughout Borneo.

DESCRIPTION. 6½". Head markings, chestnut on the forecrown and black on the nape, distinctive of this and the next species; grey streaks on throat. Iris red; upper mandible black, lower grey; feet blue-grey.

VOICE. Five or six notes of different pitch, a pleasant musical whistle uttered very clearly with slight pauses between notes.

HABITS. As suggested by their comparatively long wings and short legs, the birds of this genus are arboreal in habits and do not descend to the ground. Most of their time is spent in the understorey of the forest and the lower branches of tall trees.

FOOD. Insects, seeds (Medway); black beetles and soft greenish insects (Harrisson); large grasshopper (Chavasse).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *M. m. magnum*, in the North Natunas, S. Borneo and Sarawak; (*b*) *M. m. saba* Chasen & Kloss 1930, with the black on the occiput greatly reduced, in N. Borneo.

409. LESSER RED-HEADED BABBLER PLATE XXXIV, 2

Malacopteron cinereum Eyton 1839

S. Indo-China and Malaysia.

A common resident in the lowland forests throughout Borneo.

DESCRIPTION. 6". Very like the preceding species but smaller, not streaked below, and with the chestnut feathers of the crown margined with black. Iris dark brown; bill black above, below lighter, tip and base pink; feet grey-blue.

HABITS. Those of the genus.

FOOD. Insects, fruits, ants, grubs, surprisingly large locustids, spiders (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *M. c. cinereum*, in Borneo; (*b*) *M. c. bungurense* Hartert 1894, in the North Natunas.

410. MOUSTACHED BABBLER PLATE XXXIV, 3

Malacopteron magnirostre (Moore) 1855

Malaya, Sumatra, Borneo, Anambas.

A common resident in the lowland forests throughout Borneo.

DESCRIPTION. 6". Very like the next species but distinguished by dark grey moustachial streak; in the field a white eyering may be visible. Iris brown; bill black, whitish at base beneath; feet bluish.

HABITS. Those of the genus.

FOOD. Locustids, black beetles.

NEST AND EGGS. Not described from Borneo.

RACE. *M. m. cinereocapillum* (Salvadori) 1868.

[NOTE.—In Malaya this is known as the Brown-headed Babbler, but the Bornean race has a sooty head.]

411. PLAIN BABBLER PLATE XXXIV, 4

Malacopteron affine (Blyth) 1842

Malaysia.

A common resident in the lowland forests throughout Borneo.

DESCRIPTION. 6". See under preceding species. Iris chestnut; bill dark horn above, bluish beneath; feet grey.

HABITS. Those of the genus.

FOOD. Insects, caterpillars (Medway).
NEST AND EGGS. Not described from Borneo.
RACE. *M. a. phoeniceum* Deignan 1950.

[NOTE.—In Malaya this is known as the Sooty-headed Babbler, but the Bornean race has a brown head.]

412. WHITE-THROATED BABBLER PLATE XXXIV, 6

Malacopteron albogulare (Blyth) 1844

Malaya, Sumatra, Borneo.

Sparingly distributed through the lowland forests of Borneo, but apparently rare or absent in N. and E. Borneo.

DESCRIPTION. 5". Prettily marked, white eyebrows and throat contrasting with blackish head; grey breast contrasts with white throat and belly. Iris red; bill black above, grey-blue below; feet blue.

HABITS. Those of the genus.
NEST AND EGGS. Not described from Borneo.
RACE. *M. a. moultoni* (Robinson & Kloss) 1919.

III. SCIMITAR BABBLERS AND WREN-BABBLERS
(subfamily Pomatorhinae)

These birds are found in S.E. Asia and Australia. The scimitar babblers, so called because of their rather long scimitar-shaped bills, are best developed in the Himalayas, and are represented by only one species in Borneo. The wren-babblers are terrestrial in habits, feeding on the ground on insects and their larvae, and are shy and difficult to observe. They make globular nests on the ground and the eggs are white, spotted to a greater or less degree.

413. CHESTNUT-BACKED SCIMITAR BABBLER
PLATE XXXIV, 5

Pomatorhinus montanus Horsfield 1821 *Engkachong randau* (I)
(*Randau* refers to the creepers the bird frequents.)

Widespread in S.E. Asia.

Resident in submontane localities in Borneo, sparsely distributed in primary and secondary forest. Ranges from sea level to 5,500 feet. Common in the Kelabit uplands.

A. Hughes
1957

0" 3" 6"
0 50 mm 100 150

PLATE XXXIII

Page

1. RAIL BABBLER 401
Eupetes macrocerus borneensis.

2. BLACK-CAPPED JUNGLE BABBLER 402
Pellorneum capistratum capistratoides.

3. TEMMINCK'S JUNGLE BABBLER 402
Trichastoma pyrrhogenys erythrote.

4. SHORT-TAILED JUNGLE BABBLER 403
Trichastoma malaccense saturatum.

5. BLYTH'S JUNGLE BABBLER 404
Trichastoma rostratum macropterum.

6. FERRUGINOUS JUNGLE BABBLER 404
Trichastoma bicolor.

7. HORSFIELD'S JUNGLE BABBLER 405
Trichastoma sepiarium harterti

8. ABBOTT'S JUNGLE BABBLER 405
Trichastoma abbotti sirense.

9. BROWN QUAKER BABBLER 423
Alcippe brunneicauda.

10. WHITE-BELLIED YUHINA 424
Yuhina zantholeuca brunnescens.

DESCRIPTION. 7½". Prominent white eyebrows and long curved bill diagnostic. Iris pale yellow or brown ; basal half of upper mandible black, rest of bill greyish-white ; feet lead-grey.

VOICE. The usual call, commonly heard on Kinabalu at 3,500–5,500 feet, is a loud but mellow triple hoot, *hoot-hoot-hoot*, sometimes with a slight inflection on the first or last note, and sometimes only two hoots. On the shoulder of Kinabalu I have watched a bird uttering a harsh double note at intervals, the second note higher in pitch, as it worked its way through the undergrowth.

HABITS. Keeps to the undergrowth.

FOOD. Insects, grubs, beetles, crickets, earwigs, caterpillars, ginger seeds, flower pods, berries (Harrisson).

NEST AND EGGS. Whitehead states that it makes a large nest like a ball, composed of coarse grasses and lined with finer leaves, in which it lays two glossy white eggs, about the middle of January. Harrisson at Bario found nests in scrub and grass at the edge of *lalang*. One nest (26 October) was made of loosely linked pieces of padi and large grass leaf on the outside, the main structure being strips of old leaf and grasses with no definite lining, but some finer grass stems within. Another nest (16 October) had eggs just hatching white marked irregularly and sparsely with reddish-brown.

The normal clutch probably consists of three eggs, which Gibson-Hill describes as egg-shaped, smooth and slightly glossy, white, about 24 × 17 mm.

RACE. *P. m. borneensis* Cabanis 1851.

414. BORNEAN WREN-BABBLER PLATE XXXIV, 7

Ptilocichla leucogrammica (Bonaparte) 1850

Confined to Borneo. A rare resident of the lowland forests, known from a few records dotted about Borneo. In Indonesian Borneo it has been collected at Pontianak (Diard), upper Mahakam (Nieuwenhuis) and Long Peleben (von Plessen). In North Borneo it is known only from Bettotan (Chasen). In Sarawak from Lawas River, Baram district, Bintulu, Mukah, Long Buya (Plieran), Sadong, and Penrissen Absent from the Kelabit uplands.

DESCRIPTION. 6". White throat and mottled sides of head contrast with general dark brown colour of upperparts ; broad white streaks on black underparts.

HABITS AND NEST. Unknown.

415. STRIPED WREN-BABBLER PLATE XXXIV, 9

Kenopia striata (Blyth) 1842

Malaya, Sumatra, Borneo.

Distributed through the lowland forests of Borneo, but rather rare.

DESCRIPTION. 5½". White-streaked upperparts and buff spots in front of the eyes distinctive. A prettily marked little babbler. Iris brown ; bill blue-black, base of lower mandible white ; feet pale pink.

HABITS. Büttikofer described it as a terrestrial bird, living in brushwood.

FOOD. Small fine insects (Harrisson).

NEST AND EGGS. Not described from Borneo.

416. BLACK-THROATED WREN-BABBLER

PLATE XXXIV, 8

Napothera atrigularis (Bonaparte) 1850

Confined to Borneo, where it is sparsely distributed in the lowland forests, and occurs up to 5,000 feet at least on the mountains (specimen from above Bario).

DESCRIPTION. 7". Size and shape of the Bornean Wren-Babbler, but distinguished by black throat and by black borders to feathers of the crown and mantle. Iris reddish-brown ; bill black, lower mandible horn at base ; feet and claws horn.

VOICE. According to Hose it utters a pleasant whistling note.

HABITS. Adams noted that it frequents the ground much after the manner of the pittas. " A low-country bird, but found up to 4,000 feet on Mt. Dulit. It creeps about beneath the roots of trees, and is a thorough ground bird in its mode of life " (Hose). " Clings to the bark of trees low in the jungle, without using its tail for support and investigates crevices with its beak in a most unbabbler-like fashion " (Banks).

NEST AND EGGS. Not described from Borneo.

417. MOUNTAIN WREN-BABBLER PLATE XXXIV, 10

Napothera crassa (Sharpe) 1888

Confined to Borneo. A higher montane resident, ranging from Kinabalu to the Tama Abo range and Mt. Mulu.

DESCRIPTION. 5½". A dark brown bird with mottled upperparts and a whitish throat and reddish belly and flanks. Iris reddish-brown ; bill blackish above, pale horn below ; feet and claws horn.

HABITS. " Met with at 7,000 feet on Kinabalu, where it frequents the low bamboo growth, hunting in small families of four or five individuals, often at some height above the ground " (Whitehead). It prefers dense dark forest where the terrain is broken up by steep slopes and rocky ravines, and is often met with on the densely-clothed banks or in the bed of small streams during the heat of the day. Boys found it common at 4,500 feet on Mt. Trus Madi, parties of ten or more being frequently seen.

FOOD. Grasshoppers, insects, tiny snails (Boys).

NEST AND EGGS. Not described from Borneo.

418. SMALL WREN-BABBLER PLATE XXXIV, 11

Napothera epilepidotus (Temminck) 1827

Widespread in S.E. Asia.

A rare submontane resident in Borneo, probably with a more or less continuous distribution from Kinabalu along the spinal range to the Kapuas and Mahakam drainages. It goes up to 5,500 feet at least (specimen from above Bario).

DESCRIPTION. $4\frac{1}{2}$". Very like the preceding species, but smaller (wing under 60 mm.). Pale spots on wing-coverts. Iris brown ; bill horn ; feet pale horn.

HABITS. Robinson, writing of the Malayan race, says it has a curious chuckling note varied by occasionally sharper tones. A low repeated *pit pit pit* (Harrisson).

FOOD. Insects, locustids.

NEST AND EGGS. A nest found on the ground near Bario on 7 October was attributed to this species by the Kelabits, who know it as *rerit* ; it was anchored in a clump of grass, with grass stems as base and a loose cup of roots and tendrils and some small pieces of green moss. It contained two fresh eggs, pale greenish-white in ground-colour with reddish-brown markings all over but denser in a subapical band. 22 × 16 mm. (Harrisson).

RACE. *N. e. exsul* (Sharpe) 1888.

IV. BABBLERS (subfamily Timaliinae)

This subfamily is found in S.E. Asia and Madagascar. The birds live in the forest undergrowth, sometimes ascending up into the trees, rarely descending to the ground, a habitat they share with the jungle babblers already described ; in fact, mixed parties comprising

PLATE XXXIV

PLATE XXXIV

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several different species of babblers and jungle babblers are often encountered working their way through the forest.

Sliman calls all these *burong akar*.

PLATE XXXV, 2 **419. STRIPED TIT-BABBLER** PHOTO PLATE 42

Macronous gularis (Horsfield) 1822

Widespread in S.E. Asia.

An abundant resident throughout the lowlands of Borneo in both old and secondary jungle, and by far the commonest babbler in cultivated areas and round human habitations. In the Kelabit uplands up to 3,700 feet.

DESCRIPTION. 6". Heavily streaked underparts are diagnostic in the field. Iris pale lemon-yellow, eyering blue-grey; bill dark horn above, pale grey below; feet pale bluish, claws horn.

VOICE. A very noisy little bird, whose vocal efforts have been described admirably by Edgar: "Attention is generally drawn to their presence by a continuous *chrr chrr*, often developing into a low chatter and varied by an occasional explosive *chirr*, almost a note of irritation. Another and completely different note is a clear loud *tunk*, repeated three, four, or sometimes more times. The sound carries a long way, and the bird's throat swells with the effort of producing the note . . . a bird from a party which is chittering its way through the bushes will suddenly break into the clear notes for a time and then relapse into the conversation chatter again." Another very distinctive call I have put down as the cocky-olly note, sometimes *cocky-olly*, at other times *cocky-ocky-ocky* . . . which I think is the note described by Whitehead as *buckier, buckier, buckier*, uttered sharply. He also describes a loud bell-like note uttered in the early mornings, which is probably the same as Edgar's clear loud *tunk*. Alarm or suspicion is expressed by harsh churring notes. In the Kelabit uplands Harrisson notes a definite type of "song" call, melodious and far-carrying, answered to and fro over several hundred yards, *watchootoo-watchoo*; also a thicker contact and alarm call when moving in cover, which the Kelabits syllabify as *potong mulut* (cut mouth).

HABITS. Nearly always in small parties in tangled thickets, the bird is very shy and difficult to see, but once its notes have been learnt its abundance is soon appreciated. It creeps about among coarse grasses and dense masses of undergrowth within a few feet of the ground.

FOOD. Ants, caterpillars, insects (Medway), spiders, fruit, beetles.

NEST AND EGGS. Both Whitehead and Bartlett have described the nest and eggs, and Gibson-Hill has described the eggs. The nest is a loosely-constructed ball of grass stems or dry leaves, strongly domed, placed on or very near the ground, lined with rootlets and fibres, and with the entrance low in the side. The eggs (c/2 occasionally c/3) are white or pinkish-white in ground-colour, spotted with pink, 18×14 mm.

RACES. (*a*) *M. g. everetti* (Hartert) 1894 on Bunguran Island (N. Natunas); (*b*) *M. g. zaperissa* (Oberholser) 1932 on the Lingung Islands (N. Natunas); (*c*) *M. g. pontius* (Oberholser) 1922 on Laut Island; (*d*) *M. g. argenteus* (Chasen & Kloss) 1930 on Malawali Island; (*e*) *M. g. montanus* (Sharpe) 1887 in N. Borneo; (*f*) *M. g. borneensis* (Bonaparte) 1850 with rich chestnut crown and upperparts, elsewhere on the mainland of Borneo.

420. FLUFFY-BACKED TIT-BABBLER PLATE XXXV, 1

Macronous ptilosus Jardine & Selby 1835 *Engkachong tunggal* (I)

Malaya, Sumatra, Borneo, Billiton.

Resident throughout Borneo in the lowlands in primary and secondary forest.

DESCRIPTION. 6". Chestnut crown, black throat, and white streaks on lower back noticeable in the field. Iris brown; bill black; feet dark brown. Skin round eye and bare space on sides of neck dark French-blue (Whitehead).

VOICE. Hose describes a very curious note, like *p'wish*, which it utters with every movement, accompanying the notes by raising its feathers in a jerky manner. Madoc, writing of Malaya, says it has a most striking call, a deep, oft-repeated *pong-pong*.

HABITS. "Found in the second-growth jungle, and in the thickets of *lalang* grass, generally in pairs" (Everett). "Frequents the low growth in old jungle, in the thickest and most entangled places. Is found only a few hundred feet up on the spurs of Kinabalu" (Whitehead).

FOOD. Insects.

NEST AND EGGS. Both Whitehead and Bartlett have described the nest and eggs. The nest is much like that of the last species, and the eggs (c/3) are glossy white (Whitehead) or pinkish-white spotted with red-brown (Bartlett). 20×15 mm.

RACE. *M. p. reclusus* Hartert 1915.

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1
2
3
4
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6
7
8
9
10
11
0
THREE INCHES
3
0
25
50
75
75 mm
1957

421. GREY-THROATED TREE BABBLER PLATE XXXV, 3

Stachyris nigriceps Blyth 1844 *Kubok* (I), for *Stachyris* spp.

Widespread in S.E. Asia.

A submontane resident, not common.

DESCRIPTION. 5". Rather rich brown plumage with white cheek patch and crown grey streaked with white. Iris light buff; bill blackish; feet greyish-green, soles yellow.

VOICE. A quiet bird as a rule. No note has been described in Borneo.

HABITS. On Kinabalu "frequents the old rice plantations, and true forest 1,000–5,000 feet. It hunts through the low growth in small parties or families of five or six individuals" (Whitehead).

FOOD. Insects, locustids, beetles.

NEST AND EGGS. Whitehead described the nest as a large ball of broad-leaved grasses and other leaves, hidden away amongst the stems of palm-trees or in other dark places. Eggs usually c/3, sometimes c/2, once c/5. Shelford found a nest on Mt. Penrissen in May with three glossy white eggs. Eggs also described by Gibson-Hill. About 20×15 mm.

RACES. (*a*) *S. n. davisoni* Sharpe 1892, in the Natunas; (*b*) *S. n. borneensis* Sharpe 1887, in N. Borneo; (*c*) *S. n. hartleyi* Chasen 1935, with lores, forehead, crown markedly paler and underparts less tinged with orange-buff, in Sarawak and S. Borneo.

422. GREY-HEADED TREE BABBLER PLATE XXXV, 4

Stachyris poliocephala (Temminck) 1836

Malaya, Sumatra, Borneo.

It is sparsely distributed and resident throughout the lowland forests, ascending to 4,000 feet.

DESCRIPTION. 6". Blackish head streaked with white on forehead and chin and dark olive-brown upperparts contrast with rather bright chestnut underparts. Iris light buff; upper mandible greyish-black, lower lead-grey; feet olive.

HABITS. Not described from Borneo.

FOOD. Caterpillars, insects.

NEST AND EGGS. Bartlett describes a nest found at 1,600 feet on Mt. Matang as rather compact and cup-shaped, made of fine roots and fibres decorated with moss, the egg white and slightly polished.

423. BLACK-NECKED TREE BABBLER PLATE XXXV, 5

Stachyris nigricollis (Temminck) 1836 *Engkachong kaban* (I)

Malaya, Sumatra, Borneo.

A common resident throughout the lowlands of Borneo in primary forest.

DESCRIPTION. 6". White streaks on black forehead, black crown, black throat with a white border diagnostic; also the dark grey sides of the head with a small white malar patch and a white line behind the eye; upperparts chestnut. Iris red; bill black above, lead-grey below; feet lead-grey.

VOICE. I have seen this bird occasionally in the forest undergrowth, but have not heard it utter any distinctive note.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

424. WHITE-NECKED TREE BABBLER PLATE XXXV, 6

Stachyris leucotis (Strickland) 1848

Malaya, Sumatra, Borneo.

A scarce resident of old jungle with a preference for submontane localities. Most museum specimens come from 2,000 feet or higher, and Harrisson obtained many in the Kelabit uplands; but a few have been obtained in the lowlands, as at Bettotan far from any mountains.

DESCRIPTION. 6". Rather like the preceding species but has the crown olive-brown instead of black, white eyebrows, and white spots on the sides of the neck. Iris dark brown; bill black above, light grey below paler at tip; feet brownish-olive.

HABITS. Not described from Borneo.

FOOD. Black beetles, flies, caterpillars, small locustids.

NEST AND EGGS. Harrisson found a nest at Bario in February in dense scrub-jungle; it was a compact cup of grass and roots and fibre and contained three white eggs.

RACE. *S. l. obscurata* Mayr 1942.

425. RED-RUMPED TREE BABBLER PLATE XXXV, 7

Stachyris maculata (Temminck) 1836

Malaya, Sumatra, Borneo.

Resident throughout the lowland forests of Borneo, and locally common.

DESCRIPTION. 6½". The speckled band of white and black on the breast is diagnostic. Reddish-chestnut rump contrasts with olive-brown upperparts. Iris orange-yellow, outer rim darker; face skin bluish, throat skin bluish-green; bill black above, horn below; feet grey or dull blue, claws horn.

VOICE. I have seen this species in the forest undergrowth, but have not heard it utter the "very strident loud call" attributed to it by Delacour.

HABITS. "Frequents the true forest near the ground" (Whitehead).

FOOD. Insects.

NEST AND EGGS. Bartlett describes the nest as made of dry leaves, with a few bits of grass and roots to hold it together. Eggs pure dull white.

RACE. *S. m. maculata*

426. RED-WINGED TREE BABBLER PLATE XXXV, 8

Stachyris erythroptera (Blyth) 1842

S. Indo-China, Malaya, Sumatra, Borneo, Banka, Billiton, Banjak.

A common resident in the lowland forests of Borneo.

DESCRIPTION. 5". The blue naked patch behind the eye is diagnostic. Whole head and breast slaty-grey; upperparts chestnut-brown, the wings and tail chestnut. Iris red-brown; eye and throat skin blue; bill black above, lead-grey below, the tip dark grey; feet grey.

VOICE. The ordinary call is a typical *Stachyris* run of about ten notes on the same pitch, uttered very rapidly, while other members of the party utter churring notes (Smythies).

HABITS. A bird of the forest undergrowth. Also common in swampy country (Harrisson).

FOOD. Insects.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *S. e. erythroptera*, in the North Natunas; (*b*) *S. e. bicolor* (Blyth) 1865, in Sarawak, N. Borneo, and Banggi Island; (*c*) *S. e. rufa* (Chasen & Kloss) 1927, with richer chestnut upperparts, in S. Borneo.

427. HUME'S TREE BABBLER PLATE XXXV, 9

Stachyris rufifrons Hume 1873

Widespread in S.E. Asia.

Few specimens have been collected (details below) and it appears to be a rare submontane resident of primary forest.

DESCRIPTION. 4½". Chestnut crown contrasting with olive-brown upperparts diagnostic.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *S. r. poliogaster* Hume 1880, is represented by one specimen from Mt. Liang Kubung and one from Mt. Sedong, Serian district; (*b*) *S. r. sarawacensis* Chasen 1939, is represented by one specimen from Mt. Poi, and three from the upper Trusan; it has the crown slightly more orange and less chestnut, the lores and anterior part of supercilium grey not whitish.

V. SONG BABBLERS (subfamily Turdoidinae)

These birds are found in Africa, Arabia, Asia Minor, and S.E. Asia, the headquarters of most of the genera being in the Himalayas and other mountain ranges of S.E. Asia. In Borneo they are associated with the relict montane fauna which has strong Himalayan affinities; thus of the seven species in our area, five are montane and the other two submontane. They eat insects and berries, and build cup-shaped nests in bushes.

428. BLACK LAUGHING-THRUSH PLATE XXXI, 9

Garrulax lugubris (S. Müller) 1835

Malaya, Sumatra, Borneo.

A montane resident with a restricted range from Kinabalu along the spinal range to Mt. Murud, Usun Apau Plateau, and Mt. Dulit. On Kinabalu Whitehead met with it at 4,000 feet in primary forest and considered it to be local and uncommon. Harrisson describes it as scarce in the Kelabit uplands in moss forest, but common on Mt. Dulit at 4,000 feet.

DESCRIPTION. 10". This remarkable bird has the whole crown and face naked skin. "The adults had the iris dark brown, the bill vermilion, the head quite bald, and the skin of a brownish-greenish-yellow, more yellow at the base of the bill; bare skin on neck dull bluish-green; feet brownish-yellow. The young bird, curiously enough, has the crown of the head feathered to the base of the bill, but has a large space of bare skin behind the eye, as well as bare spaces on the neck" (Whitehead).

VOICE. Whitehead describes its voice as a loud booming call-note, and Hose as a peculiar kind of note resembling a hoot. I have

listened to these birds several times on Kinabalu. The usual call is *queer-queer-hoop-hoop-hoop*, sometimes *queer-queer-hoop-* or *hoop-hoop-hoop*; in addition members of a flock constantly utter a contact note, consisting of a single bleat of distinctive tone.

HABITS. It creeps about in the trees much like the Chestnut-capped Laughing-Thrush but looks much longer, less "fluffy" and in general is less active (Harrisson).

FOOD. Crickets, insects.

NEST AND EGGS. Not described from Borneo.

RACE. *G. l. calvus* (Sharpe) 1888.

429. GREY-AND-BROWN LAUGHING-THRUSH

PLATE XXXI, 11

Garrulax palliatus (Bonaparte) 1850

Sumatra, Borneo.

A montane resident with a range similar to that of the preceding species, except that it also occurs on Mt. Mulu.

DESCRIPTION. 10". Grey and brown plumage diagnostic. Iris deep dull red; bill black; feet blue-black. "A fairly large sub-ocular patch of bare skin of a pale blue colour, almost white" (Whitehead).

VOICE. It makes a very noisy whistle or mews like a cat and is cheerful and conspicuous (Banks).

HABITS. Whitehead found it feeding among the higher branches of large trees in primary forest at 4,000 feet.

FOOD. Primarily a vegetable feeder but also takes beetles and insects (Harrisson).

NEST AND EGGS. Hose found a nest with young on Mt. Dulit.

RACE. *G. p. schistochlamys* Sharpe 1888.

430. CHESTNUT-CAPPED LAUGHING-THRUSH

PLATE XXXI, 10

Garrulax mitratus (S. Müller) 1835

Malaya, Sumatra, Borneo.

An abundant montane resident, ranging from Kinabalu throughout the mountains of Borneo as far south as Mt. Batu Tibang, but absent from the mountains of the Mahakam and Kapuas drainages and also from Mt. Penrissen and the Poi range. In mountainous country it may be found in the valleys at a low altitude; thus on Kinabalu

Whitehead described its real headquarters as the low growth from 700–1,000 feet, and gave its range as 700–9,000 feet; and in the Trusan valley Harrisson found it common in the Tengoa and Brayong valley bottoms also at 700–1,000 feet.

DESCRIPTION. 10". Identify by white wing-patch. Iris dark brown; skin round eye bright yellow, not so bright above eye; bill pale orange; feet pale yellow, claws paler.

VOICE. " It utters a loud whistling note, which may be heard more frequently in the early morning. This is one of the first sounds which attracts the traveller's attention on entering the Kinabalu region " (Whitehead). There is also a distinct if not very brilliant song *wu-luwu-luwu*, heard up to 10.30 a.m. and especially noticeable in January–March (Harrisson).

HABITS. " This species is one of the ornithological features of the lower slopes of Kinabalu, where it frequents the low growth which springs up in the old rice fields. It is found more sparingly at high elevations up to 9,000 feet in the true forest, so that perhaps it has a wider range on Kinabalu than any other bird. . . . The *Lăhoie*, as the Dusuns call this bird, creeps and hops about within a few feet of the ground, or may sometimes be seen amongst the highest branches of old forest trees, in parties of four or five, probably an entire family " (Whitehead).

FOOD. Seeds, fruit, grasshoppers, insects, ants, small snails, earwigs, crickets, caterpillars (Harrisson).

NEST AND EGGS. " I saw a nest which was built in a long tangled mass of creepers some 30 feet from the ground; it was composed of dead leaves and roots, and contained one bright greenish-blue egg; this was on 17 March" (Whitehead). Harrisson found a nest on 25 October at Bario with two fresh eggs, ten feet up in secondary forest. A loose cup, well made from grass stems and tendrils, no inner lining; on the outside, leaf skeletons, fern leaves, and five breast feathers. A further twenty clutches were examined in February–March, all c/2. Eggs taken by Ryves on Kinabalu are described by Gibson-Hill (c/2) as " egg-shaped. Surface smooth and glossy. Colour an immaculate light glaucous blue." About 27 × 20 mm.

RACES. (*a*) *G. m. treacheri* (Sharpe) 1879, on Kinabalu; (*b*) *G. m. damnatus* (Harrisson & Hartley) 1934, with breast less streaked and less tinged with green, in Sarawak; (*c*) *G. m. griswoldi* (Peters) 1940, with anterior underparts much richer, on Mt. Batu Tibang.

431. RED-WINGED SHRIKE-BABBLER PLATE XXXV, 11

Pteruthius erythropterus (Vigors) 1831

Widespread in S.E. Asia.

A higher montane resident, ranging from Kinabalu along the spinal range to Mt. Poi. Whitehead describes it on Kinabalu as met with 4,000–9,000 feet; fairly common at the latter elevation, where it haunts the low weather-beaten trees in small parties. Banks found it common on Mt. Poi. Never numerous elsewhere.

DESCRIPTION. 6". Sexes differ. The male has the top and sides of the head black with a long broad white eyebrow, and a chestnut and yellow patch on the wing; the female is grey with indistinct eyebrow and no yellow on the wing.

VOICE. I have described its distinctive call-notes *cha-chew, cha-chew* or *cha-cha-chip, cha-cha-chip* or *chu-wip-chip-chip*.

HABITS. An arboreal bird, keeping much to the tree-tops; when feeding it works its way sedately and slowly up a tree, searching chiefly the main branches for insects and berries; having arrived at the top it may spend half an hour or more calling persistently before resuming its feeding on another tree.

"They sit on the lower boughs, hopping sideways when moving, every now and then leaving their perches to pick an insect off the leaves. They have a very hawk-like look, sitting with the head sunk low on the shoulders, are quarrelsome with other birds, always driving them off" (Whitehead).

FOOD. Locustids and other insects, large caterpillars (Harrisson, three examined).

NEST AND EGGS. Typically a cradle of fine roots slung from a fork. Harrisson found one at 5,500 feet on the Tama Abo range.

RACE. *P. e. robinsoni* Chasen & Kloss 1931.

432. BROWN QUAKER BABBLER PLATE XXXIII, 9

Alcippe brunneicauda (Salvadori) 1879

Confined to Borneo. A submontane resident in old jungle throughout Borneo. Harrisson collected eleven in the Kelabit uplands and Shelford described it as the commonest bird on Mt. Penrissen, but in most localities it is rather scarce. Occurs in the North Natunas.

DESCRIPTION. 5½". A brown bird, paler below with no distinguishing features. In the hand easily confused with the Mangrove Whistler, but not likely to be found in the same habitat in the field. Iris brown or greyish; bill dark brown above, bluish below; feet and claws grey or brown or dark lead-blue.

VOICE. A very quiet bird ordinarily. The only call I have heard is a light chutting sound (Harrisson).

HABITS. Hops about low down in vegetation.

FOOD. Caterpillars, beetles, insects.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *A. b. brunneicauda* in the North Natunas and N.W. Borneo; (*b*) *A. b. eriphaea* Oberholser 1922, elsewhere (*Smiths. Misc. Coll.* lxxiv, 2 : 2).

433. CHESTNUT-HEADED MINLA PLATE XXXV, 10

Minla castaniceps (Horsfield & Moore) 1854

Widespread in S.E. Asia.

Our sole representative of a well-known Himalayan genus is a common submontane resident throughout Borneo.

DESCRIPTION. 5½". Best identified by tit-like habits, erectile chestnut crest, and white outer tail-feathers.

VOICE. Constantly utters a harsh note (Harrisson).

HABITS. This and the Chestnut-capped Laughing-Thrush are the two most characteristic birds of the Kundasan–Bundu Tuhan track round the shoulder of Kinabalu, " where they pass from one tree to another in small twittering flocks of from six to a dozen individuals. The crest is often raised and the throat puffed out " (Whitehead). Some of the flocks I observed must have contained at least twenty birds. It is unusual to see it at low altitudes, but it is a common breeding bird of the Bau area. A striking gay little bird, very active, flitting, head turning, tail flirting (Harrisson).

FOOD. Seeds, berries, fruit.

NEST AND EGGS. The nest and eggs have been described by Whitehead, Bartlett, and Shelford. The nest is built in a small hole in a bank or other suitable spot in the forest ; it is cup-shaped, made of moss and roots lined with rootlets and fine fibres. The eggs (c/2, c/3, rarely up to c/6), are white or pinkish-white, spotted dark reddish-brown, chiefly at the larger end. About 18×14 mm.

RACE. *M. c. everetti* (Sharpe) 1887.

434. WHITE-BELLIED YUHINA PLATE XXXIII, 10

Yuhina zantholeuca (Blyth) 1844

Widespread in S.E. Asia.

A submontane resident with a wide altitude range from sea level to 5,000 feet.

1
2
3
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10
THREE INCHES
0 1 2 3
0 25 50 75
75mm
1957

PLATE XXXVI

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10. ASHY TAILORBIRD 436
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DESCRIPTION. 4½". A short erectile crest. According to Robinson the feathers of the crest are very frequently raised and extended at a sharp angle, but are not lifted vertically. Upperparts olive-green, underparts white. Iris dark; bill black above, flesh-pink below; feet flesh-pink or bluish-pink.

HABITS. Normally silent, often solitary though sometimes in flocks, seldom seen, and rather mysterious. Thus even Whitehead went several years without seeing one:

"I shot my first specimen in a bit of old forest near Sandakan, and did not meet with it again until years after, when I found it in small companies at an altitude of 5,000 feet on Kinabalu."

FOOD. Insects, grasshoppers, occasionally seeds (Harrisson). Vegetable and insect (Boys).

NEST AND EGGS. Not described from Borneo.

RACE. *Y. z. brunnescens* (Sharpe) 1876.

WREN-WARBLERS: Maluridae

This family includes the blue wrens of Australia and the wren-warblers. Only one species occurs in S.E. Asia.

435. FLYEATER PLATE XXXVI, 1

Gerygone fusca (Gould) 1838

S. Indo-China, Malaysia, Philippines, Celebes.

Resident, but rare in Borneo. It has been collected in S. Borneo (Schwaner and Fischer), Kuching, Niah, lower slopes of Kinabalu, Sandakan, Tawau, and the Maratuas.

DESCRIPTION. 3½". Identify by small size, dark grey upperparts, yellow underparts, and distinctive note.

VOICE. Its distinctive note is a trill with a most unmistakable rising and falling cadence, very thin in quality, exactly resembling the effect when one whistles with the tongue curled up.

HABITS. I have observed this species only in Malaya, where it frequents open country and rubber gardens. One of the few birds regularly coming *into* the cave mouths at Niah (Harrisson).

NEST AND EGGS. Not described from Borneo. Delacour states that it is a pretty structure of lichens and plant wool, with a roofed-over side entrance.

RACE. *G. f. salvadori* Büttikofer 1893.

WARBLERS : Sylviidae

Warblers are small active songbirds with a thin bill, well known in temperate countries, but poorly represented in our area apart from the tailorbirds. They derive their name from the fact that many of the species summering in the British Isles sing actively while there, and include several of the finest songsters, such as the Blackcap and the Garden Warbler. Those that visit our area in winter, however, are virtually silent, and none of our resident species is a fine songster, though the tailorbirds have some cheerful notes.

436. SHORT-TAILED BUSH WARBLER PLATE XXXII, 1

Cettia whiteheadi (Sharpe) 1888

Confined to Borneo. A montane resident, ranging from Kinabalu along the spinal chain to Mt. Liang Kubung, but absent from Mt. Penrissen and the Poi range.

DESCRIPTION. 3¾". Very short tail and long buff eyebrows diagnostic. Underparts white washed with buff on the abdomen and mottled blackish on the breast and sides. Iris dark with yellow ring.

VOICE. Banks records a long drawn-out squeak like that of a bat or a squirrel.

HABITS. " Very wren-like in habits, frequenting the undergrowth close to the ground, through which it creeps more after the manner of a mouse than a bird " (Whitehead). " A very quiet bird, living in the undergrowth of the forest, where it is found hopping along the ground " (Büttikofer).

FOOD. Green aphids (Harrisson, one examined).

NEST AND EGGS. Not described from Borneo.

437. MOUNTAIN BUSH WARBLER PLATE XXXII, 3

Cettia fortipes (Hodgson) 1845 *

Widespread in S.E. Asia.

A higher montane resident with a restricted range from Kinabalu along the spinal chain to Mt. Murud and Mt. Mulu. Rare.

DESCRIPTION. 5". Tail about equal to wing in length. A dark brown bird, paler below, with a narrow buff eyebrow. Iris brown ; bill horn, paler below ; feet horn, claws darker.

* or *C. montanus* (Horsfield) 1821 (see Vaurie, 1959).

VOICE. The call is a low whistle rising and falling in pitch once in each utterance (Boys). "It has a feeble song" (Whitehead). A very small whistle and a faint hissing *ssurr*, repeated (Harrisson). The latter note is technically an alarm note and is constantly uttered so long as the bird can see you; its song is a soft but sweet *witch-ă-wĕĕ-chĕĕĕ-wee*, with the emphasis on the last two notes, which sound like a faint version of the Common Iora's call (Smythies).

HABITS. A shy skulker in dense undergrowth and easily overlooked. Harrisson found it quite common above 9,500 feet on Kinabalu. Seen only between one and three feet in the moss and heath, including one in a single dwarf shrub in a gulley on the rock-summit ridge. It creeps about like a mouse.

FOOD. Very small black insects, tiny spiders both pinkish and black, tiny beetles, soft white maggots (once). This species seems to do better than any other at high altitudes, in that stomachs (twelve examined) were found to be full at all times of day and the body noted as conspicuously fat (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *C. f. oreophila* Sharpe 1888, on Kinabalu; (*b*) *C. f. banksi* Chasen 1935, darker, elsewhere in Borneo.

438. KINABALU FRIENDLY WARBLER PLATE XXXII, 8

Bradypterus accentor (Sharpe) 1888

Confined to Borneo, on the higher slopes of Kinabalu and on Mt. Trus Madi.

DESCRIPTION. 6". Moderate tail, boldly spotted throat, and reddish-brown upperparts.

VOICE. A hissing note and a weak single whistle (Harrisson). Normally silent, but utters a single *chuck* note if disturbed (Smythies).

HABITS. This bird is of interest as the only species that is found on Kinabalu and on Mt. Trus Madi, and nowhere else in the world; (the Mountain Blackbird is found only on these peaks, but other races of the same species are found elsewhere). Whitehead discovered it and writes: "I only met with this species at 7,000–9,000 feet where it frequented the dark and damp patches of forest, amongst the wet moss-covered fallen trunks of large trees, where this peculiar bird was found singly." Harrisson, who spent ten nights in the Paka cave at 9,790 feet in February 1952, found it common at 10,000–12,000 feet. Its name is derived from its friendly nature, for it delights to hop about amongst the feet of human intruders into its rarefied haunts.

FOOD. Small hard black insects including tiny round beetles, tiny flies, a small spider (Harrisson, three examined).

NEST AND EGGS. Unknown.

439. YELLOW-BELLIED WREN-WARBLER

PLATE XXXVI, 2 PHOTO PLATE, 43

Prinia flaviventris (Delessert) 1840 *Enkejirah padi* (I)

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo in the open.

DESCRIPTION. 5". Adult has head dark grey contrasting with olive mantle; chin and throat white; underparts faintly washed with yellow, more pronounced on the flanks, but it looks a pale buff in the field. Young bird has head and mantle uniform in colour, a paler olive than the adult; lores and underparts yellowish; tail with broader white tips. Iris orange-brown; bill and feet black.

VOICE. A curious clicking or snapping sound is made as it flies about, probably with the wings, and its distinctive shivery little song is freely uttered from a perch on tall grass stems. Harrisson has noted a distinct difference in the call of Bario and Kuching birds, on many visits to and fro. The upland note is a clear loud treble note *sen-si-lak* persistently uttered with even stress. This is a sound never absent from the high plains and rice fields, and the Kelabits accordingly name the bird "Sensilak", and have an affection for it as their constant companion in the fields (one moreover that does not damage the padi !). In the Kuching area the note is distinctly shorter, less divided and clear-cut.

HABITS. It is a common and characteristic bird of cultivated wastelands and rice fields. It climbs and hops about actively on the grass stems, every now and then taking wing in a weak and top-heavy flight, covering a short distance in a precarious manner, before flopping back into the grass again.

FOOD. Mainly flies, also small grasshoppers and other locustids, caterpillars, spiders, ants, and other insects (Harrisson).

NEST AND EGGS. Nest and eggs have been described by Sharpe, Whitehead, and Bartlett. In the Kelabit uplands Harrisson examined many nests from December to March; eggs are mainly laid in January (c/3 sometimes c/2). The nest is often made largely of the leaves of rice plants and actually built in the rice fields. It is a round or oval structure entered by a hole in the side. The eggs are a bright terra-cotta or mahogany-red. 16×13 mm.

RACE. *P. f. latrunculus* Finsch 1905.

440. PALLAS'S GRASSHOPPER WARBLER

PLATE XXXVI, 3

Locustella certhiola (Pallas) 1827

Palaearctic.

Passage migrant and winter visitor to North Borneo, Sarawak, and northwestern Indonesian Borneo. It is abundant in wet padi fields and grasslands in the interior and has been collected also in coastal districts.

DESCRIPTION. Grasshopper warblers skulk in long grass and rarely offer more than a brief glimpse of their plumage ; the three species wintering in our area are probably impossible to separate in the field, but can be identified in the hand:

1. No white tips to tail feathers.
   Wing ♂ 53–59 mm., ♀ 52–58 mm. . . . *lanceolata*
   White tips to tail feathers.
   Wing ♂ 61–68 mm., ♀ 59–65 mm. . . . 2
2. Upperparts strongly streaked . . . . *certhiola*
   Upperparts faintly streaked . . . . *ochotensis*

VOICE. The song is a rapid and uniform trill, mechanical in sound like a line running off a fisherman's reel, and is supposed to resemble the sound made by a grasshopper. It is loud and long-sustained, usually heard coming from dense high grass or growing padi. Further study is required to determine whether the three species differ in their notes.

HABITS. All are shy and secretive birds, keeping low down in thick cover, and only flitting along a few yards when forced to take wing. The flight is low, undulating, with tail spread out ; the eye-stripe is prominent and the bird is more restless than shy (Harrisson).

FOOD. Small insects, usually soft ones, but sometimes little beetles and weevils (Harrisson).

RACE. *L. c. certhiola.*

441. MIDDENDORFF'S GRASSHOPPER WARBLER

Locustella ochotensis (Middendorff) 1853

Breeds in E. Siberia and Kamchatka, wintering in the Philippines, Borneo, and Celebes.

Passage migrant and winter visitor to Borneo, found in the same areas as the preceding species ; perhaps equally common, but there are only three records to date (Kinabalu at 1,000 feet, Labuan, and Cape Sirik).

DESCRIPTION. See under *L. certhiola.*

HABITS. Same as *L. certhiola.*

RACE. *L. o. ochotensis.*

442. STREAKED GRASSHOPPER WARBLER

Locustella lanceolata (Temminck) 1840

Breeds in N.E. Palaearctic, wintering in S.E. Asia.

It seems to be the rarest of the grasshopper warblers visiting Borneo. It was first collected on Labuan in 1890, and Harrisson recently obtained two in the Kelabit uplands.

DESCRIPTION. See under *L. certhiola*.

HABITS. Those of *L. certhiola*.

FOOD. One of the two specimens from Bario had been feeding on tiny soft insects, smaller than any found in numerous Pallas's Grasshopper Warblers examined (Harrisson).

443. GREAT REED WARBLER PLATE XXXVI, 4

Acrocephalus arundinaceus (Linnaeus) 1758

Widespread in Europe and Asia.

Passage migrant and winter visitor to Borneo, represented by specimens from all parts of Borneo, but mostly from the coast.

DESCRIPTION. 6". Plain light brown above, whitish below, with whitish lores. Identify by note.

VOICE. In winter quarters and on passage utters a single harsh deep note *tchack* at intervals.

HABITS. Frequents padi fields, waste grasslands, or thickets. On 20 May 1958 a bird on passage was moving about in a tree six feet from the sitting-room window of the District Officer's house at Bintulu.

FOOD. Small locustids, caterpillars, soft insects (Harrisson).

RACE. *A. a. orientalis* (Temminck & Schlegel) 1847, breeds in E. Asia and Japan. For map showing breeding ranges of all races of this species see Meinertzhagen, *Birds of Arabia* p. 197.

444. ARCTIC LEAF WARBLER PLATE XXXVI, 6

Phylloscopus borealis (Blasius) 1858

Breeds in Siberia and Japan.

Common passage migrant and winter visitor to all parts of Borneo.

DESCRIPTION. 4". Upperparts dull green with a prominent white eyebrow; underparts whitish; a single inconspicuous wing-bar. Active arboreal bird.

VOICE. Delacour gives the call-note as a loud and husky *tswee-ep* or *dz-zit*. Bartlett on the other hand records that one frequented a large durian tree in Kuching from October to December and made a very low and soft chiff-chaff note at intervals.

HABITS. A small, slim and graceful, intensely active warbler, spending most of its time hunting for insects on twigs and leaves, often fluttering for a few seconds. Twice a year this fragile-looking

bird travels thousands of miles from its breeding haunts in Siberia across mountains and seas to Borneo, and back again. Earliest date of arrival so far recorded is 27 August, and it leaves again in April and early May (a marked passage movement through the Turtle Islands has been noticed in April).

FOOD. Caterpillars, wingless ants, beetles, soft insects, ladybirds, eggs of butterflies and moths. Small soft green locustids (Harrisson).

RACES. (*a*) *P. b. borealis*, is the common form ; (*b*) *P. b. xanthodryas* (Swinhoe) 1863, the race breeding in Japan, is less common.

445. MOUNTAIN FLYCATCHER-WARBLER

PLATE XXXII, 4

Seicercus trivirgatus (Strickland) 1849

Malaysia to the Solomons.

A higher montane resident, from Kinabalu (where it is common and goes up to 10,000 feet) along the spinal range to the Tama Abo Mountains and Mt. Mulu ; re-appearing on the Poi range.

DESCRIPTION. 4". Banded yellow and black crown and bright yellow underparts distinctive. Iris very dark brown ; bill black ; feet bluish-grey, claws horn.

VOICE. Call *cheecheechee* and a scolding alarm note (Boys).

HABITS. On Mt. Trus Madi associated with *Chlorocharis* and *M. westermanni*.

FOOD. Ants, insects (Boys).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *S. t. kinabaluensis* (Sharpe) 1901, on Kinabalu only ; (*b*) *S. t. sarawacensis* Chasen 1938, richer yellow below, elsewhere in Borneo.

446. YELLOW-BREASTED FLYCATCHER-WARBLER

PLATE XXXII, 6

Seicercus montis (Sharpe) 1887

Malaya, Sumatra, Borneo, Palawan to Timor.

Montane resident from Kinabalu along the spinal chain to the Poi range. Common.

DESCRIPTION. 4". Differs from the preceding species in its chestnut crown. Iris dark.

VOICE. An extremely irritating high-pitched song of disjointed notes, starting with daylight (Boys).

HABITS. Whitehead met with it most often in the thick bamboo undergrowth and noted that it has a peculiar habit of hovering below the leaves of the big trees and suddenly flying up and snatching an insect (a habit common to most leaf warblers and flycatcher-warblers). On Mt. Trus Madi common in the valleys at 4,500 feet, moving swiftly through low trees and dense shrubbery, hovering at twig-tips (Boys).

NEST AND EGGS. Not described from Borneo.

RACE. *S. m. montis.*

447. WHITE-THROATED FLYCATCHER-WARBLER

PLATE XXXVI, 5

Seicercus superciliaris (Blyth) 1859

Widespread in S.E. Asia.

A submontane resident in Borneo. Most specimens in museums have been collected on mountains at 3,000–5,000 feet, but the Sarawak Museum has a series from the lowlands of Paku, Saribas River, and I have obtained one out of a small flock in bamboos at 200 feet along the Penrissen Road near Kuching.

DESCRIPTION. Differs from the two preceding species in its white throat and short white eyebrows. Crown dark, upperparts olive-green, underparts bright yellow. Iris dark brown; bill blackish, pale at tip, greyer at base of lower mandible; feet light yellowish-grey or bluish.

VOICE. According to Whitehead it has a very pleasing song and creeps about with very much the habits of a Willow Warbler.

HABITS. Inhabits the tangled bamboo jungle on the steep sides of Kinabalu at 3,000–5,000 feet. The only ones I have seen were in a small flock in secondary jungle actively feeding amongst clumps of bamboos.

FOOD. Spiders, small insects, flies, mosquitoes, eggs of butterflies (Harrisson).

NEST AND EGGS. The nest in Borneo has not been described, but elsewhere is usually a pad of moss in a dead bamboo. Gibson-Hill describes a clutch of three hard-set eggs taken by Ryves at Kiau, Kinabalu on 29 March: "Egg-shaped. Surface smooth and slightly glossy. Ground-colour white, thickly flecked with mahogany-red, more densely round the broader end, and a few spots of light purplish grey (beneath)." 16×12 mm.

RACE. *S. s. schwaneri* (Blyth) 1870.

448. MOUNTAIN TAILORBIRD PLATE XXXVI, 9

Orthotomus cucullatus Temminck 1836. *Briak* (I) for all tailorbirds

Widespread in S.E. Asia.

A higher montane resident from Kinabalu to the Tama Abo range.

DESCRIPTION. 4". Distinguish from other tailorbirds by voice and by bright yellow underparts. Cap orange, nape grey, olive-green upperparts, greyish-white throat.

VOICE. Its song is unmistakable, consisting of a four-note whistle, the first two notes on the same pitch, the third a trill (three or four notes uttered very rapidly), and the fourth sometimes higher sometimes lower in pitch than the first two, the whole repeated in a remarkable number of different keys high and low.

HABITS. The bird's favourite habitat is dense bamboo undergrowth in primary forest but it may also be heard in dense thickets in secondary forest. Walking along the Kundasan-Bundu Tuhan track I heard its song, and shortly after one bird appeared beside the path at six feet range, but it is such a skulker that to see it is a rare event. Often collects in small parties.

NEST AND EGGS. Not described from Borneo.

RACE. *O. c. cinereicollis* (Sharpe) 1888.

PLATE XXXVI, 5 449. BLACK-NECKED TAILORBIRD PHOTO PLATE 44

Orthotomus atrogularis Temminck 1836

Widespread in S.E. Asia.

Resident and moderately common throughout the lowlands of Borneo.

DESCRIPTION. 4½". Best identified by olive-green upperparts, small size, and voice. The name is apt to be misleading, immature birds lacking black on the throat. Crown chestnut.

VOICE. The voice is distinctive, a sweet-sounding *kri-ri-ri* with variants, unlike any other tailorbird note.

HABITS. A skulker in dense thickets, not easy to see.

NEST AND EGGS. Two or more leaves are used between which to suspend the nest. This is a pouch 3½ inches deep, 2½ inches wide, of fine green grasses and white kapok down, sewn to the two leaves by strands of kapok or by cobwebs (Banks).

RACES. (*a*) *O. a. atrogularis*, in S. Borneo and Sarawak ; (*b*) *O. a. humphreysi* Chasen & Kloss 1929, in N. Borneo ; in this form the underparts are pale lemon-yellow and, in the female, the throat and breast are white, giving it a strong resemblance to *O. c. cinereicollis*,

which can be distinguished by its orange rather than dark rufous crown, and grey (not rufous) nape.

450. RED-HEADED TAILORBIRD PLATE XXXVI, 7

Orthotomus sericeus Temminck 1836

Malaysia.

Resident throughout the lowlands of Borneo ; the commonest of the tailorbirds, often in gardens.

DESCRIPTION. 5". Grey upperparts, whitish underparts, bright chestnut crown, nape *and tail* distinctive. Iris chestnut or dull crimson ; bill brown above, fleshy-white below ; feet flesh, claws horn.

VOICE. The loud cheerful shout of this bird is one of the familiar sounds of gardens, cultivated country, and forest outskirts in Borneo. It sounds like the word *kon-tiki* repeated several times, occasionally shortened to two syllables, *chuchi chuchi chuchi*. When calling, a black patch often appears on each side of the throat due to the lifting of the feathers and exposure of their dark bases. Harrisson records a harsher note *terrr-terrr- . . .* usually repeated three to five (occasionally up to ten) times, by single birds feeding and moving.

HABITS. When hunting about in the bushes the tail is often cocked up vertically, and when flying it is flicked energetically far over the back and the bird seems to be on the point of overbalancing (Smythies). Although often noisy and active, it also has a particular —and in tailorbirds, unusual—capacity for sitting perfectly still for long periods ; I have noticed this often over the years gazing out of my old Museum office (Harrisson).

FOOD. Tiny insects. These are often taken by a sudden movement from a very still bird, darting with surprising speed *along* a branch in a quick run (Harrisson).

NEST AND EGGS. All tailorbirds derive their name from the remarkable way in which they stitch their nests together, described in Kipling's immortal story Rikki Tikki Tavi in the " Jungle Book ". The bird prepares an aerial cradle by sewing two or more leaves together, or sometimes the two edges of a single large hanging leaf. The sewing is done with threads of cobwebs, cocoons, or plant fibres. The bird pierces a hole in the leaf with its sharp bill and draws the thread through ; the end frays easily and the part that is forced through the tiny aperture issues as a fluffy knob, which looks like a knot and is usually mistaken for such. As a matter of fact, the bird makes no knots, relying on the friction between the sewing

material and the leaf to keep the structure together. In the cradle so formed a deep cup is built. Bartlett mentions its little oval-shaped nest in *lalang* grass. Feeding young 5 July (Harrisson).

RACES. (*a*) *O. s. sericeus*, in Borneo; (*b*) *O. s. rubicundulus* Chasen & Kloss 1931, in the Natunas.

451. ASHY TAILORBIRD PLATE XXXVI, 10

Orthotomus sepium Horsfield 1821 *Jerrwit* (M)

Malaysia.

A common resident throughout the lowlands of Borneo.

DESCRIPTION. 4½". Ashy-grey colour except for the rufous crown and sides of head distinctive. Iris light brown, yellow-brown or orange; upper mandible dark brown, lower cinnamon; feet flesh.

VOICE. Less noisy than the Red-headed Tailorbird. I have heard a rather plaintive note *choee-choee* uttered one to ten times. Harrisson has noted a loud call *serrwit*.

HABITS. "They frequent the more open places near the edges of the forest, where they hunt the low growth for their insect food" (Whitehead). Bartlett described it as abundant along roads, open spaces, and gardens round Kuching. Hose found it very common in the Baram district, particularly in cleared land and secondary forest. A characteristic bird of the mangrove swamps (Harrisson).

FOOD. Insects, caterpillars, beetles, ants, small flies (Medway).

NEST AND EGGS. The Ashy Tailorbird uses one large leaf but makes two different kinds of nests: the commonest is a single large flat leaf, the two outer edges pulled down by strands of cotton or cobweb drawn through holes pierced in the leaf edges and secured by fluffing out the sewing material until bigger than the holes. Partly-built nests are abandoned when the leaf tears at the holes. The midrib of a completed nest forms the centre of a sloping roof, from which rain drips. Nesting material of fine grass is sewn together, and to the leaf, in a pouch up to ten inches long, dependent on the size of the leaf (Banks).

RACE. *O. s. borneonensis* Salvadori 1874.

FLYCATCHERS: Muscicapidae

Some ornithologists now include in the family Muscicapidae not only the true flycatchers, but all the Old World insect-eaters, *e.g.* thrushes, warblers, babblers, whistlers and many intermediate types; the

European species are merely a few somewhat specialised offshoots of this rich and extremely diversified group, which is best developed in South-east Asia and South-west Pacific. This may be the more logical treatment, but it makes the Muscicapidae a vast and unwieldy family and for the purpose of the present work it is more convenient to retain the Timaliidae, Turdidae, Sylviidae, Pachycephalidae as separate families.

The true flycatchers are a cosmopolitan group, well represented in Borneo ; some species are sedentary, but many are migratory to a greater or less degree, and we still know too little about their status and movements in Borneo. They all build cup-shaped nests, either in the fork of a tree or bush, or in a natural hole or hollow. The plumage of the young is mottled or squamated. The family divides naturally into three well-defined subfamilies.

I. FANTAIL FLYCATCHERS (subfamily Rhipidurinae)

These flycatchers are found in S. Asia and S.W. Pacific, and are easily recognized by their habit of constantly cocking up and fanning out their tails.

452. WHITE-THROATED FANTAIL FLYCATCHER

PLATE XXXVIII, 1

Rhipidura albicollis (Vieillot) 1818

Himalayas to Malaysia.

A montane resident from Kinabalu to Mt. Murud and Mt. Mulu, with an isolated population on the Poi range. Altitude range 4,000–9,000 feet.

DESCRIPTION. 7". Distinguish from the common lowland Malaysian Fantail by the dark grey breast and belly. Iris dark brown ; bill black ; feet blue-black.

VOICE. The song consists of four ascending notes and two or three descending ones, the intervals irregular, rather high-pitched and thin in tone ; sometimes the first four notes only.

HABITS. Found in primary and secondary forest and scrub jungle.

FOOD. Small insects, generally soft *diptera* (Harrisson).

NEST AND EGGS. On 16 June Harrisson found a nest at 3,500 feet on Mt. Dulit, in a pocket in the side of a steep mossy bank. Outer layer of coarse dark moss, etc., inner layer (clearly defined) of pale

fine grasses. Two fresh eggs, white with reddish irregular spotting, concentrated mainly at the broad end. Nests were also found at Bario in 1952 and 1953, including one with two young in December.

RACES. (*a*) *R. a. kinabalu* Chasen 1941, Kinabalu to Mt. Murud ; (*b*) *R. a. sarawacensis* Chasen 1941, paler below, Mt. Poi only.

453. SPOTTED FANTAIL FLYCATCHER

PLATE XXXVIII, 2

Rhipidura perlata S. Müller 1843

Malaysia.

A common resident throughout the lowlands of Borneo, ascending the mountains to 5,500 feet.

DESCRIPTION. 7". White spots on black throat and breast diagnostic. Iris brown ; bill black ; feet brown to blackish.

HABITS. Generally confined to primary forest.

FOOD. Small insects, including *diptera* and *microlepidoptera*, and regularly small spiders (taken from the web, as I once saw one do ?) (Harrisson).

NEST AND EGGS. On 26 March I saw a nest under construction, in the loop of a creeper overhanging a forest stream.

PLATE XXXVIII, 3 **454. PIED FANTAIL FLYCATCHER** PHOTO PLATE 44

Rhipidura javanica (Sparrman) 1788 *Bedat* (M) ; *kanji* (I)

S. Indo-China, Malaysia, Philippines.

A common resident throughout the lowlands of Borneo in cultivated country and gardens ; also found in the Kelabit uplands where it is the second commonest bird of the plains. It has been recorded on the North Bornean islands and the Maratuas.

DESCRIPTION. 6½". White underparts except for the broad black collar diagnostic. Iris dark brown ; bill black ; feet black.

VOICE. Whitehead described its note as a four-syllabled squeaking cry of *kip-kip-pĕ-whēēk*, with the accent on the last syllable.

HABITS. Whistler's classic description of *R. aureola* applies equally to the present species and is here summarized. It is never still, and all day long it dances and pirouettes, filled with an inimitable *joie-de-vivre*. It turns from side to side with restless jerky movements, and like a ballet dancer before her mirror it tries out new steps and attitudes : down drop the wings, up jerks the head, and all the time the dainty fan of the tail is opened and closed and flirted. Now and again it flits amongst the leafy branches or emerges

from the shelter of the trees, and launches into the air; it seems to tumble, bent on suicide; but a rapid snap at some tiny insect invisible to the naked eye, a swift recovery, and it has returned to the cool recesses of the foliage and is once more bowing and dancing. To the above description might be added the fact that it often settles on the ground. It is the only species of fantail to visit gardens.

When nesting it is one of the aggressive birds. Harrisson has seen it attack and chase for 200 yards the Ashy Swallow-Shrike (usually itself the aggressor) with real fury; also swallows, and even a snipe.

FOOD. It regularly feeds behind moving buffaloes. On the coast it regularly takes food on beaches above highwater mark, especially where there is white sand with much driftwood. As far as food is concerned it is the most catholic and adaptable of the genus, but takes mainly small insects and other animal material (Harrisson).

NEST AND EGGS. "Whilst going up the Lawas River in a boat I often get the men to row close to the nipah palms, which line both sides of the tideways of these tropical rivers, and I found several nests of this flycatcher perched on the summit of the broken fronds of the dead palms. Eggs taken on the Lawas 8 April" (Whitehead). Harrisson found a nest with two young at Bario on 9 February, and another with young ready to fly in the grounds of the Astana, Kuching, on 18 June. Bartlett describes the nest as cup-shaped, of fine fibres, neatly covered outside with cobwebs. Eggs pale buff, with a few scattered brown and greyish spots at the larger end. Eggs described also by Sharpe and Gibson-Hill. About 17×13 mm.

RACE. *R. j. longicauda* Wallace 1865.

II. TYPICAL FLYCATCHERS (subfamily Muscicapinae)

The typical flycatchers are well represented in Borneo. Some species catch insects conspicuously from a perch, whereas others do so under cover of the undergrowth or take insects from the ground; the latter approach the robins in their habits but have much feebler legs and feet.

455. GREY-HEADED FLYCATCHER PLATE XXXVII, 19

Culicicapa ceylonensis (Swainson) 1820

Widespread in S.E. Asia.

A submontane resident throughout Borneo, locally common up to 5,500 feet.

DESCRIPTION. 4½". Grey head, bright olive-green upperparts, and yellow underparts diagnostic. Iris very dark brown; bill blackish, lower mandible light greyish-flesh at base; feet brownish-olive, soles yellow.

VOICE. The constantly uttered call *silly-billy* attracts attention, and the song is a clear trill followed by a prolonged twittering note. Harrisson records this as a strong quick rattly *churrru*.

HABITS. It is a bold and friendly bird of the forest undergrowth, flitting incessantly from branch to branch as it hawks insects, and continually fanning its tail, though not as noticeably as the fantail flycatchers.

FOOD. Insects and beetles; on several occasions small wasps, which evidently form a regular item of diet (Harrisson).

NEST AND EGGS. "Close to one of my camps a pair had a nest in a long dangling piece of moss. It was a simple pocket in the moss itself. The eggs are very pretty, being glossy white, plentifully spotted with brown and blotched with underlying grey mottling, principally towards the larger end. 15×13 mm. The nest also contained an egg of *Cuculus fugax*" (Whitehead).

RACE. *C. c. ceylonensis.*

Three species of grey-brown flycatchers with white eyerings are winter visitors to Malaysia from N. Asia. They may be distinguished in the hand as follows:

	Muscicapa
1. White on centre and sides of forehead	*griseisticta*
No white on forehead	2
2. 2nd primary = to or longer than 5th	*sibirica*
2nd primary shorter than 5th	*latirostris*

A further distinction between *griseisticta* and *sibirica* is that the former has the under wing-coverts tawny, not white.

456. SOOTY FLYCATCHER PLATE XXXVII, 1

Muscicapa sibirica Gmelin 1789

Breeds in N. and Central Asia down to the Himalayas and Yunnan.

Passage migrant and winter visitor to Borneo in small numbers, both on the coast and in the interior.

DESCRIPTION. 5". A sooty-brown bird with a conspicuous white eyering and with whitish centre of throat and belly separated by a dark area on breast. Iris dark brown; bill black, base of lower mandible dirty white; feet and claws black, soles dirty white.

HABITS. Usually seen sitting in a rather upright attitude on a bare branch, the tips of the wings almost reaching the tip of the tail, giving it a distinctive triangular outline.

RACE. *M. s. sibirica.*

457. FERRUGINOUS FLYCATCHER PLATE XXXVII, 2

Muscicapa rufilata (Swinhoe) 1860 (=*M. ferruginea*)

Breeds from the Himalayas to S. China, wintering in S.E. Asia.

Passage migrant and winter visitor to Borneo in small numbers; not so far obtained in Indonesian Borneo. Specimens so far collected have come from the lower slopes of Kinabalu and Mt. Murud, none from the coast. Like *M. sibirica* it normally winters on mountains, but is to be expected on the coast on passage.

DESCRIPTION. 5". A reddish-brown bird with a buff ring round the eye and a white patch on the throat.

HABITS. Typically a shy retiring bird of streams and glades in the densest forest.

[NOTE.—*M. griseisticta* Swinhoe 1861, a Chinese species, has not been reliably reported from Borneo but has been collected on Palawan and will, therefore, probably turn up in N. Borneo sooner or later. The underparts are more streaked than most examples of *M. sibirica*.]

458. BROWN FLYCATCHER

Muscicapa latirostris Raffles 1822

Breeds India and E. Palaearctic, wintering in S.E. Asia.

Passage migrant and winter visitor to Borneo in small numbers; specimens have been collected from all quarters of the island, both on the coast and in the interior, and in the North Natunas.

DESCRIPTION. 5". See key. In the field it is a paler brown above than the Sooty Flycatcher, and whiter below. Iris brown; bill black, lower mandible horn at base; feet black.

HABITS. Similar to those of the Sooty Flycatcher. It is more partial to small islands off the coast. The earliest arrival so far was collected on 16 September.

RACE. *M. l. latirostris*.

[NOTE.—*M. williamsoni* Deignan 1957, differing in its red-brown coloration and striated underparts, breeds in Cochin-China and Thailand, and might reach Borneo in winter.]

KEY TO THE FLYCATCHERS

I. Key to Flycatchers in which males are blue but have no white at base of tail (*Muscicapa* part). *Muscicapella*, with wing under 50 mm., excluded.

A. MANTLE BLUE

1.	Breast rusty	2
	Breast not rusty	8
2.	Throat blue	*turcosa* ♂
	Throat rusty	3
3.	Chin buffy-white or rusty (may be a few black hairs on point of chin in *venusta*)	4
	Chin black	6

4. Upperparts dull dark blue . . . . . *rufigaster* ♀
   Upperparts bright blue 5
5. Nape and middle of back shiny blue contrasting with dark wings . . . . . *venusta* ♂
   Nape and back dull blue; only rump shiny blue . . *turcosa* ♀
6. Black on chin much reduced, 2 mm. . . . . *banyumas* ♂
   Black on chin 6-8 mm. 7
7. Forehead and back dull blue . . . . . *rufigaster* ♂
   Forehead and back bright blue . . . . . *caerulata* ♂
8. Entirely verditer blue . . . . . *thalassina*
   Belly not blue 9
9. Back and breast light blue . . . . . *unicolor* ♂
   Back and breast dark blue 10
10. Bill very short; under tail-coverts fulvous . . . *indigo*
    Bill rather long (18 mm.); under tail-coverts white . . *concreta* ♂

B. MANTLE BROWN or GREY

1. Breast rusty. 2
   Breast brown or grey 4
2. Rump and tail blue . . . . . *caerulata* ♀
   Rump and tail brown 3
3. Upperparts dark greyish-brown . . . . . *banyumas* ♀
   Upperparts chestnut . . . . . *venusta* ♀
4. Throat and breast entirely brown . . . . . *unicolor* ♀
   A large white patch on lower throat . . . . *concreta* ♀

II. Key to flycatchers in which males have some white on base of tail.

Muscicapa

1. Mantle blue . . . . . *cyanomelana* ♂
   Mantle not blue. 2
2. Mantle black or dark grey 3
   Mantle brown or grey 6
3. Underparts entirely white . . . . . *westermanni* ♂
   Breast rusty 4
4. Upperparts bluish-grey; no white on wing . . . *hyperythra* ♂
   Upperparts black; some white on wing . . . 5
5. Bill broad, long (13 mm.); basal 2-3rds of rectrices white *dumetoria* ♂
   Bill narrow and short (10 mm.); less white on rectrices . *mugimaki* ♂
6. Breast rusty 7
   Breast brown or grey 8
7. Bill narrow, short; tertiaries bordered with white . . *mugimaki* ♀
   Bill broad, long (13 mm.); tertiaries bordered rusty . *dumetoria* ♀
8. Throat brown, with pale patch; wing over 85 mm. . *cyanomelana* ♀
   Throat white, buffy, or rusty; smaller . . . 9
9. Throat and breast rusty-buff . . . . . *hyperythra* ♀
   Throat and breast greyish-white; wing 55 mm. . . *westermanni* ♀
   Throat white (rusty in breeding plumage) contrasting with grey breast . . . . . *parva* ♂ ♀

458a. RED-BREASTED FLYCATCHER

Muscicapa parva Bechstein 1794

Palaearctic, wintering in S.E. Asia.

A rare vagrant to Borneo, where three specimens have been collected recently at Brunei and in the upper Tinjar (where the Berawans say it is a regular visitor).

DESCRIPTION. 5". A small brown bird with whitish underparts. Easily recognized in the field by white patches at the base of the blackish tail, conspicuous in flight and also at rest owing to the bird's characteristic habit of jerking the tail upwards at intervals and at the same time quivering the pointed tips of the wings.

VOICE. In winter quarters a distinctive harsh jarring note, sounding like a wooden rattle rotated at speed, is commonly uttered.

RACE. *M. p. albicilla* Pallas 1811.

459. VERDITER FLYCATCHER PLATE XXXVII, 3

Muscicapa thalassina Swainson 1838

Himalayas to Malaysia.

A rather rare submontane resident, recorded only once to date in Indonesian Borneo, more frequently elsewhere. Whitehead found it only on the lower slopes of Kinabalu, not above 1,000 feet, and described it as apparently very rare everywhere. Harrisson obtained one in the Kelabit uplands at 3,500 feet and states it is not really so scarce as the records show, because it escapes notice by favouring the forest canopy.

DESCRIPTION. 5½". Entire plumage verditer-blue, the female duller ; forehead, lores and chin black in the male, grey in the female. Iris brown ; bill black ; feet blackish.

VOICE. It has a distinctive and rather loud rattly note (Harrisson).

HABITS. A quiet and unobtrusive forest bird ; perches on exposed sites and hawks insects in the air with active flight.

NEST AND EGGS. Not described from Borneo.

RACE. *M. t. thalassoides* (Cabanis) 1851.

460. INDIGO FLYCATCHER PLATE XXXVII, 4

Muscicapa indigo Horsfield 1821

Sumatra, Java, Borneo.

A higher montane resident, ranging from Kinabalu to Mt. Murud and Mt. Mulu, and one of the most characteristic birds of those mountains at 5,000–6,000 feet, less frequent down to 3,000 feet.

DESCRIPTION. 5½". Similar to Verditer Flycatcher, but much darker blue and with belly and under tail-coverts fulvous; fore-crown light blue, face black. Iris brown; bill and feet black.

VOICE. A very tame bird with a squeaky song (Boys).

HABITS. "It frequents the real forest, and does not come into the open" (Whitehead).

FOOD. Insects *and* vegetable matter (Harrisson.)

NEST AND EGGS. Not described from Borneo.

RACE. *M. i. delicata* Deignan 1947.

461. BLUE-AND-WHITE FLYCATCHER PLATE XXXVII, 5

Muscicapa cyanomelana Temminck 1829

Breeds in Manchuria, N. China, and Japan, wintering in Malaysia.

Passage migrant and winter visitor to Borneo in fair numbers.

DESCRIPTION. 6½". The male has the face, throat and breast black contrasting with the pure white of the rest of the underparts; crown glittering blue contrasting with dark blue of upperparts; white on base of tail. The female is brown with middle of throat and belly whitish. Iris dark brown; bill and feet black.

HABITS. It winters in submontane localities and in the Kelabit uplands, in primary and secondary forest and scrub jungle, but a number have been collected on coastal islands on passage, *e.g.* on Labuan and on the Turtle Islands. Late date 24 April. I saw several on Kinabalu at 4,500 feet, all in the tops of tall trees, an unusual habitat for a flycatcher.

FOOD. To a remarkable extent—for a flycatcher—feeds on berries, often green and hard (*e.g.* in nine out of eleven birds examined in one month). Beetles and bees often, but seldom mixed with vegetable matter. Birds taken on the same day in the same habitat had 100 per cent. berry or 100 per cent. animal food, and only one had berries *with* a beetle (large and brightly coloured). (Harrisson, from observations March to November 1952 and 1953.)

RACES. (*a*) *M. c. cyanomelana* from Japan; (*b*) *M. c. intermedia* Weigold 1922, with crown bright pale blue in the male, from Ussuriland.

462. WHITE-TAILED BLUE FLYCATCHER

PLATE XXXVII, 6

Muscicapa concreta S. Müller 1835

Burma, Thailand, Indo-China, Malaya, Sumatra, Borneo.

A submontane resident, usually found at 2,000–4,000 feet, but occasionally near sea level.

DESCRIPTION. 6½". See key. The male is dark blue except for grey abdomen and white under tail-coverts. Female light chestnut, with a large white patch on the throat ; under tail-coverts white ; some white on the tail. Iris very dark brown ; bill black ; feet dark grey.

HABITS. Not described from Borneo.

FOOD. Beetles and small wasps (Harrisson.)

NEST AND EGGS. Not described from Borneo.

RACE. *M. c. everetti* (Sharpe) 1890.

463. PALE BLUE FLYCATCHER PLATE XXXVII, 7

Muscicapa unicolor (Blyth) 1843

Himalayas to Malaysia.

A rare submontane resident in Borneo, represented by specimens from Mt. Mulu, Tegora, Mt. Penrissen, and Mt. Liang Kubung.

DESCRIPTION. 5½". See key. Sexes differ. The male is light blue, brighter on front and sides of crown ; abdomen and under tail-coverts grey. The female is brown, with reddish rump and tail.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *M. u. infuscata* (Hartert) 1902.

464. MALAYSIAN BLUE FLYCATCHER PLATE XXXVII, 8

Muscicapa turcosa Brüggemann 1877

Malaya, Sumatra, Borneo.

A common resident in the lowlands throughout Borneo in primary and secondary forest.

DESCRIPTION. 5½". See key. Sexes differ. The male has chin and throat blue, breast rusty, fading to whitish buff on abdomen and vent. Female differs in having the chin and throat buff. Both have upperparts a rather bright blue, brighter on the forehead, eyebrows, shoulders and rump. Iris brown ; bill black ; feet and claws dark grey or very pale horn.

HABITS. A common riverine bird of forest streams. " Along the banks of main rivers rather far upstream it is common among the trees and driftwood between normal and floodwater level, being entirely a littoral bird not to be taken inland away from the river " (Banks). Büttikofer, however, found it in bamboo jungle and brush-wood of abandoned native plantations ; in the Kapuas drainage it

was never met with at any considerable elevation above the plain or the bottom of the valleys, being exclusively an inhabitant of the lowland country.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *M. t. turcosa*, in E. Borneo; (*b*) *M. t. rupatensis* Oberholser 1920, darker and more rufous on the breast, flanks and belly, in the rest of Borneo.

465. MANGROVE BLUE FLYCATCHER PLATE XXXVII, 9

Muscicapa rufigastra Raffles 1822

Throughout Malaysia.

Resident throughout Borneo in coastal districts.

DESCRIPTION. 5½". See key. The distinctive feature of the male is the dull dark blue upperparts with no brightening on the forehead, and the black chin; underparts rusty, paler on the throat and belly. The female is paler and has the chin and throat buffy white. Iris brown; bill black; feet bluish-flesh.

HABITS. Though usually described as strictly confined to mangrove forests, in Borneo this bird is commonly found in other types of jungle, particularly rubber gardens, not far from the coast, its habitat being that of the Mangrove Whistler.

FOOD. Beetles, twice buffalo biting flies, small bees, and other insects (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *M. r. rufigastra*, on the mainland of Borneo and the North Bornean islands and Maratuas; (*b*) *M. r. karimatensis* Oberholser 1924, on the Karimatas only.

466. LARGE-BILLED BLUE FLYCATCHER
PLATE XXXVII, 10

Muscicapa caerulata (Bonaparte) 1857

Sumatra, Borneo.

Resident throughout the lowlands of Borneo outside the domain of *rufigastra*.

DESCRIPTION. 5½". See key. The male closely resembles *M. rufigastra* but has the forehead and back brighter blue. Delacour states that he is smaller, but this does not hold for Bornean races, wing measurements being *rufigastra* 73–77 mm. *caerulata* 73–78 mm. Female is quite different, being brown above with blue rump and tail.

HABITS. A bird of the lowland forest.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *M. c. caerulata*, in N., E., and S. Borneo; (*b*) *M. c. nigrogularis* (Everett) 1891 in Sarawak; the male is more deeply coloured below and the female has a tendency to develop more blue above, the scapulars and wing-coverts being slightly tinged with that colour.

467. HILL BLUE FLYCATCHER PLATE XXXVII, 11

Muscicapa banyumas Horsfield 1822

Widespread in S.E. Asia.

Sparingly distributed as a submontane resident in Borneo; specimens from Kinabalu, upper Trusan, Kelabit uplands, Mt. Dulit, upper Plieran, Mt. Liang Kubung (eleven and a nestling collected by Büttikofer, but cited as *Siphia caerulata*).

DESCRIPTION. 5". See key. The male has the forehead light blue, back dull dark blue much as in *rufigastra*, underparts almost uniform ferruginous including the under tail-coverts, except for the black point of the chin. The female has no blue on the upperparts.

HABITS. Not described from Borneo.

FOOD. Cockroaches, beetles. Small black insects (Harrisson).

NEST AND EGGS. Gibson-Hill describes two clutches of two eggs taken by Ryves at Kiau (*not* Kota Belud) on 11 and 23 March as "egg-shaped. Surface smooth and glossy. Ground-colour pale olive-buff, almost completely obscured by a soft flecking of snuff-brown." 22×15 mm.

RACE. *M. b. montana* (Robinson & Kinnear) 1928.

468. BORNEAN BLUE FLYCATCHER PLATE XXXVII, 12

Muscicapa venusta Deignan 1947 (=*M. superba*)

Confined to Borneo. A submontane resident throughout Borneo; most specimens have been taken at 2,000–5,000 feet, but it has also been collected at Bettotan in the lowlands near Sandakan far from mountains.

DESCRIPTION. 6". See key. The male is very like female *turcosa* but the forehead, eyebrows, nape and middle of back are brighter blue. The very reddish forehead, rump and tail of the female are distinctive. Iris dark brown; bill black; feet blue-grey.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

PLATE XXXVII

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Muscicapa rufilata.
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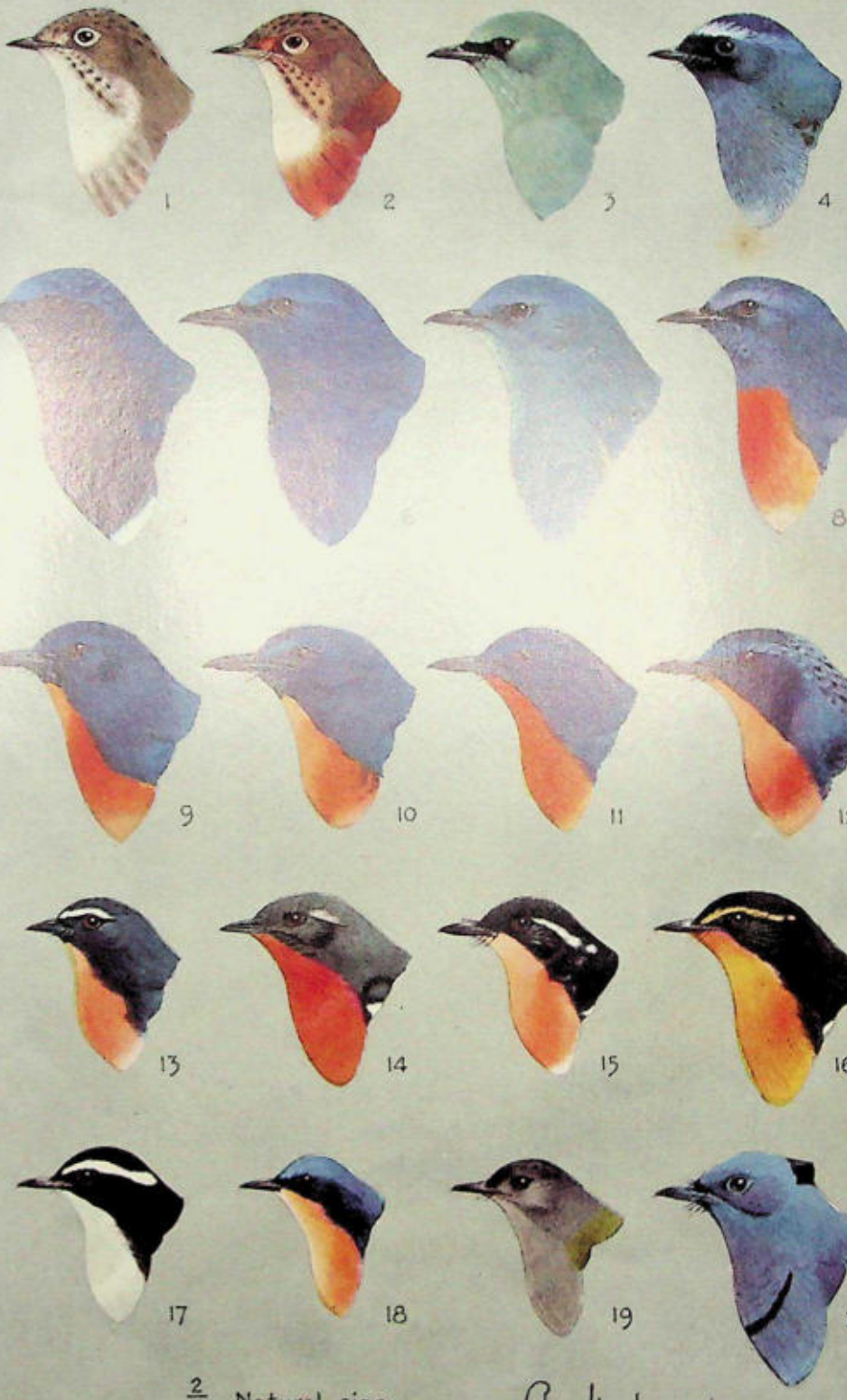

$\frac{2}{3}$ Natural size

A. M. Hughes
1958

470. WHITE-FRONTED BLUE FLYCATCHER

PLATE XXXVII, 13

Muscicapa hyperythra Blyth 1842

Widespread in S.E. Asia.

A montane resident from Kinabalu (where it is fairly plentiful at 4,000–8,000 feet and goes up to 11,000 feet) along the spinal chain to the Tama Abo range and Mt. Mulu ; an isolated pocket on Mt. Poi. On Mt. Trus Madi very common everywhere over 4,500 feet, irrespective of vegetation (Boys).

DESCRIPTION. 4". Male has upperparts dark bluish-grey with white at the base of the tail ; wings and tail blackish ; short white eyebrows ; chin black ; throat and breast rusty, belly whitish. Female differs in being greyish-brown above and has the throat and belly buff. Iris grey or brown ; bill black ; feet and claws very pale horn.

HABITS. Very tame, flying about among gnarled mossy roots, in young bamboo among mossy tree roots, on damp logs and leaves, etc. Seldom more than six feet from the ground ; hops like a Robin (Boys).

FOOD. Small insects, berries (Harrisson).

NEST AND EGGS. " The nest is a neat little moss-lined cup ; it is generally placed, with considerable talent for concealment, right in the loose moss which grows along the trees in profusion. In structure the nest itself is so exactly similar to the mass of moss in which it is placed as almost to escape observation, the entrance being merely a small hole in the side of the overhanging moss. On 22 March I found a nest with two white eggs." (Whitehead).

RACES. (*a*) *M. h. mjobergi* (Hartert) 1925, on the Poi range only ; (*b*) *M. h. oliga* Deignan 1947, elsewhere

471. BLACK-AND-ORANGE FLYCATCHER

PLATE XXXVII, 14

Muscicapa mugimaki Temminck 1835

Breeds in N.E. Asia and Japan.

Passage migrant and winter visitor to Borneo in small numbers. It winters on the mountains, but is also collected on the coast and coastal islands on passage.

DESCRIPTION. 5". Most birds in our area are in immature plumage, which is plain brown above, with some white on the wings, tawny-buff below, abdomen white. The adult male is blackish-grey with

white eyebrows and wing-coverts and some white on the tail. Very small triangular bill (10 mm.). Iris dark ; bill dark flesh, pink at base of lower mandible ; feet dark flesh.

HABITS. Sits on posts and dead wood ; patient and quiet when settled, very quick and nippy in flight. Tame (Harrisson).

FOOD. Insects and seeds (Harrisson).

472. ORANGE-BREASTED FLYCATCHER

PLATE XXXVII, 15

Muscicapa dumetoria (Wallace) 1863

Malaysia.

A submontane resident sparingly distributed throughout Borneo.

DESCRIPTION. 4½". Male has a pied appearance above, the long white eyebrows, white patch on wing and white base of tail contrasting with black upperparts ; rufous below, passing to white on the abdomen. Female is olive-brown above, tertiaries bordered with rusty ; like the male below. Iris brown ; bill black ; feet pale brown or pink.

VOICE. Call *sst-sst-* (Harrisson).

HABITS. A bird of primary forest.

FOOD. Soft insects, spiders, cockroaches, beetles, etc., but *not* vegetable matter (many examined, Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *M. d. mulleri* Blyth 1870.

473. BLACK-AND-YELLOW FLYCATCHER

PLATE XXXVII, 16

Muscicapa narcissina Temminck 1835

Breeds in N.E. Asia and Japan.

Passage migrant and winter visitor to Sarawak and N. Borneo in small numbers ; in the Kelabit uplands to 4,500 feet. No record for Indonesian Borneo to date.

DESCRIPTION. 5". Male is unmistakeable, the bright yellow eyebrows, rump and underparts contrasting with black upperparts ; a white shoulder patch. The female is olive-grey above, pale brown below with a slight yellowish tinge. Iris dark brown ; bill dark bluish ; feet lead-blue.

HABITS. Not described from Borneo.

RACE. *M. n. narcissina*, breeds in Japan.

474. LITTLE PIED FLYCATCHER PLATE XXXVII, 17

Muscicapa westermanni (Sharpe) 1888

Widespread in S.E. Asia.

A montane resident, from Kinabalu along the spinal chain to the mountains of the upper Telen ; also on Mt. Mulu and the Poi range. Banks found it really common on the Poi range and rare in the central highlands. Common again from 5,000–8,000 feet on Kinabalu.

DESCRIPTION. 4". Male has upperparts black ; a broad eyebrow, a patch on the wing, basal half of the lateral tail-feathers, and the whole underparts white. Female is olive-brown above, upper tail-coverts rufous, underparts whitish down the centre, grey on sides of breast. Iris whitish or black.

VOICE. Its distinctive call-note I have described in Burma as a thin high *pi-pi-pi-pi* followed by a low rattle *churr-r-r-r*, or *pi-churr-r-r-pi-pi-pi-pi* uttered all day long.

NEST AND EGGS. " The nest was placed in a creeper in the big forest, at about 40 feet from the ground ; it was quite a small pile of moss, deep, and lined with fine white roots, a very pretty bit of work, and contained (25 March) one small fawn-coloured egg " (Whitehead).

RACE. *M. w. westermanni.*

474a. PYGMY BLUE FLYCATCHER PLATE XXXVII. 18

Muscicapella hodgsoni (Horsfield & Moore) 1854

Widespread in the mountains of S.E. Asia.

In Borneo a rare montane resident, so far collected only on Kinabalu (up to 6,000 feet) and Mt. Dulit (once at 4,000 feet).

DESCRIPTION. See key. Small size and thin narrow bill distinctive. The male is bright blue above, the crown and rump vivid ; forehead, lores and sides of head black ; underparts rusty. Female is olive-brown above, buffy-white below. No black on chin.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *M. h. sondaica* (Robinson & Kloss) 1923.

KEY TO THE JUNGLE FLYCATCHERS—*Rhinomyias*

These olive-brown flycatchers are puzzling to the novice ; in the hand they resemble on the one hand some babblers such as the Quaker Babbler, and on

the other hand the Mangrove Whistler. The four species in our area are best identified by the following key :

1. With a distinct eyebrow . . . . . *gularis*
   Without 2
2. A sharp or well-defined or distinct pigmented pectoral band separating the white of the throat from the white of the lower breast 3
   Pectoral band indistinct or obsolete . . . . *ruficauda*
3. Lores white or whitish ; throat pure white ; pectoral band grey or olive-grey . . . . . *umbratilis*
   Lores grey or buff, pectoral band fulvous-olive or brownish-olive . . . . . *olivacea*

475. OLIVE-BACKED JUNGLE FLYCATCHER

Rhinomyias olivacea (Hume) 1877

Extreme S. Tenasserim and Peninsular Thailand, Sumatra, Billiton, Java, Bali, N. Natunas, N. Borneo (Vaurie).

Resident in N. Borneo, where Ryves found it breeding at Kota Belud and Everett collected specimens at Bongon in Marudu Bay and on Kinabalu (one from each locality).

DESCRIPTION. $5\frac{1}{2}$". See key. In the hand distinguish from the Brown Quaker Babbler by broader and flatter bill. Upperparts olive-brown, tail and wings more rufous.

HABITS. Not described from Borneo.

NEST AND EGGS. Gibson-Hill describes eggs (c/2 or c/3) taken by Ryves at Kota Belud as " egg-shaped. Surface smooth and glossy. Ground-colour capucine-buff, faintly or strongly spotted with light purplish-grey and chestnut, mostly at the broader end ". 23 × 16 mm.

RACES. (*a*) *R. o. olivacea*, in N. Borneo and the North Natunas ; (*b*) *R. o. perolivacea* Chasen & Kloss 1929, a rather dubious race on Banggi and Balambangan Islands.

476. WHITE-THROATED JUNGLE FLYCATCHER

PLATE XXXVIII, 4

Rhinomyias umbratilis (Strickland) 1849

Malaya, Sumatra, Borneo.

Resident throughout the lowlands of Borneo in primary forest.

DESCRIPTION. 6". See key. Darker above than *olivacea*, and the white throat contrasts more strongly with the dark brown breast-band. The only *Rhinomyias* at present known in S. Borneo. Iris dark ; bill black ; feet and claws pink or dull yellow or grey.

HABITS. A typical flycatcher of the forest understorey.

NEST AND EGGS. "The nest is a neat cup-shaped structure of moss and small sticks. The eggs have a bluish tinge and the ground-colour is brownish-white thickly clouded all over with faint spots of reddish-brown" (Whitehead). The eggs are also described by Gibson-Hill. About 23×15 mm.

477. RUFOUS-TAILED JUNGLE FLYCATCHER

PLATE XXXVIII, 5

Rhinomyias ruficauda Sharpe 1877

Philippines and Borneo.

A montane resident, actual records being from Kinabalu, Kelabit uplands, Mt. Kalulong, Mt. Dulit, Usun Apau Plateau, near Mt. Batu Tibang (at 3,300 feet on the Pajau River), Mt. Penrissen, and Mt. Liang Kubung; also one puzzling record near sea level on the Baram River (at the Kejin River junction, Oxford University Expedition, 1955).

DESCRIPTION. 5½". See key. Bright chestnut tail distinctive. Iris dull brown; bill black; feet very pale pink slightly tinged with mauve-grey, or pale bluish.

HABITS. Whitehead described it as a flycatcher in habits, frequenting the lower branches of the high trees.

FOOD. Soft and hard insects, spiders.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *R. r. ruficrissa* Sharpe 1887, on Kinabalu only; (*b*) *R. r. isola* Hachisuka 1932, elsewhere—darker below, throat yellowish-buff instead of dirty white, and rufous tint stronger on outer web of primaries.

478. WHITE-BROWED JUNGLE FLYCATCHER

Rhinomyias gularis Sharpe 1888

Philippines and Borneo.

A higher montane resident from Kinabalu to the Tama Abo range and Mt. Mulu. Whitehead described it as found on Kinabalu at 3,000–7,000 feet but more plentiful at the higher elevation.

DESCRIPTION. 6". See key. Rufescent brown above, face reddish, throat white contrasting with and sharply demarcated from grey breast. Iris brown; bill black; feet very pale grey, claws horn.

VOICE. Silent (Boys).

HABITS. In habits and outline it is very Robin-like and will follow one closely in the jungle, keeping near the ground (Banks). Keeps

low down and behaves just like a babbler in the undergrowth, often in small parties (Boys).

FOOD. Mainly insects, once seeds (Boys).

NEST AND EGGS. " I procured a nest and eggs on 11 March at about 3,000 feet on the mountain. The nest was entirely composed of moss, with a few small sticks outside, and a few dead leaves ; inside it was lined with roots and red fibres. The eggs are pale olive-greenish, clouded with reddish spots all over, collected somewhat at the larger end, where they form a distinct zone " (Whitehead). 24×17 mm.

RACE. *R. g. gularis.*

III. MONARCH FLYCATCHERS (subfamily Monarchinae)

The monarch flycatchers have a long ridged bill, depressed at the base, small legs and feet, and comparatively long wings. Apart from *Hypothymis*, which is a typical flycatcher in habits, they glean their insect prey from the branches as a rule and only rarely sally out for flying insects.

479. CHESTNUT-WINGED MONARCH FLYCATCHER

PLATE XXXVIII, 6

Philentoma pyrrhoptera (Temminck) 1836

S. Indo-China, Malaya, Sumatra, Borneo.

A common resident throughout the lowlands of Borneo, and it goes up to 5,000 feet in the Kelabit uplands.

DESCRIPTION. 6". Male dull blue with chestnut wings and tail and whitish abdomen. In a rarer colour phase the whole plumage is blue, greyer and streaked with white on the abdomen. The female is brown, head and mantle greyish, wings and tail as in the male ; throat and abdomen whitish, breast reddish-brown. The underlying skin of the head and neck of the male bright blue. Iris red ; bill black ; feet dull blue or grey.

HABITS. A bird of primary forest. Keeps low down and comes on to the ground.

FOOD. Insects, including wasps (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. p. pyrrhoptera*, in Borneo ; (*b*) *P. p. dubia* Hartert 1894 in the North Natunas.

480. MAROON-BREASTED MONARCH FLYCATCHER

PLATE XXXVIII, 7

Philentoma velata (Temminck) 1825

Malaysia.

Resident throughout the lowland forests of Borneo. Apparently scarce or local in N. Borneo, where it has been collected only round Sandakan. It goes up to 5,500 feet in the Kelabit uplands.

DESCRIPTION. 7". The adult male is distinctive, maroon breast contrasting with black chin and throat; upperparts dull indigo-blue. Immature male and female entirely blue, very similar to the blue phase of the male *P. pyrrhoptera* but distinguished by blackish throat and larger size (wing about 3·9 inches as against 3·5 inches). Iris red; bill and feet black.

VOICE. Very noisy and active; a loud harsh churring note is constantly uttered by both sexes (Harrisson).

HABITS. They hawk for insects and are conspicuous for their uncertain dipping flight (Banks). Frequent at low levels in primary forest, nearly always near water; I have often watched these really beautiful, gently colour-toned birds bathing, which they love to do, fluttering and preening on the edge of any tiny forest stream (Harrisson).

FOOD. Soft insects mainly; about one in ten takes other insect food, including locustids (Harrisson).

NEST AND EGGS. At Niah two years running (1957–58) nested in the same fork of a rotting forest tree; feeding young just able to fly on 2 March (Harrisson).

RACE. *P. v. caesia* (Lesson) 1839.

481. BLACK-NAPED BLUE MONARCH FLYCATCHER

PLATE XXXVII, 20

Hypothymis azurea (Boddaert) 1783 *Burong kangan* (I)

Widespread in S.E. Asia.

Resident throughout the lowlands of Borneo and up to 3,700 feet in the Kelabit uplands.

DESCRIPTION. 5". Male is azure-blue with a black skull-cap, and narrow black bands on forehead and upper breast; flanks and abdomen whitish. Female is duller, lacks the black marks, and has the back, wings, and tail dull olive-brown. Iris brown; bill blue, black at base and tip, inside apple-green; feet dull blue.

VOICE. A quiet bird with a sharp little call-note.

HABITS. Frequents primary and secondary forest, rubber gardens, etc. Occasionally spreads its tail like a fantail flycatcher. Usually solitary.

FOOD. Insects, notably small grasshoppers (many records, Harrisson).

NEST AND EGGS. " I found it nesting on the Padas River on 12 June. The nest was situated about five feet from the ground. It was a firmly made little cup, constructed of twigs and lined with fine roots, and was placed in a large plant in the undergrowth. The eggs were creamy-white, blotched and spotted with brown, with some large underlying spots of grey, chiefly at the larger end " (Whitehead). On 3 August I saw a pair working on a nest on a branch overhanging a stream in the Belait district. Eggs also described by Sharpe and by Gibson-Hill. 19×13 mm.

RACES. (*a*) *H. a. gigantoptera* Oberholser 1911, in the North Natunas ; (*b*) *H. a. aeria* Bangs & Peters 1927, in the Maratuas ; (*c*) *H. a. karimatensis* Chasen & Kloss 1932, in the Karimatas ; (*d*) *H. a. prophata* Oberholser 1911, elsewhere.

482. PARADISE FLYCATCHER PLATE XXXVIII, 8

Terpsiphone paradisi (Linnaeus) 1758

Bisek kepan (M) ; *langgai lamujan* (I)

Turkistan to Mongolia, Manchuria and S.E. Asia.

A common resident in the lowlands of Borneo and goes up to 3,900 feet in the Kelabit uplands.

DESCRIPTION. Adult male, with two very long white tail feathers (up to 18") is unmistakable. The name " Paradise Flycatcher " derives from a fancied resemblance to the ornate tails of the true birds of paradise found in New Guinea. Female has head and neck black, upperparts chestnut, underparts grey, and the tail not elongated. In some races males are also found in this chestnut phase but in Borneo they are rare in this plumage (three in Sarawak Museum collection). Iris dark ; eyelid blue ; bill blue with a small black tip ; feet blue.

VOICE. The call is *auk auk* very like that of a frog (Banks). One of the loudest calls in the forest—both sexes call (Harrisson).

HABITS. A bird of primary forest. The male is often seen, because so conspicuous, flying through the forest or across a stream.

FOOD. Small insects and bees (Harrisson).

1
2
3
4a
4b
5
6
7
8
9
10
THREE INCHES
0 1 2 3
0 25 50 75
75mm
1958

PLATE XXXVIII

Page

1. WHITE-THROATED FANTAIL FLYCATCHER . . . 437
Rhipidura albicollis kinabalu.

2. SPOTTED FANTAIL FLYCATCHER 438
Rhipidura perlata.

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Tersiphone paradisi borneensis.

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9. MANGROVE WHISTLER 458
Pachycephala cinerea secedens.

10. VELVET-FRONTED NUTHATCH 460
Sitta frontalis corallipes.

NEST AND EGGS. Gibson-Hill describes eggs (c/2) taken on 13 May by Ryves in N. Borneo as " egg-shaped. Surface smooth and glossy. Ground-colour capucine-buff, faintly or strongly spotted with light purplish-grey and chestnut, mostly at the broader end." 23 × 16 mm.

RACE. *T. p. borneensis* (Hartert) 1916. [*T. p. incei* Gould 1852 is a winter visitor from China to Malaya and Sumatra, but has yet to be recorded from Borneo.]

WHISTLERS: Pachycephalidae

This family comprises a group of bush-dwelling relatives of the flycatchers; they frequent the undergrowth, hunting for insects on the twigs and branches, and are usually solitary or in pairs; they have a round thick head, which has earned them the alternative family name of " thickheads ". The young are not spotted. The family is best developed in Australia and New Guinea, and is represented by only two species in Borneo.

483. MANGROVE WHISTLER PLATE XXXVIII, 9

Pachycephala cinerea (Blyth) 1847

Burma to Indo-China, Malaysia, Lombok.

A common resident throughout Borneo in coastal districts.

DESCRIPTION. 5½". A nondescript greyish bird, paler below with a noticeably thick head, best identified by song. Crown and nape greyer than back. Iris dark brown; bill dark brown; feet pale blue.

VOICE. The distinctive lovely song, freely uttered, consists of four or five somewhat staccato notes on the same pitch followed by two notes on a higher pitch, or by a sort of explosive flourish (Smythies), which Harrisson likens to a whip-crack—a very definite peculiar cut-off effect.

HABITS. A common bird of mangrove forests, and also of forests of other types and rubber gardens, provided they are not too far from the coast.

FOOD. Small insects.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. c. vandepolli* Finsch 1899, in S. Borneo; (*b*) *P. c. secedens* Stresemann 1913, with lighter (more brown less grey) forehead and sides of head, in the Karimatas, Natunas, Maratuas, North Bornean islands, and N. Borneo. It is uncertain to which form Sarawak birds should be assigned (Chasen & Kloss 1930: 51).

484. BORNEAN MOUNTAIN WHISTLER PLATE XXXII 5

Pachycephala hypoxantha (Sharpe) 1887

Confined to Borneo. A montane resident, ranging from Kinabalu to the mountains of the upper Telen and Mt. Poi. On Kinabalu Whitehead found it at 3,000–8,000 feet, but more plentiful at the higher elevation. Boys found it common on Mt. Trus Madi from 2,800–6,500 feet. Mjöberg collected it on Mt. Murud, and Banks on the Maga Mountains, on the Tama Abos (several specimens), and on Mt. Mulu, but Harrisson considers it to be rare in these areas, and absent from Mt. Dulit. Common on the Poi range.

DESCRIPTION. $6\frac{1}{4}$". Olive-green upperparts and yellow underparts diagnostic. Iris dark brown ; bill black ; feet pale grey, soles yellowish-orange.

VOICE. Intermittent loud song (Boys).

HABITS. Frequents the lower branches of tall trees (Whitehead).

FOOD. Ants, grasshoppers, insects, caterpillars, beetles, crickets, a few seeds (Boys).

NEST AND EGGS. A fledgling was taken from a nest at 5,500 feet above Bario on 1 November (Harrisson).

RACES. (*a*) *P. h. hypoxantha*, mountains other than the Poi range ; (*b*) *P. h. sarawacensis* Chasen 1935, with underparts more uniformly yellow, on the Poi range only.

TITS : Paridae

Tits are found in Europe, Asia, and parts of Africa and include some of the best-known birds in England and North America. In Borneo however they are represented by only one very rare species.

485. GREAT TIT PLATE XLV, 2

Parus major Linnaeus 1758

Palaearctic and Oriental Regions.

The mystery bird of Borneo. Two or three specimens were collected in the 1880's at Tegora and the Bengo range of hills south of Bau. It was not heard of again until 10 December 1956 when Allen observed a pair in the mangroves at Pending, near Kuching, and a specimen was obtained there two days later by a Sarawak Museum collector. Further investigation may show that it is a bird of the mangrove zone, on the landward side.

DESCRIPTION. 5". Best identified by black band down middle of breast and belly ; there is a white patch on the nape.

HABITS. Not described from Borneo. In Europe the Great Tit is a well-known species, feeding mainly on trees, clinging to twigs in a variety of acrobatic postures and gently flicking the wings and tail as it moves about.

NEST AND EGGS. Not described from Borneo. The nest is made in a hole and the eggs are white speckled with reddish.

RACE. *P. m. sarawacensis* Slater 1885.

NUTHATCHES : Sittidae

Nuthatches are non-migratory birds found in Europe, Asia and Australia ; represented in Borneo by one wide-ranging species.

486. VELVET-FRONTED NUTHATCH

PLATE XXXVIII, 10

Sitta frontalis (Swainson) 1820

Widespread in S.E. Asia.

A common resident of the sea coast and also of the Kelabit uplands, less often met with in the intervening lowlands.

DESCRIPTION. 5". Identify by habits. The sexes differ slightly, male having black eyebrows which are lacking in female. Iris bright yellow ; skin round eye orange-red ; bill red, tip of upper mandible black ; feet bright orange-red, claws horn.

VOICE. A mouse-like cheep *chwit-chwit* is constantly uttered when feeding. A thin *seepseepseep* in flight (Harrisson).

HABITS. Nuthatches share with woodpeckers and treecreepers the ability to climb about the trunks and branches of trees and search the crevices of the bark for insects and their larvae, which live there secure from the attentions of most insect-feeding birds, but unlike them they do not need the support of their tails against the bark ; in consequence they are more agile and lively and by far the most skilful climbers of them all. They move with short, jerky leaps and climb upwards, downwards, or sideways with equal facility. In coastal districts it is commonly seen on Casuarina trees and in mangrove forests. A Kelabit omen bird.

FOOD. Very small insects ; one was eating gregarious white grubs on the *outside* of bark of a living tree (Harrisson). Also ants.

NEST AND EGGS. Not described from Borneo. Elsewhere it nests in a hole in a tree.

RACE. *S. f. corallipes* (Sharpe) 1888.

FLOWERPECKERS : Dicaeidae

This family is restricted to the Oriental and Australian Regions. In our area they resemble sunbirds in habits and appearance but are distinguished by their shorter less curved bills, stumpy tails, and minute size. Some species have brightly-coloured males and dull-coloured females, whereas others have both sexes similar and plain-coloured. Chasen summarized their habits as follows :

" Usually they are seen alone ; tiny, fat, but very active little birds, darting across the path from one tall flowering bush to another with a sharp *chit-chit-chit*, a sound like two pebbles being tapped together, but often they congregate at the tops of very tall flowering trees and then through binoculars, the busy birds can be seen flitting like a swarm of hymenoptera about the blossoms on the exposed surface of the forest canopy. They eat small spiders, insects, and small berries and are especially fond of the berries of plants allied to the mistletoe. There is a marked partiality for the glutinous fruit of *Loranthus*. Epiphytic plants of tall trees seem to attract flowerpeckers. The nectar of flowers is also taken as food."

The flight is often erratic, in zig-zags, with sudden changes of direction.

KEY TO THE FLOWERPECKERS

1.	Lower breast and belly mostly yellow or orange	2
	Lower breast and belly mostly pale buff or grey	10
2.	Nape and wings black	3
	Nape, wings, and mantle olive-green	6
3.	Back orange	*D. trigonostigma* ♂
	Back not orange	4
4.	Back olive-green	*P. thoracicus* ♂
	Back black	5
5.	Rump black	*P. percussus* ♂
	Rump yellow	*P. xanthopygius* ♂
6.	Underparts coarsely streaked with dark green	*P. maculatus*
	Underparts not clearly streaked	7
7.	Breast grey	*D. trigonostigma* ♀
	Breast dirty yellow	8
8.	Wing > 2"	*P. thoracicus* ♀
	Wing < 2"	9
9.	Upper tail-coverts lemon-yellow	*P. xanthopygius* ♀
	Not as above	*P. percussus* ♀
10.	Rump red (crown and back red in ♂♂)	11
	Rump black or olive	14

11. Throat and breast red . . . . . *D. trochileum* ♂
Throat and breast not red 12
12. Wings and sides of head black . . . . *D. cruentatum* ♂
Wings and sides of head grey 13
13. No trace of red on crown and mantle; abdomen buff *D. cruentatum* ♀
Reddish wash on crown and mantle; abdomen greyish-white . . . . . *D. trochileum* ♀
14. Upperparts black or dark grey . . . . *D. celebicum* ♂
Upperparts olive-green 15
15. Underparts not streaked . . . *D. concolor, D. celebicum* ♀
Underparts streaked 16
16. Streaks very strong, vent yellow . . . *D. chrysorrheum*
Streaks weak; vent whitish. . . . . *D. agile*

The species of *Prionochilus* have 10 primaries, of *Dicaeum* 9.

487. SCARLET-BREASTED FLOWERPECKER

PLATE XXXIX, 1

Prionochilus thoracicus (Temminck) 1836 *Kunchit* (I)

Malaya, Sumatra, Borneo, Billiton.

A common resident in the lowlands of Borneo.

DESCRIPTION. 3½". See key. The male can only be confused with the next species. The female is olive-green above, the head greyish with a yellowish patch on the crown; underparts greyish-yellow, the breast tinged with orange.

HABITS. A bird of primary and secondary forest.

NEST AND EGGS. Not described from Borneo.

488. YELLOW-RUMPED FLOWERPECKER

PLATE XXXIX, 2

Prionochilus xanthopygius (Salvadori) 1868

Confined to Borneo, and the North Natunas. Common in the lowlands and Kelabit uplands.

DESCRIPTION. 3½". See key. Smaller size and yellow rump distinguish this from preceding species. Iris brown; bill black, paler below; feet black or dark grey.

HABITS. A bird of forest edges, secondary forest, scrub jungle, and clearings.

FOOD. Predominantly flowers, pollen, stamens and honey; tiny beetles and spiders in about one quarter of the specimens examined (Harrisson).

NEST AND EGGS. Not described from Borneo.

489. CRIMSON-BREASTED FLOWERPECKER

PLATE XXXIX, 3

Prionochilus percussus (Temminck) 1826

Malaya, Sumatra, Java, Borneo.

A rare bird of the lowland forest, apparently confined to S. Borneo, whence about ten specimens from various localities exist, Kuching, and the North Natunas.

DESCRIPTION. See key. Sexes differ. Male has the upperparts grey with a flame-coloured spot on the centre of the crown ; underparts bright yellow with a flame-coloured patch on the breast. Female is olive-green, with a dull orange spot on the crown and dull yellow on centre of abdomen.

HABITS. Not described from Borneo.

NEST AND EGGS. Stuart Baker (*Nidification of Indian Birds* 1934, III : 249) describes a nest taken by Moulton at Kuching. It contained one pure white egg.

RACE. *P. p. ignicapillus* (Eyton) 1839.

490. YELLOW-THROATED FLOWERPECKER

PLATE XXXIX, 4

Prionochilus maculatus (Temminck) 1836

Malaya, Sumatra, Borneo.

A common resident in the lowland forests, and occurs in the North Natunas.

DESCRIPTION. 3½". See key. Sexes alike. Coarse olive-green streaks on underparts distinctive. Iris red ; bill black, paler at base of lower mandible ; feet grey.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. m. maculatus*, on the main island of Borneo ; (*b*) *P. m. natunensis* (Chasen) 1935, in the North Natunas.

491. YELLOW-VENTED FLOWERPECKER

PLATE XXXIX, 5

Dicaeum chrysorrheum Temminck 1829

Widespread in S.E. Asia.

Resident and sparsely distributed in the lowlands of Borneo and in the Kelabit uplands to 5,500 feet.

DESCRIPTION. 3¾". See key. Sexes similar. White and blackish cheek stripes and bright yellow under tail-coverts distinctive. Iris yellow ; feet dull blackish.

PLATE XXXIX

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1. SCARLET-BREASTED FLOWERPECKER 462
Prionochilus thoracicus.

2. YELLOW-RUMPED FLOWERPECKER 462
Prionochilus xanthopygius.

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Prionochilus maculatus maculatus.

5. YELLOW-VENTED FLOWERPECKER 463
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6. THICK-BILLED FLOWERPECKER 465
Dicaeum agile everetti.

7. PLAIN FLOWERPECKER 465
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8. BLACK-SIDED FLOWERPECKER 466
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9. SCARLET-BACKED FLOWERPECKER 466
Dicaeum cruentatum nigrimentum.

10. SCARLET-HEADED FLOWERPECKER 467
Dicaeum trochileum trochileum.

11. ORANGE-BELLIED FLOWERPECKER 467
Dicaeum trigonostigma dayakanum.

A. M. Hughes
1959

0" 1" 2" 3"
0 25 mm 50 75

HABITS. A bird of primary forest, active in the upper and middle levels.

FOOD. Small insects, flowers.

NEST AND EGGS. Not described from Borneo.

RACE. *D. c. chrysorrheum*.

492. THICK-BILLED FLOWERPECKER PLATE XXXIX, 6

Dicaeum agile (Tickell) 1833

Widespread in S.E. Asia.

A lowland resident, rare or overlooked. The few specimens that exist from Borneo have all been taken in Sarawak (including one from the Kelabit uplands at 3,000 feet), Labuan, and the North Natunas.

DESCRIPTION. 4″. See key. Sexes alike. Short thick munia-like bill distinctive. Iris yellow or orange.

HABITS. Not described from Borneo.

FOOD. Tiny insects, flowers, spiders.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *D. a. bunguranse* (Chasen) 1934 in the North Natunas; (*b*) *D. a. everetti* (Sharpe) 1877, on the main island of Borneo.

493. PLAIN FLOWERPECKER PLATE XXXIX, 7

Dicaeum concolor Jerdon 1840

Widespread in S.E. Asia.

In our area it is perhaps most characteristic of the Kelabit uplands, where the type specimen was collected and where Harrisson later found it abundant. Single specimens have been collected on Kinabalu, and on Bunguran Island in the North Natunas, the only other records.

DESCRIPTION. See key. Very small size, thin bill, and plain colour diagnostic. Bill black, pale bluish below; feet dark blue-black.

VOICE. *Chirp-chirp-chirp* (Harrisson).

HABITS. A bird of secondary forest, scrub jungle, and village clearings. Keeps low, sometimes only two or three feet above the ground, unlike others of the group (Harrisson).

FOOD. Insects only (Harrisson).

NEST AND EGGS. Gibson-Hill describes two eggs taken by Ryves at Kiau, Kinabalu, on 23 March as " egg-shaped. Surface smooth.

Ground-colour pale orange-pink, thickly flecked towards the broader end with burnt-sienna, with in addition a few fine spots of chestnut ". 14 × 11 mm.

RACE. *D. c. borneanum* Lönnberg 1925.

494. BLACK-SIDED FLOWERPECKER PLATE XXXIX, 8

Dicaeum celebicum Müller & Schlegel 1843

Borneo and Celebes.

A common montane species from Kinabalu along the spinal chain to Mt. Liang Kubung in the upper Kapuas, including the outliers of Mt. Mulu and Mt. Dulit, but not Penrissen or the Poi range.

DESCRIPTION. ♂. Scarlet throat and breast of male diagnostic. Female is olive-grey, similar to *D. concolor* but larger. Iris brown or black ; bill black ; feet dark horn.

VOICE. A high piercing *zit* (Harrisson).

HABITS. " I first met with this beautiful little bird at an altitude of 4,000 feet, where it frequented the parasitic plants and flowers on high trees. In some trees were large clusters of parasites, which were covered with small fruits ; these trees were regularly visited " (Whitehead).

FOOD. Eats quite large fruits, and has a varied diet, including green aphids, tiny flies, leafhoppers, seeds, etc. (Harrisson).

NEST AND EGGS. At Bario nests with young have been found from November to February. The nest is beautifully made of moss, lined with tree-fern pith, and decorated with lichen on the outside. Normal clutch probably three. (Harrisson).

RACE. *D. c. monticola* Sharpe 1887.

495. SCARLET-BACKED FLOWERPECKER PLATE XXXIX, 9

Dicaeum cruentatum (Linnaeus) 1758

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo. Occurs in the North Bornean islands and the Karimatas.

DESCRIPTION. ♂. See key. Scarlet crown and back of male distinctive (see also next species). Female has rump and upper tail-coverts scarlet (see also next species). Iris dull brown ; bill and feet black.

HABITS. Often seen in gardens and open country. Motley describes it as a most active and pugnacious bird.

FOOD. Small figs, insects, green seeds.

NEST AND EGGS. " I have a beautiful nest of this bird, which is a small rounded pocket suspended from the underside of a small twig, well sheltered from above by the broad leaves of the tree. The nest is composed of white (seed) down, and woven on the outside with small red leaves and fine grass stems. The eggs are three in number and pure white " (Whitehead). Another nest is described by Motley as " most beautiful, open at the side and hanging on a branch ; made of moss and spiders' webs."

RACE. *D. c. nigrimentum* Salvadori 1874.

496. SCARLET-HEADED FLOWERPECKER

PLATE XXXIX, 10

Dicaeum trochileum (Sparrman) 1789

Borneo, Java, Bali, Kangean, Lombok. In our area known from S. Borneo only.

DESCRIPTION. See key. The male is the only flowerpecker with the entire head crimson. The female is like the female of the preceding species, but is washed with reddish on the crown and mantle. Hybrids between the two species have been recorded.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACE. *D. t. trochileum*.

497. ORANGE-BELLIED FLOWERPECKER

PLATE XXXIX, 11

Dicaeum trigonostigma (Scopoli) 1786 *Burong bunga api* (M)

Widespread in S.E. Asia.

A common resident in the lowlands of Borneo, and in the Kelabit uplands to 5,500 feet.

DESCRIPTION. 3". See key. Orange rump and belly of the male diagnostic. Female has rump greenish-orange, throat yellowish-white, breast grey, abdomen yellow. Iris brown ; bill black ; feet dark grey.

VOICE. According to Motley, it continually utters a low shrill chirp. Banks describes a long-drawn-out *zeeee*. A repeated *sit* from male birds only (Harrisson).

HABITS. A common garden bird, also found in primary and secondary forest and in scrub jungle. When the male flies among the bushes he appears like a flash of flame, hence the Malay name.

FOOD. Mangrove fruits, sedge seeds, figs, minute insects (Medway).

NEST AND EGGS. Motley and Dillwyn describe the nest as having the form and size of a goose's egg, suspended by the small end from some slender twig of a tall tree, made of fine green moss lined with white fibres and a few small feathers. The egg is described by Sharpe as bluish-white, with tiny brown specks distributed over its surface, with a few longer spots of darker brown, principally at the large end, but also somewhat scattered over the rest of the egg. 16×12 mm.

RACES. (*a*) *D. t. trigonostigma*, in the Karimatas; (*b*) *D. t. megastomum* Hartert 1918, in the Natunas; (*c*) *D. t. dayakanum* Chasen & Kloss 1929, on the main island of Borneo.

SUNBIRDS AND SPIDERHUNTERS: Nectarinidae

I. SUNBIRDS (subfamily Nectariniinae)

From their habits and the brilliant metallic plumage of the males the sunbirds are an easy group to recognize; but the females are dull olive-green or yellow, and a number of different species resemble each other very closely. The tongue is long and almost tubular in structure and capable of extrusion beyond the bill, which in most species is long and slender.

The sunbirds feed largely at the blossoms of various flowering trees and shrubs, including coconut palms (which are almost always in flower), taking from them not only the nectar, but also the various small insects that they attract, and in return undoubtedly assisting to pollinate many species. They usually perch on the twigs and stems, flitting actively with shrill call-notes from flower to flower and often hovering on rapidly vibrating wings in front of a blossom, but only for a short time. When perched on a branch they have a curious habit, which they share with the spiderhunters, of rhythmically stretching and contracting their necks and at the same time swaying the body from side to side.

The nest is usually found hanging beneath the leaves at the end of a branch, and is a pear-shaped or oval structure with a small round or oval entrance at one side, often sheltered by a projecting porch. Fibres, rootlets and vegetable down are the materials, and cobwebs are extensively used to bind the structure together. The interior of the nest is usually lined with down.

Chasen (1937: 393) writing of *Nectarinia sperata*, *N. jugularis* and *Aethopyga* spp. says that they seem to feed mostly on nectar, but will also readily eat spiders, small insects and tiny caterpillars.

"Spiders I should put as the second item on the menu, second

only to nectar, and to obtain them the birds will hover in front of a web; *N. jugularis* will occasionally enter a bungalow and methodically search the cobwebs, etc., on the ceiling and in the corners of a room. Among insects, tiny flies and minute beetles are usually chosen. The birds usually seek their food on flowering bushes and garden flowers at no great height from the ground, preferring these to the inflorescences of the higher trees. The sight of the scarlet or carmine males of the several species of *Aethopyga* flitting about a bed of bright red cannas or a bush of red hibiscus is not one to be soon forgotten.

All these birds are very active when feeding, flitting from flower to flower like bees, even during the hottest hours of the tropical day, thrusting their long bills, and even their faces, which are sometimes smeared with pollen, into the flowers, and sucking up the nectar with their long tubular tongues, stretching out from precarious perches and performing amazing acrobatics in order to reach the opening of the flower. Repeated sips are often necessary to exhaust a flower. Very often the birds will seek the nectar by hovering in front of the flower, especially, of course, when no convenient perch is handy, but the hovering is not sustained for long, and although the wings are whirred rapidly, the hovering of sunbirds cannot be compared with the finished performance of the hummingbirds. Insects are numerous in the vicinity of the nectar and are greedily snapped up, and tiny flies, etc., will also be caught independently among the foliage of the trees. I have never seen a sunbird on the ground. In search of nectar they will puncture the base of flowers."

Of the larger and heavier sunbirds such as *A. malacensis* and *N. chalcostetha* he says :

"They also are nectar-and pollen-eaters, but the insects attracted to these sweet foods and also in other situations form a more important part of the diet. . . . The birds also show a preference for the inflorescences of higher trees, usually with a strong specific bias, *A. malacensis* for coconuts and *N. chalcosettha* for the flowers of trees of the mangrove association, especially the red bell-like blossoms of *Bruguiera*. These larger sunbirds will also hover in front of flowers, but they hover less and perch more often than do the smaller species when feeding, a habit perhaps to be correlated with their heavier bodies and the slender support offered by most flowers. They are certainly less active than the smaller species but, nevertheless, still more sprightly than most other birds of their size."

Winter or eclipse plumage. When using the key that follows it must be borne in mind that males are occasionally collected in a

plumage somewhat like that of the female. As Chasen puts it (1937 : 401) :

" It is a well-established fact that the males of some sunbirds . . . have a post-nuptial moult, in which they assume a ' winter ' or off-season dress, also known as the eclipse plumage, which is more like that of the adult female than their own resplendent breeding plumage. This post-nuptial moult has been examined in a few species and has been determined as of the body feathers only ; the complete moult takes place in the ' spring ', when the ornate full plumage is reassumed."

This eclipse plumage is confirmed for *N. jugularis* and suspected for *A. malacensis* and for *Aethopyga*, but is not known for *N. sperata*. The problem is not an easy one to study, for reasons given by Chasen.

KEY TO THE SUNBIRDS

1.	Underparts streaked	*N. hypogrammica*
	Underparts not streaked	2
2.	Lower breast and abdomen entirely yellow or greenish	3
	Lower breast and abdomen with other colours	13
3.	Abdomen yellow	4
	Abdomen olive or greyish-green	11
4.	Metallic purple band on sides of throat	5
	No metallic colour on throat	7
5.	Throat metallic purple	*N. jugularis* ♂
	Throat olive-brown	6
6.	Lesser wing-coverts metallic violet	*A. malacensis* ♂
	Lesser wing-coverts reddish-chestnut	*A. rhodolaema* ♂
7.	Throat yellow or cinnamon	8
	Throat whitish-grey	*N. chalcostetha* ♀
8.	Throat and upper breast cinnamon	*A. singalensis*
	Throat and upper breast yellow	9
9.	No white on tail	*A. malacensis*, *A. rhodolaema* ♀♀
	Some white on tail	10
10.	Throat pale yellow	*N. sperata* ♀
	Throat bright yellow	*N. jugularis* ♀
11.	Large (wing 2·4 ins.) ; bill short (18 mm.)	*A. simplex*
	Small (wing 2·0 ins.) ; bill long	12
12.	Wings and tail dark olive-green	*Ae. siparaja* ♀
	Wings and tail washed with red	*Ae. mystacalis* ♀
13.	Throat and breast scarlet	14
	Throat black, bronze-green, or metallic purple	15
14.	Abdomen pale grey	*Ae. mystacalis* ♂
	Abdomen dark grey	*Ae. siparaja* ♂
15.	Breast metallic violet	*N. chalcostetha* ♂
	Breast not metallic	*N. sperata* ♂

498. PLAIN-COLOURED SUNBIRD PLATE XL, 1

Anthreptes simplex (S. Müller) 1843

Malaya, Sumatra, Borneo.

A common resident throughout the lowlands of Borneo. Occurs in the North Natunas.

DESCRIPTION. 5". See key. Forehead metallic purple in the male, greenish in the female. Iris brown ; bill black, paler below ; feet dark brown or greenish.

HABITS. Harrisson finds it common on the Turtle Islands.

FOOD. Fruit.

NEST AND EGGS. Not described from Borneo.

499. BROWN-THROATED SUNBIRD PLATE XL, 2

Anthreptes malacensis (Scopoli) 1786

Tenasserim, S. Thailand, Indo-China, Malaysia, Celebes.

This and the Yellow-bellied Sunbird are probably the two commonest sunbirds in the lowlands of Borneo. Found up to 3,000 feet.

DESCRIPTION. 5". See key. Male has upperparts dark metallic, with a maroon patch on the inner wing-coverts ; throat brown with a purple border at the sides ; underparts deep olive-yellow. Female has upperparts olive-green ; underparts paler, greenish-yellow. Iris red ; bill black, paler below, gape orange ; feet grey or dark green, claws horn, soles orange or bright yellow.

VOICE. " The male . . . occasionally utters a feeble song, a few twittering notes, but very distinctly more of a song than the chirruping of an *Aethyopyga* " (Davison).

HABITS. Whitehead remarked on its abundance in the neighbourhood of coconut plantations, and Harrisson confirms this for the Turtle Islands. Davison, writing of Tenasserim, says " it is one of the most common of all the sunbirds, occurring in numbers in every garden and coconut plantation, amongst the mangroves that fringe the shores, and almost wherever flowers are to be seen ; only it seems to shun the denser portions of the forest and dense scrub jungle. Both this species and *A. hypogrammica* differ somewhat from the other sunbirds in feeding more largely on insects and less on nectar, and in making more use of their feet and less of their wings when moving about the flowers and foliage."

FOOD. Caterpillars, insects, very small black beetles, spiders, butterflies, fruits (Harrisson, Medway).

NEST AND EGGS. " The nest is a pocket, suspended from a branch in some tangled bush, and is much more open at the mouth in proportion than that of *N. jugularis* ; it is made of grass-stems and lined with the down off *lalang* grass, and bound together with spiders' webs. Eggs two, dull pink, thickly scribbled over with grey, spotted and sprinkled over with black, after the manner of some buntings " (Whitehead). 18×14 mm. The eggs have also been described by Sharpe.

RACES. (*a*) *A. m. malacensis*, in S. Borneo and the Karimatas ; (*b*) *A. m. mjobergi* Bangs & Peters 1927, in the Maratuas ; (*c*) *A. m. borneensis* Riley 1920, in N. Borneo, including the North Bornean islands and Mangalum Island. According to Chasen and Kloss, Sarawak birds are either *malacensis* or intermediate between that and *borneensis*, the difference being merely one of brightness of colour.

500. RUFOUS-THROATED SUNBIRD PLATE XL, 3

Anthreptes rhodolaema Shelley 1878

Malaysia.

Resident in the lowlands of Borneo, but less common than *A. malacensis*.

DESCRIPTION. 5". See key. Male is very like *A. malacensis*, but metallic green not purple on the mantle and back, and olive rather than bright yellow below. Female is darker and duller than female of *A. malacensis*. Iris dark brown ; bill black ; feet light olive-green.

HABITS. Not recorded from Borneo.

NEST AND EGGS. Not described from Borneo.

501. RUBY-CHEEKED SUNBIRD PLATE XL, 4

Anthreptes singalensis (Gmelin) 1789

Burma, Thailand, Indo-China, Malaysia.

Resident throughout the lowlands of Borneo but not often seen. Harrisson obtained two in the Kelabit uplands at Pa Main.

DESCRIPTION. 4¼". See key. Cinnamon throat and breast of both sexes distinctive. Male appears blackish above in the shade and a brilliant metallic green in sunlight. Iris red ; bill black ; feet grey-brown or olive.

PLATE XL

PLATE XL

Page

1. PLAIN COLOURED SUNBIRD 471
Anthreptes simplex.

2*a*. BROWN-THROATED SUNBIRD (♂) 471
Anthreptes malacensis borneensis.

2*b*. BROWN-THROATED SUNBIRD (♀) 471
Anthreptes malacensis borneensis.

3. RUFOUS-THROATED SUNBIRD 472
Anthreptes rhodolaema.

4. RUBY-CHEEKED SUNBIRD. 472
Anthreptes singalensis borneana.

5. PURPLE-NAPED SUNBIRD 474
Nectarinia hypogrammica hypogrammica.

6. VAN HASSELT'S SUNBIRD 474
Nectarinia sperata brasiliana.

7. MACKLOT'S SUNBIRD 475
Nectarinia chalcostetha.

8*a*. YELLOW-BREASTED SUNBIRD (♂) 475
Nectarinia jugularis ornata.

8*b*. YELLOW-BREASTED SUNBIRD (♀) 475
Nectarinia jugularis ornata.

9*a*. YELLOW-BACKED SUNBIRD (♂) 476
Aethopyga siparaja siparaja.

9*b*. YELLOW-BACKED SUNBIRD (♀) 476
Aethopyga siparaja siparaja.

10. SCARLET SUNBIRD 477
Aethopyga mystacalis temminckii.

VOICE. A shrill chirp (Motley).

HABITS. Davison nearly always observed it in flocks of five to ten birds, moving and working together in concert like a flock of tits or white-eyes, unlike other sunbirds which sometimes collect together on one tree but do not behave as a flock. Motley also found it in small parties, frequenting the Casuarina trees on Labuan, their stomachs full of Casuarina pollen.

FOOD. Caterpillars, sandflies, winged insects, ants, pollen, small fruits (Medway).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *A. s. pallida* Chasen 1934, in the North Natunas; (*b*) *A. s. borneana* (Kloss) 1921, on the main island of Borneo and on Banggi Island.

502. PURPLE-NAPED SUNBIRD PLATE XL, 5

Nectarinia hypogrammica S. Müller 1843

Burma to Indo-China; Malaysia.

A common resident in the lowlands of Borneo.

DESCRIPTION. 5½". Coarsely streaked underparts diagnostic. Male has metallic purple bands across nape and rump. Iris red or brown; bill black; feet brown or dark olive, soles yellow.

HABITS. Not described from Borneo.

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *N. h. hypogrammica*, on the main island of Borneo; (*b*) *N. h. natunensis* (Chasen) 1935, in the North Natunas.

503. VAN HASSELT'S SUNBIRD PLATE XL, 6

Nectarinia sperata (Linnaeus) 1766

Widespread in S.E. Asia.

A common resident in the lowlands of Borneo in open country, and Harrisson obtained two in the Kelabit uplands.

DESCRIPTION. 3½". See key. Male is a dark-coloured little bird of brilliant metallic hues to which no description can give justice. Female is remarkably like female *Ae. siparaja* but can be distinguished by shorter tail (1·1 as against 1·4 inches) and yellower underparts. Iris, bill and feet black.

VOICE. Edgar states that the note reminds one of a flowerpecker but is not so sharp; sometimes a little *sisisi*, and at intervals a *wheep*.

HABITS. Frequents rubber gardens, open country, and scrub jungle.

FOOD. Seeds, nectar, fruit, minute insects, including green aphids (Harrisson, Medway).

NEST AND EGGS. Sharpe describes an egg sent by Low from Labuan as creamy-white, with longitudinal streaks of light reddish-brown or purplish-grey extending nearly the whole length of the egg, and sometimes confluent so as to hide the ground-colour. 18 × 14 mm.

RACES. (*a*) *N. s. sperata*, with mantle red, in the Maratuas; (*b*) *N. s. axantha* (Oberholser) 1932, in the Natunas; (*c*) *N. s. brasiliana* (Gmelin) 1788, with mantle black, on the main island of Borneo.

PLATE XL, 7 **504. MACKLOT'S SUNBIRD** PHOTO PLATE 46

Nectarinia chalcostetha Jardine 1843

Malaysia, Celebes.

Resident in the coastal districts of Borneo and all the main island groups.

DESCRIPTION. 5". See key. Rather large for a sunbird. Male appears almost black in the field, the orange pectoral tufts often visible on the sides of the breast. Female has white tips to the black tail; throat and breast pale grey, remaining underparts yellow. Iris dark brown; bill and feet black.

VOICE. A deep trill (Harrisson).

HABITS. Almost entirely confined to mangrove forests, and coconut palms or Casuarina trees near the beach. Has a characteristic sharp dipping flight (Banks).

NEST AND EGGS. Not described from Borneo.

PLATE XL, 8 **505. YELLOW-BREASTED SUNBIRD** PHOTO PLATE 47

Nectarinia jugularis (Linnaeus) 1766

Widespread in S.E. Asia, extending to N. Australia.

A common resident throughout the lowlands of Borneo in gardens, cultivated country, and secondary forest; on the mountains it reaches 3,000 feet at least. Recorded from all the main island groups except the Maratuas.

DESCRIPTION. 4". See key. Bright yellow underparts and black tail with broad white tips to lateral feathers diagnostic. Male has the throat metallic purple-black. Iris dark brown; bill and feet black.

HABITS. "I think there is no doubt that this lovely little bird

feeds almost entirely on honey; three or four of them frequent all day long a beautiful plant of *Russelia juncea* just before my office window, clinging to the slender twigs in all sorts of positions, and turning up the scarlet bells to insert their fairy little beaks. They appear very sociable little birds, never passing one another without putting their beaks together with a little chirp. If anyone comes too near, off they go like meteors, but are back in a minute. I think I never saw anything more beautiful than this plant . . . its long pendant twigs are one blaze of scarlet blossoms for months together, with half-a-dozen of these living gems flitting among them " (Motley, writing of Labuan).

Food. Examination of stomachs shows that in addition to honey the birds take locustids, ants, and insects.

Nest and Eggs. The nest and eggs have been described by Whitehead and Bartlett, the eggs by Sharpe and Gibson-Hill. Whitehead writes: " I have seen many nests of this bird, which are generally suspended about three or four feet from the ground on an outside branch of some bush or small tree. The nest is often a beautiful structure, composed of dead leaves; over the small entrance-hole is a roof which projects to keep out the wet. At the bottom is generally a long streamer which assists in making the nest look much like a lump of leaf-refuse that has got caught up in the branches. Inside the nest is lined with *lalang* grass down, from the seeds of that plant.

The eggs are always two in number, of a pale greenish-blue ground-colour, sometimes thickly clouded with light brown, and slightly speckled with small black spots, or of the same underlying colour only slightly marked with greyish blotches and small black spots." About 16×11 mm.

In Kuala Belait a pair of these birds attached their nest to a corner of the leaf-attap roof of a " kajang " building in which I was living.

Race. *N. j. ornata* (Lesson) 1827.

506. YELLOW-BACKED SUNBIRD PLATE XL, 9

Aethopyga siparaja (Raffles) 1822

Widespread in S.E. Asia.

A common resident in the lowlands of Borneo, and often seen in gardens. Ascends to 3,900 feet.

Description. 4" (♂), 3½" (♀). See key. Male can only be confused with male of next species. For distinctions between female of this

and of *N. sperata* see under that species. Iris very dark brown; upper mandible black, lower yellowish-brown underneath; feet bluish-horn, soles yellow.

HABITS. Motley found it common in mangrove forests round Bandjarmasin. Whitehead described it as " fairly common in the lowland forests, and found on Kinabalu up to 2,000 feet, above which elevation its place is immediately taken by *Ae. mystacalis* neither species seeming to overlap the range of the other ". This does not hold good for the Kelabit uplands, where Harrisson obtained it up to 3,900 feet, and *mystacalis* down to 3,200 feet.

FOOD. Insects only (Harrisson).

NEST AND EGGS. " In the end of April I found a nest of this species which was placed under an overhanging bank amongst loose roots of trees. The nest was a long pocket made outwardly of dead grass and lined with fine roots. The eggs were two in number, of a pale salmon-pink, blotched with darker tints at the larger end, then spotted and marked with dark lake-red " (Whitehead). The eggs have also been described by Sharpe. 14×10 mm.

RACES. (*a*) *Ae. s. siparaja*, on the main island of Borneo and on Banggi Island, the Maratuas, and the Karimatas; (*b*) *Ae. s. natunae* Chasen 1934, in the Natunas.

507. SCARLET SUNBIRD PLATE XL, 10

Aethopyga mystacalis (Temminck) 1822

Malaysia.

A submontane resident, throughout the mountains of Borneo at moderate elevations.

DESCRIPTION. 4½". See key. Red tail and light grey belly distinguish the male from the preceding species. Female has head and throat grey, and the wings and tail washed with red. Iris dark brown; feet pale horn; bill horn.

HABITS. " Found on Kinabalu at 2,000–6,000 feet, but most plentiful about 4,000 feet, where it frequents the high forest trees and feeds among the many parasitical plants which cover their boughs with many beautiful flowers " (Whitehead).

FOOD. Flowers, nectar. A striking paucity of insect food (Harrisson).

NEST AND EGGS. Harrisson observed nest building at Bario on 28 November.

RACE. *Ae. m. temmincki* (S. Müller) 1843.

II. SPIDERHUNTERS (subfamily Arachnotherinae)

The spiderhunters are large sunbirds of mainly olive-green colour with very long curved bills. They are well represented in Borneo, where seven of the nine known species are found.

Male spiderhunters are fond of displaying the brightly coloured tufts of axillary feathers, which some species possess; when displaying the bird balances almost upright with the bill nearly vertical, and the wings vibrating rapidly. Some of the metallic sunbirds display in a similar fashion.

Although called spiderhunters, there is some doubt whether they in fact hunt spiders to a greater extent than some of the sunbirds. Thus Davison maintained that their diet consisted chiefly of nectar. Chasen comments (1937 : 395) :

" I feel a little doubtful about this, and have often watched birds when they were clearly foraging for living food, collecting insects among the foliage, and spiders, the latter maybe by hovering in front of the web. Even the largest species will hover in front of a flower if this is a convenient way of getting at the opening. Robinson has described another characteristic method of feeding, the birds running up the midribs of large banana leaves in a creeper-like fashion, searching for insects, etc."

Robinson recorded of *A. modesta* that its food in part at least consists of vegetable matter, especially the purple seeds of a shrubby plant, and Ridley saw one pursuing a large cricket.

The nest of a spiderhunter is a cup suspended from the under surface of a large leaf.

Sliman calls these birds *kerasak*, a name not given in Wilkinson's Dictionary and perhaps derived from Iban.

KEY TO THE SPIDERHUNTERS

		Arachnothera
1.	Throat not streaked	2
	Throat streaked	5
2.	Throat greyish-white	*longirostris*
	Throat greyish-yellow	3
3.	No yellow on face	*crassirostris*
	Yellow on face	4
4.	Large (wing 3·8–4·2 ins.); a small yellow cheek-patch of normal feathers	*flavigaster*
	Smaller (wing 3·2–3·6 ins.); yellow cheek-patch of elongated feathers	*chrysogenys*
5.	Underparts faintly streaked	6
	Underparts heavily streaked	*juliae*
6.	Abdomen yellow	*robusta*
	Abdomen grey	*affinis*

508. LITTLE SPIDERHUNTER PLATE XLI, 1

Arachnothera longirostris (Latham) 1790 *Engkerasak* (I)

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo, reaching 3,700 feet on mountains.

DESCRIPTION. 6". See key. Identify by small size and yellow belly. Iris brown ; bill black above, grey below ; feet blue-grey.

VOICE. I have recorded a plaintive single call-note, and a repeated call of four notes, the first higher in pitch.

HABITS. According to Hume, Davison " always found it . . . most numerous in plantain gardens, where it may be seen generally upside down, clinging to the purple bract leaves of the young plantain bunches, its head turned up inside the bract, and thus hidden from sight, busily sucking the nectar from the inflorescence concealed beneath the purple sheath." Davison also " found it not uncommon in coconut plantations, and the undergrowth on the outskirts of forest, and in scrub-jungle." A Kelabit omen bird.

FOOD. Soft insects, locustids (Harrisson).

NEST AND EGGS. Nest and eggs have been described by Whitehead Bartlett and Shelford, the latter with a drawing of the nest. " The nest is different from that of *A. affinis*, the entire structure being sewn on to the underside of some large leaf, which forms one side of a pocket. The building materials are dead leaves " (Whitehead). The eggs are pinkish-white, with a bright red-brown ring at the larger end, and a few specks scattered over the rest of the surface.

RACES. (*a*) *A. l. rothschildi* van Oort 1910, in the North Natunas ; (*b*) *A. l. atita* Oberholser 1932, in the South Natunas ; (*c*) *A. l. buttikoferi* van Oort 1910, on the mainland of Borneo.

509. THICK-BILLED SPIDERHUNTER PLATE XLI, 2

Arachnothera crassirostris (Reichenbach) 1854
Engkerasak kampong (I)

Malaya, Sumatra, Borneo.

Sparingly distributed and resident throughout the lowland forests of Borneo.

DESCRIPTION. 6". See key. Orange pectoral tufts in the male. Not much larger than Little Spiderhunter, and distinguished by greenish throat and breast and greener belly. Thick bill, dark streak through eye, and yellow stripe above and below eye, are noticeable

PLATE XLI

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1. LITTLE SPIDERHUNTER 479
Arachnothera longirostra buttikoferi.

2. THICK-BILLED SPIDERHUNTER 479
Arachnothera crassirostris.

3. GREATER YELLOW-EARED SPIDERHUNTER . . . 481
Arachnothera flavigaster.

4. LONG-BILLED SPIDERHUNTER 481
Arachnothera robusta robusta.

5. LESSER YELLOW-EARED SPIDERHUNTER . . . 482
Arachnothera chrysogenys harrissoni.

6. GREY-BREASTED SPIDERHUNTER 482
Arachnothera affinis modesta.

7. WHITEHEAD'S SPIDERHUNTER 483
Arachnothera juliae.

PLATE XLI

1958

THREE INCHES
0 1 2 3
0 25 50 75
75 mm

in the field (Edgar). Iris brown ; upper mandible black, lower has basal half grey rest black ; feet blackish.

VOICE. Edgar reports that it is rather noisy, the note being a *chit-chit* and a *chissie chissie*.

FOOD. Soft insects ; a small butterfly once (Harrisson).

NEST AND EGGS. Bartlett states that the nest is similar to that of *A. robusta* but much smaller, not measuring over six to eight inches.

PLATE XLI, 4 **510. LONG-BILLED SPIDERHUNTER** PHOTO PLATE 48

Arachnothera robusta Müller & Schlegel 1845 *Simatong* (I)

Malaysia.

Resident in the lowlands of Borneo, but local and erratic in distribution.

DESCRIPTION. 7½". See key. Identify by large size, long bill and white tips to lateral tail-feathers. The male has an orange tuft on each side of the breast. Iris dark ; bill black, base of lower mandible pale ; feet blackish-brown.

HABITS. A bird of primary and secondary forest. Very aggressive and bold, and thus not infrequently caught in nooses and snares by Malay and Dayak boys, and is then fierce in the hand (Harrisson).

FOOD. Spiders and often soft insects (Harrisson).

NEST AND EGGS. " The nest is placed on the underside of a large leaf, sometimes three feet long, the nest itself being about eighteen inches long . . . it is composed principally of coarse fibres, and is fastened on by means of threads passed through the leaf, and knots are twisted on the upper side in two regular rows. The eggs, two in number, are pure white, with a series of beautiful fine black hair-like lines on the top of the large end " (Bartlett). See also Gibson-Hill 1950 : 129–131. Eggs about 22 × 16 mm.

RACE. *A. r. robusta*.

511. GREATER YELLOW-EARED SPIDERHUNTER

PLATE XLI, 3

Arachnothera flavigaster (Eyton) 1839

Malaya, Sumatra, Borneo.

Resident throughout Borneo, but probably the rarest of the spiderhunters in most localities ; reaches 5,500 feet (specimen from above Bario).

DESCRIPTION. 7". See key. This and the next species are probably difficult to differentiate in the field ; this has a broader yellow eyering and a smaller yellow cheek patch ; both lack pectoral

tufts. In the hand the broad unridged bill of this species differs from the narrower ridged bill of the next species.

HABITS. A bird of cultivation, coconut gardens, and secondary jungle (Banks).

NEST AND EGGS. Some of its nests between large rubber-tree leaves are sewn together, but others are suspended under a coconut palm frond slung from the leaf sections (Banks). Banks found it nesting on Mt. Dulit.

512. LESSER YELLOW-EARED SPIDERHUNTER

PLATE XLI, 5

Arachnothera chrysogenys (Temminck) 1826

Malaysia.

Resident throughout Borneo in the lowland forests, but not common.

DESCRIPTION. See key and see under preceding species. Iris dark brown ; bill blackish, paler along edge ; feet dirty-white.

VOICE. Robinson describes its note as three short syllables followed by a long one—*twit-twit-twit-twee-ee*, the last note much prolonged.

HABITS. Not described from Borneo.

FOOD. Small fruits, spiders, seeds (Medway).

NEST AND EGGS. Not described from Borneo.

RACE. *A. c. harrissoni* Deignan 1957 (*Proc. Biol. Soc. Washington* 1957, 70 : 44. Type locality Labuan Kelambu in eastern Borneo).

513. GREY-BREASTED SPIDERHUNTER PLATE XLI, 6

Arachnothera affinis (Horsfield) 1821

Malaysia.

Resident throughout Borneo in primary forest up to 4,000 feet.

DESCRIPTION. 6½". See key. Grey underparts and black-tipped tail diagnostic. Iris brown ; bill blackish above, paler below ; feet flesh.

HABITS. Whitehead notes that both this species and *A. longirostris* fly low and fast through the jungle, uttering their peculiar call-note at short intervals. Frequents primary and secondary forest and gardens.

FOOD. Spiders, banana flowers, seeds.

NEST AND EGGS. Whitehead took several nests in March and writes : " Makes a beautiful cup-like nest, which it suspends from

tufts. In the hand the broad unridged bill of this species differs from the narrower ridged bill of the next species.

HABITS. A bird of cultivation, coconut gardens, and secondary jungle (Banks).

NEST AND EGGS. Some of its nests between large rubber-tree leaves are sewn together, but others are suspended under a coconut palm frond slung from the leaf sections (Banks). Banks found it nesting on Mt. Dulit.

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PLATE XLI, 5

Arachnothera chrysogenys (Temminck) 1826

Malaysia.

Resident throughout Borneo in the lowland forests, but not common.

DESCRIPTION. See key and see under preceding species. Iris dark brown ; bill blackish, paler along edge ; feet dirty-white.

VOICE. Robinson describes its note as three short syllables followed by a long one—*twit-twit-twit-twee-ee*, the last note much prolonged.

HABITS. Not described from Borneo.

FOOD. Small fruits, spiders, seeds (Medway).

NEST AND EGGS. Not described from Borneo.

RACE. *A. c. harrissoni* Deignan 1957 (*Proc. Biol. Soc. Washington* 1957, 70 : 44. Type locality Labuan Kelambu in eastern Borneo).

513. GREY-BREASTED SPIDERHUNTER PLATE XLI, 6

Arachnothera affinis (Horsfield) 1821

Malaysia.

Resident throughout Borneo in primary forest up to 4,000 feet.

DESCRIPTION. 6½". See key. Grey underparts and black-tipped tail diagnostic. Iris brown ; bill blackish above, paler below ; feet flesh.

HABITS. Whitehead notes that both this species and *A. longirostris* fly low and fast through the jungle, uttering their peculiar call-note at short intervals. Frequents primary and secondary forest and gardens.

FOOD. Spiders, banana flowers, seeds.

NEST AND EGGS. Whitehead took several nests in March and writes : " Makes a beautiful cup-like nest, which it suspends from

the underside of some large leaf. The nest is fastened to the leaf by spiders' web, which is sewn through. It is composed of a bright brown silky substance, which is found on the young fronds of ferns; a good deal of white down from seeds is also used. The outside is covered with small flower- and plant-stems, stuck together with spiders' web.

The eggs, two in number, of a deep olive-brown, mottled and clouded all over with grey specks, sometimes with a well-marked zone of black spots and blotches." The eggs have also been described by Gibson-Hill. Size 24×18 mm. (Whitehead), 21×15 mm. (Gibson-Hill).

RACES. (*a*) *A. f. modesta* (Eyton) 1839, over most of Borneo; (*b*) *A. f. everetti* (Sharpe) 1893, a race with more heavily streaked breast, whose status is not clear; (*c*) *A. f. pars* Riley 1939, in E. Borneo.

514. WHITEHEAD'S SPIDERHUNTER PLATE XLI, 7

Arachnothera juliae Sharpe 1887

Confined to Borneo. A montane resident, locally common, ranging from Kinabalu along the spinal chain to the Usun Apau Plateau and Mt. Dulit; also on Mt. Mulu. Apparently absent from Mt. Trus Madi.

DESCRIPTION. See key. A striking and unmistakable species. Iris chocolate; bill and feet black.

VOICE. A long twittering note, head up, bill tilted up (Harrisson). A short sharp bleat, and a thin high-pitched squeaky song (Smythies).

HABITS. A bird of the moss forest. "This spiderhunter, one of the finest of my discoveries, was scarce on Kinabalu. During my first expedition I only obtained one specimen, and altogether, by carefully watching some high trees in a large forest for a month, only collected six specimens. These birds seldom left the orchids and other plants which flower on the tops of the highest trees" (Whitehead). I was more fortunate, and on one unforgettable occasion I watched for a long time a party of five of these lovely birds chasing each other around in low bushes beside the road in the golden evening sunlight—one of the most beautiful bird scenes in my experience.

FOOD. Regularly feeds by probing rhododendron blossoms—a glorious sight (Harrisson). Whitehead noted that the food does not consist of insects exclusively; one specimen had several small berries in the throat.

NEST AND EGGS. Unknown.

WHITE-EYES : Zosteropidae

This is a large family, spread over Africa, southern Asia, and Australia. The name is derived from the ring of white feathers round the eye, more or less conspicuous in all species in our area except for the Mountain Black-eye, which has a black eye-ring. Typical white-eyes are extremely active and restless tit-like birds of the tree-tops and understorey, often found in flocks outside the breeding season. They feed on insects and berries, and search for nectar in flowers like sunbirds and flowerpeckers. The nest is a neat cup, in the fork of a branch.

KEY TO THE GENUS ZOSTEROPS

1.	Whole underside, including flanks, yellow . . .	2
	Flanks grey or pale grey	3
2.	Tail short (to 33 mm.) greenish edges to tail-feathers. No dark loral spot	*flava*
	Tail long (35–40 mm.) without greenish edges, black loral spot present	*chloris*
3.	Forehead black (much reduced in juveniles but always visible)	*atricapilla*
	Forehead not black, yellow above lores, narrow yellow ventral line, flanks pale grey ; coastal	*p. auriventer*
	Forehead not black, no yellow over lores, broad yellow ventral line, flanks dark grey ; interior . . .	*e. tahanensis*

515. ORIENTAL WHITE-EYE PLATE XLII, 1

Zosterops palpebrosa (Temminck) 1824

Widespread in S.E. Asia.

In Borneo it has been collected in the South Natuna Islands, and in S.W. Sarawak (Kuching, Santubong, Penrissen). [The upper Baleh specimen collected in August 1956, see Checklist p. 765, proves on examination to be *tahanensis* !]

DESCRIPTION. $3\frac{3}{4}$". See key. Iris yellow-brown ; bill dark brown ; feet olive-grey.

VOICE. Members of a party constantly utter a rather monotonous querulous *chee-chee-chee* or *tseer-tseer*, like the cheeping of a one-day-old chick, which at once attracts attention.

HABITS. A bird of mangroves and adjoining coastal areas.

NEST AND EGGS. Not described from Borneo.

RACE. *Z. p. auriventer* Hume 1878.

516. BLACK-CAPPED WHITE-EYE PLATE XLII, 3

Zosterops atricapilla Salvadori 1879

Malaya, Sumatra, Borneo.

A higher montane resident on Kinabalu from 3,000 feet upwards. One from Mt. Mulu at 4,500 feet.

DESCRIPTION. $3\frac{3}{4}$". See key.

HABITS. Not described from Borneo.

NEST AND EGGS. " I found a nest of this species " (at 5,000 feet on Kinabalu, probably in March), " which was built of fine roots on the underside of a moss-covered bough, in the damp dark forests on the slopes of the mountain. The old birds were feeding their young on grubs " (Whitehead).

RACE. *Z. a. atricapilla.*

517. MANGROVE WHITE-EYE PLATE XLII, 5

Zosterops chloris Bonaparte 1850

Islands of the Java Sea ; Moluccas.

In our area known only from the Karimata Islands.

DESCRIPTION. 4". See key.

RACE. *Z. c. maxi* Finsch 1907.

518. JAVAN WHITE-EYE PLATE XLII, 4

Zosterops flava (Horsfield) 1821

Java and Borneo.

Collected at Bandjarmasin by Schwaner, by Motley, and by Hombron and Jacquinot. A single specimen was obtained at Pending, near Kuching, on 2 July 1892 (Moulton 1914*b* : 192) but has disappeared from the Museum collection.

DESCRIPTION. $3\frac{3}{4}$". See key.

HABITS. Motley noted that it frequented especially the flowers of the Lausat (*Lausium domesticum*).

519. EVERETT'S WHITE-EYE PLATE XLII, 2

Zosterops everetti Tweeddale 1877

Peninsular Thailand; Malaya, W. and N. W. Borneo, Philippines.

A submontane resident ranging from the lower slopes of Kinabalu to the Poi range. Not so far recorded in Indonesian Borneo.

DESCRIPTION. $3\frac{3}{4}$". See key.

HABITS. " Fairly common on the lower slopes of Kinabalu, frequenting the more open spaces, flying in twittering flocks amongst the tops of small trees " (Whitehead).

NEST AND EGGS. Not described from Borneo.

RACE. *Z. e. tahanensis* Ogilvie-Grant 1906.

520. PYGMY WHITE-EYE PLATE XXXII, 9

Oculocincta squamifrons (Sharpe) 1892

Confined to Borneo. Montane resident ranging from Kinabalu along the spinal chain to Mt. Kenepai, including Mt. Dulit and Mt. Penrissen but not the Poi range. On Kinabalu it has been collected as low as 600 feet, and it occurs on Mt. Magdalena at 4,000 feet.

DESCRIPTION. 3¾". Thin white eyering. Olive-grey above, yellowish-white below. Forehead speckled with white, hence the specific name. Iris buff-white; bill brownish-black; feet pale greenish.

VOICE. *Chit chit chit* (Harrisson).

HABITS. Found in moss forest, village clearings, and scrub jungle; keeps low, and will approach humans and cattle very closely in dense scrub, somewhat like the Friendly Warbler (Harrisson).

FOOD. Berries and seeds.

NEST AND EGGS. Unknown.

521. MOUNTAIN BLACKEYE PLATE XXXII, 2

Chlorocharis emiliae Sharpe 1888

Confined to Borneo. A higher montane resident, locally common; it is much the commonest bird above 10,000 feet on Kinabalu (Harrisson) and above 7,000 feet on Mt. Trus Madi (Boys). It has also been collected on the Maga mountains, Tama Abo range, Mt. Mulu, and Mt. Poi, but is very local in these areas.

DESCRIPTION. 4½". Dark olive-green with yellow ear-coverts and eyebrows, black lores, and a black ring round the eyes. Iris yellow-brown; bill orange-yellow; feet yellow, claws horn.

VOICE. The following is condensed from Harrisson's account (1955) of the bird on Kinabalu. The song is melodious, much like a thrush. The call-notes are heard all day from 7.30 (when the summit is usually wrapped in grey cloud and mist) to 17.00 hours (by which time the weather has normally closed down to wet gloom above 10,000 feet) and have a twittering finch-like quality. *Twt-u* or *stwt-u* or *te-wio* and in flight a call not heard when settled *gujuguju*, a sort of stuttering call the *u* short all through. Jangling notes also in flight.

HABITS. "The vegetation above 10,000 feet on this great granite peak is not exactly parallelled anywhere else in Borneo. It is predominantly heathers, conifers, rhododendrons, pitcher plants, mosses, lichens, etc., with nothing above 25–30 feet high except in sheltered

gulleys, where a few reach tree stature. The higher you go, the lower the vegetation. At 11,500–12,500 feet it is mostly below head-high. Then it gradually fades out into bare, slippery, frigid rock, except for little pockets and clefts with stunted heather, moss, etc.

"It ranges throughout this environment, from tree-tops to near the ground, and in dwarf clumps close to the bare summit. . . . This arboreal habit encourages it to roam downward where the tree levels rise quickly as the mountain falls steeply towards the lowlands. But it never goes below the strictly upper montane, 'moss forest' habitat. . . . On top of Kinabalu it is easily the most conspicuous and probably the commonest bird.

"It goes up to the very limits of vegetation in gulleys and crevices of the almost bare granite cap to the great mountain. I saw it in dwarf clumps of heather close to the top. Its flight, which I recorded as 'irregular, fastish,' is strong and it is a very active little bird." (Harrisson).

Food. "The food includes both animal and vegetable matter, but insect food is clearly preferred; vegetable matter is taken only very sparingly, even when the stomach remains empty" (Harrisson).

Nest and Eggs. It appears to nest in dense heath. Both Whitehead and Harrisson collected young just out of the nest in February, and the latter considered that most eggs were laid about the turn of the year, with second broods in late February and March. The nest is built four to twenty feet up in a fork. It is a rather flattened compact cup of tendrils and coarse dead grasses, with some lichen and "staghorns" and also heather rootlets included, lined with finer grasses and moss fibres of a brilliant orange colour giving a vivid and unusual effect (two nests collected by E. F. Allen and E. J. H. Berwick in 1958, described by Harrisson).

Races. (*a*) *C. e. emiliae*, on Kinabalu only; (*b*) *C. e. trinitae* Harrisson 1956, on Mt. Trus Madi, has underparts pale green to yellowish, quite distinct from dark green of (*a*) or yellow of (*c*) and the crown not sepia or well defined as in (*c*); (*c*) *C. e. fusiceps* Mees 1955, on the Maga mountains; (*d*) *C. e. moultoni* Chasen & Kloss 1927, much yellower, elsewhere.

FINCHES: Fringillidae

Finches are small seed-eating birds with a heavy conical bill and a forked tail, well-known in the temperate regions of America, Europe and Asia down to the Himalayas, but almost absent from our area.

522. LITTLE BUNTING

Emberiza pusilla Pallas 1776

N. Palaearctic. A stray in Borneo, where a single specimen was collected at Tegora by H. H. Everett many years ago.

DESCRIPTION. 5½". Distinguished by rufous sides of head, grey-streaked back, underparts greyish-white with fine black streaks. The note is a high quiet *pwick*.

STARLINGS : Sturnidae

Starlings are found throughout the Old World, but are poorly represented in Borneo, where only two species are common ; of the mynas that are such a conspicuous feature of bird life on the mainland of S.E. Asia, only the Grackle is found with us. *Perling* (M) is a general name for starlings.

523. GLOSSY STARLING PLATE XLIV, 1

Aplonis panayensis (Scopoli) 1783
Burong lilin (M) ; *pianglin* (I)

From Bengal to Indo-China, Malaysia, Philippines, Celebes.

An abundant resident of coastal districts in Borneo, and Harrisson collected one at Bario.

DESCRIPTION. 8". Adults are all black with green gloss and a conspicuous red iris. Immature birds are whitish below strongly streaked with black. Bill and feet black, soles dirty white.

VOICE. A loud clear metallic note is frequently uttered on the wing.

HABITS. A typical social starling, flocking together and roosting and nesting in large numbers. The flight is swift and direct. Large numbers live in towns such as Kuching.

FOOD. Mainly fruit. At Tarat near Serian a major pest of pepper (K. E. H. Kay).

NEST AND EGGS. Breeding described by Motley and Dillwyn, and by Bartlett. It nests in colonies on cliffs, in hollow trees, or in the roof of a building (*e.g.* the round water tower in Kuching). Eggs pale blue. 28×18 mm.

RACES. (*a*) *A. p. heterochlora* (Oberholser) 1917, on the North Bornean islands ; (*b*) *A. p. alipodis* (Oberholser) 1926 on the Maratuas ; (*c*) *A. p. strigata* (Horsfield) 1821, in North Borneo ; (*d*) *A. p. eustathis* (Oberholser) 1926, elsewhere.

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1. ORIENTAL WHITE-EYE 484
Zosterops palpebrosa auriventer.

2. EVERETT'S WHITE-EYE 485
Zosterops everetti tahanensis.

3. BLACK-CAPPED WHITE-EYE 485
Zosterops atricapilla atricapilla.

4. JAVAN WHITE-EYE 485
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Lonchura leucogastra.

11. CHESTNUT MUNIA 497
Lonchura malacca jagori.

523a. DAURIAN STARLING

Sturnus sturninus (Pallas) 1776

Breeds Central Asia to China, reaching Malaysia in winter in small numbers. There is one specimen from Borneo in the British Museum, collected by Everett on the Baram in November 1892.

DESCRIPTION. 7". Adult male is distinguished from that of the next species by having no chestnut on ear-coverts or neck, no grey band on the breast, and a rufous rump; female and young differ in having the rump and throat pale grey or brown, not fulvous.

524. VIOLET-BACKED STARLING PLATE XLIV, 2

Sturnus philippensis (Forster) 1781

Breeds in Japan, and is an irregular winter visitor to N. Borneo and Sarawak not so far recorded south of the Kuching area. Whitehead saw a large flock in Labuan on small berry-bearing shrubs, and Morrison saw large mixed flocks of this and immature Glossy Starlings at Awat Awat, Brunei Bay, in Casuarina trees on 12 November, and odd specimens have been collected elsewhere, including one at Bario on 27 October. I saw about forty in Brunei town on a rubber tree outside my house on 19 January 1959, and again on 18 February mixing with Glossy Starlings.

DESCRIPTION. 6½". White or buffy head at once distinguishes from Glossy Starling. Sexes differ. Adult male has a chestnut collar from side of head across lower throat; back and wings black, with violet gloss on back and green gloss on wings; a broad white bar across the base of the wing; rump buff, tail black. Female is dirty grey-brown above, the wings and tail blackish; head and rump whitish; ear-coverts and sides of throat chestnut. Iris rich brown; bill black, pinkish at base; feet dark jade green, soles pinky-white.

525. GRACKLE or TALKING MYNA PLATE XLIV, 3

Gracula religiosa Linnaeus 1758 *Tiong* (M)

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo; occurs in the Natunas and Karimatas. A migrant to the Kelabit uplands, arriving in October.

DESCRIPTION. 12". Unmistakable. Iris very dark brown; eyelids pale orange; ear flaps orange-yellow; bill red, the terminal third pale yellow; feet yellow, claws horn.

VOICE. This is a popular cage bird, well known throughout Malaysia; it is called *tiong* in Sarawak, and *beo* in Java. It has an immense repertoire of notes, some of which are melodious and others noisy and raucous; in a wild state the notes of other birds are copied freely, and in captivity it may be taught to talk, hence the alternative

English name. Perhaps its most distinctive note in the wild is a high-pitched sibilant whistle of great power.

HABITS. It is seldom seen in flocks in our area, nearly always in pairs, which perch conspicuously on tall trees or fly across open spaces from one tall tree to another; in its nuptial display flight it rises and stalls like an Imperial Pigeon.

FOOD. Fruit, berries, large insects (Medway).

NEST AND EGGS. The eggs are laid in a hole in a tree, and have been described by Sharpe and by Bartlett; they are pale blue, sparingly spotted and blotched with pale brown. 38×28 mm.

RACE. *G. r. religiosa.*

WOOD SHRIKES: Prionopidae

526. BALD-HEADED WOOD SHRIKE PLATE XLV, 3

Pityriasis gymnocephala (Temminck) 1835 *Tiong batu* (M)

Confined to Borneo. A rare bird of the lowland forest. Details of all specimens collected to date are given in the Checklist; they cover all parts of Borneo, yet few observers have seen it in the field. It goes up to 4,000 feet.

DESCRIPTION. 10". Sexes differ, the female having red spots on the flanks which are absent in the male. Iris black; bill black; feet yellow. Owing to its massive hooked bill in front and comparatively short tail behind the bird has a top-heavy appearance in the field.

VOICE. It utters curious nasal whining high-pitched notes, interspersed with harsh notes almost corvine in character. Sometimes the birds of a party indulge in a chorus, which consists of a rolling note followed by the nasal whining note, or sometimes the latter note followed by a similar note lower in pitch. The calls are difficult to put into writing, but the curious nasal tone, once heard a few times, is most distinctive (Smythies).

HABITS. In the Andulau Forest Reserve, Brunei, I have watched these birds on five different occasions, probably at least two different parties, usually for half-an-hour at a time. An Iban friend of mine (Asah), who was with me on the last two occasions, said the birds were common in the *Shorea albida* peatswamp forest of the Mendaram River, a tributary of the Belait River, where he spent four months tapping gutta jelutong, and noted the chorus as being one of the distinctive noises of the forest. It seems probable that they may be

principally birds of these peatswamp forests, which cover large areas in Brunei, Sarawak, and S. Borneo, and which are rarely visited by naturalists ; most specimens, however, are from the lowland forest.

The birds are slow and heavy in movements, keep to the middle canopy, and are difficult to frighten (a fact noted by Beccari and others). They remind me of shrike-babblers ; the resemblance to starlings is purely superficial.

Food. I have watched a bird eating what looked like a green grasshopper, and on another occasion clumsily chasing a large insect (moth ?) with loud snaps of the bill, almost falling over itself in its antics. " The bird feeds on insects, and the stomach of those I shot contained the remains of Coleoptera, especially *Brenthidae*. This explains the presence of the birds in the neighbourhood of a recent clearing, where, on the felled trunks, such insects abound " (Beccari). The stomach of one shot by Grabowsky contained mainly spiders. Everett listed their food as arboreal Orthoptera, cockroaches, beetles, green larvae. This is in marked contrast to the Grackle, which feeds 75 per cent. on fruit.

Nest and Eggs. Bartlett describes an oviduct egg found on 8 October, as " pure white, sparingly marked all over with large round and oval bright brown and slaty-grey spots of various sizes, the majority forming an irregular ring at the larger end." The nest is unknown but Bartlett guessed that it would prove to be a large loose shrike-like structure placed in a fork or on the bough of a tree.

MUNIAS : Estrildidae

Munias are small seed-eating birds that resemble finches in external appearance but differ in internal anatomy ; they build covered nests, whereas finches build cup-shaped ones. The family can be grouped into the weaverbirds, which have their stronghold in Africa, and are represented in S.E. Asia, but not in our area ; the well-known sparrows, also not in our area ; and the munias, which are only too well known to the cultivator of padi.

527. LONG-TAILED MUNIA PLATE XLII, 6

Erythrura prasina (Sparrman) 1788 *Pipit lansi* (I)

N. Laos, Malaya, Sumatra, Java, Borneo.

The status of this bird in our area is obscure but it seems to be a resident forest bird that wanders widely in search of food. Whitehead says " Not met with until my last expedition to Kinabalu (when

I arrived a month earlier than on my previous visit). These birds were then in large flocks in the Dusun rice-fields, and were especially active late and early in the day. . . . After a month there was not a bird to be met with." He collected two specimens on 8 January and another two on 15 January, so it seems the birds were in force in the Kinabalu area in January that year, disappearing at the end of the month.

Further south in the Kelabit uplands it does not arrive in force until late in February, though individual birds have been reported on 26 December (at Pa Trap) and on 10 January (at Bario) ; if the rice harvest is late vast numbers appear in March to finish off the standing corn.

In southwestern Sarawak all dated skins are August–October ; its appearances are erratic and not in force. I have not seen a single one in ten years.

Where do our birds breed ? What are their movements ?

DESCRIPTION. ♂ 5½" ; ♀ 4½". The male is a beautiful bird ; female and immature male differ in having a shorter tail, green upperparts except for red rump and tail, greyish throat, and brownish underparts. Iris black ; feet yellow.

VOICE. Not described from Borneo.

HABITS. Bird scaring devices are powerless against this, the most dreaded pest of padi fields in the uplands (see Chapter 4).

FOOD. Rice only (hundreds examined by Harrisson, who has never found grass seed, etc., as in other munias).

NEST AND EGGS. Unknown in Borneo.

RACE. *E. p. coelica* Baker 1925. As this race is restricted to Borneo the birds must breed *somewhere* in our area.

528. BAMBOO MUNIA PLATE XLII, 7

Erythrura hyperythra (Reichenbach) 1862

Mountains of Malaya, Java, Borneo, Lesser Sundas, Philippines, Celebes.

A very rare higher montane resident in Borneo. Whitehead collected three on Kinabalu at 8,000 feet and two more lower down. Banks one on Mt. Mulu at 5,000 feet.

DESCRIPTION. 4". Green and not red tail distinguishes from preceding species. Forehead black, crown blue, upperparts green ; underparts rufous. In the young bird the forehead and crown are green like the back. Iris and bill black ; feet flesh (Whitehead).

VOICE. "On the wing the bird continually utters its call-note, which is a hissing sound like *tzit-tzit*, but when settled it is silent" (Whitehead).

HABITS. "During my first expedition to Kinabalu I only collected two of this beautiful little bird, which were feeding in a rice-field. This locality was, however, not its real habitat; for on climbing up to nearly 9,000 feet I came upon its true headquarters, which is the bamboo-jungle at that elevation. The flight is very quick" (Whitehead).

NEST AND EGGS. Unknown.

RACE. *E. h. borneensis* (Sharpe) 1889.

529. JAVA SPARROW PLATE XLII, 8

Padda oryzivora (Linnaeus) 1758 *Pipit Jawa* (M)

Throughout Malaysia, but indigenous only in Java, and Bali.

Introduced into Borneo and now feral in a number of localities. A century ago Motley reported it in large flocks in the padi fields round Bandjarmasin, thousands being caught by the natives for food, but nowhere else does it seem to have become abundant. Doria in 1865 said it was not very abundant round Kuching, and it is much the same to-day. Whitehead found it plentiful on Labuan, where it had been introduced by Low, but noted that he had never seen it on the mainland of Borneo. I have recently (1955) reported it in Brunei Town. At places where it is introduced it is able to hold its own, and develop to some extent, but not to overrun the country as was at one time feared.

DESCRIPTION. Black head with massive pink bill and large white cheek patch diagnostic.

HABITS. Unlike other munias in that it is a slow moving, rather sedentary bird and only takes wing normally if alarmed. On the other hand it carries the munia love for cuddling and canoodling to excess. Harrisson kept some in an aviary with Tigrine Doves. The doves had quite a hard time getting used to the Java Sparrows, which at night got under them and over them and even on to their heads. Eventually one dove became the comforter for up to eight Java Sparrows in this way. Dusky and Chestnut Munias in the same cage took no notice of the doves.

NEST AND EGGS. Nests in the eaves of buildings, *e.g.* the Law Courts and Brooke Memorial in Kuching. I watched two pairs having a furious fight in the eaves of my bungalow in Brunei at 11.45 a.m. on 5 September, keeping up a continuous low churring note which

first attracted my attention. When not locked in fight they would demonstrate at each other by weaving their bodies about, churring with open bills. It is seldom that one sees one *pair* of birds fight another *pair*. The fight lasted about five minutes, then both pairs flew off.

530. DUSKY MUNIA PLATE XLII, 9

Lonchura fuscans (Cassin) 1852 *Pipit* (M, I) for all munias

Confined to Borneo. Abundant in the padi fields and open grassy country.

DESCRIPTION. 4". Entirely brownish-black. Two albino specimens were collected by Harrisson in the Kelabit uplands. Iris dark brown; bill black above, pale grey below ; feet pale blue.

VOICE. Williams described its note as a shrill *pee, pee*. A thin chirrup, and a quick low *teck teck* in flight (Harrisson).

HABITS. Whereas the Chestnut Munia is a rather jolly, active, extrovert sort of bird, the Dusky has rather the tactics of a rodent. It nips about and runs much like a mouse. It has a love for entering and exploring things, and this frequently leads to its getting caught in hung-up fish traps (*bubu*), rice bins and dwellings—whereas the Chestnut Munia does not succumb to its own idle curiosity. This difference is well known to Bornean rice farmers, for what will keep a Chestnut Munia off the crops will by no means suffice for the smaller shier Dusky, which largely works from below, under cover, taking the lower grains, and sitting still or going to ground when alarmed, whereas the topside Chestnut flies off on windmill groan, gunshot, bamboo clapper, etc. (Harrisson).

FOOD. Padi, reed seeds, soft green seeds, etc.

NEST AND EGGS. Have been described by Whitehead, Bartlett, and Williams ; the eggs by Sharpe and Gibson-Hill. Motley states that it often nests in hollow trees, Whitehead found it nesting in fruit trees, and Harrisson says it is essentially a high nester—over 250 feet up in places in Niah Caves, commonly 25 to 50 feet up in fruit trees in the Kelabit uplands, and normally 15 to 30 feet up in trees in Kuching. In the Kelabit uplands, Harrisson found nests normally being built in November, eggs in December, young in January and February, but with considerable variation related to the local rice crops. In Kuching young as late as May, and Allen found two nests with young and two pairs building in the Kuching area in the first week of October. Normal upland clutch c/3, sometimes c/2, occasionally up to c/5. The nest is the usual munia ball of grass with a side-entrance. The eggs are pure white in colour, about 14×11 mm.

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Oriolus xanthonotus xanthonotus.

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531. WHITE-BELLIED MUNIA PLATE XLII, 10

Lonchura leucogastra (Blyth) 1846 *Pipit itong* (I)

Malaysia, Philippines.

In Borneo a somewhat rare and local species, with local movements that are not yet understood. In the Kuching area it is common in the breeding season, scarce or absent for the rest of the year. It definitely does *not* breed in the Kelabit uplands, but arrives there in January in small numbers, before the Long-tailed Munia.

DESCRIPTION. The white belly is diagnostic. Iris red ; bill black above, dark grey below ; feet grey-blue, claws horn.

HABITS. I have only come across this species in odd pairs away from the breeding colony, and it seems to be less gregarious than the other munias ; in fact Harrisson describes it as shy, often solitary, always skulking in rice, etc. Bartlett found it close to human habitations, seeking food from stables and outhouses.

NEST AND EGGS. Bartlett found a small colony breeding in areca palms near Kuching in June ; he collected a nest, which was a large loose structure made entirely of dry bamboo leaves, but contained no egg. In 1958 I found a colony of six nests in a tree in the garden of a house " across river " at Kuching. The colony was occupied February to May. The birds often hovered in front of the nests like hummingbirds, body almost vertical, wings beating rapidly.

RACES. See addenda.

532. CHESTNUT MUNIA PLATE XLII, 11

Lonchura malacca (Linnaeus) 1766 *Pipit banda* (I)

(*banda* is an adjective used to describe red colour in birds only.)

Widespread in S.E. Asia.

Abundant resident and local migrant in Borneo, probably the commonest of the munias ; has been collected at 5,500 feet on Kinabalu, and is abundant in the Kelabit uplands.

DESCRIPTION. 4½". Pale blue bill, black head and chestnut plumage diagnostic. Young birds are earthy-brown all over and later change colour (not by moulting) to something like the adult plumage but the head still remains tinged with brown ; the full adult plumage is only attained at the third change of plumage (Bartlett). Iris red, feet pale blue.

HABITS. Social birds, almost always in flocks, which fly up with a whirr and a shrill *peep, peep*. The other common munias mix, but these stay apart as one species. Often seen in the garden feeding

on seeding grasses. Motley describes how " whilst foraging they are never still for a moment and it is quite amusing to watch them clinging to the leaves and stems of grass at every conceivable angle." On the wing the flock flies in a characteristic close globular formation, rather like a small swarm of large bees. With the possible exception of the Long-tailed Munia in the uplands, this is the worst avian pest of the padi fields, one of the six pests listed in the Iban prayer :

" *Antu buntak, antu pasak,*
Antu empangau, antu alau,
Antu chit, antu pipit "

along with padi bugs, locusts and rodents (pipit refers to any species of munia).

Food. Padi, grass seeds.

Nest and Eggs. The nest is the usual ball of grass or leaves of the rice plant, and is always placed low in grass or padi. Whitehead records their habit of roosting in them : " I have often turned out seven or eight birds from one of their old nests in the evening, and am at a loss to know how they could possibly pack together into such a small space " (Harrisson records up to ten in one nest). The eggs have been described by Gibson-Hill, six in a clutch, white in colour, 16×11 mm. According to Harrisson, a clutch of more than four eggs is unusual, but more than one bird may lay in one nest. In the Kelabit uplands lays earlier than the Dusky Munia.

Race. *L. f. jagori* (von Martens) 1866.

DRONGOS : Dicruridae

This family ranges throughout the tropics of the Old World from Africa to Australia and the Solomon Islands, being best developed in S.E. Asia. Drongos are arboreal birds, black (grey in one species) in colour, and perch conspicuously. They have a long forked tail of ten feathers and long pointed wings. In our area they are rarely seen in the lowlands outside old jungle, unlike India and Burma where one species is a familiar bird of the open country, and are usually solitary or in pairs. They build a cup-shaped nest in a fork of a tree, and feed chiefly on insects.

They are fierce and aggressive birds, especially when breeding. Thus Whitehead writes of the Grey Drongo : " Like the other species of this genus which have come under my notice in other countries, it is pugnacious in the extreme, attacking even big birds of prey like the Crested Serpent Eagle, if they approach too near the Drongo's quarters ".

533. CROW-BILLED DRONGO PLATE XLIII, 1

Dicrurus annectans (Hodgson) 1836

Breeds in the Himalayas; passage migrant and winter visitor to western Borneo, from Kinabalu to S.W. Sarawak. (Records for eastern and S.E. Borneo given in the Checklist are wrongly identified examples of *D. p. brachyphorus*, Deignan *in litt.*) Most specimens are from coastal islands or coastal districts, but Burbidge collected two on Kinabalu (low altitude) and Hose one from Marudi. Early date 19 September on the Turtle Islands.

DESCRIPTION. 10". Difficult to distinguish from some examples of *D. paradiseus* (q.v.) in the hand, but in the field different habitat is best guide. Young birds are boldly spotted with white below.

HABITS. A conspicuous bird of open country, which I have not seen once in ten years, so that it cannot be common in Sarawak.

534. GREY DRONGO PLATE XLIII, 2

Dicrurus leucophaeus Vieillot 1817

Widespread in S.E. Asia.

A common montane resident throughout the mountains of Borneo; in mountainous country it may be seen in the valleys at a low altitude (*e.g.* the middle Trusan at 500 feet, Harrisson).

DESCRIPTION. 10". Prominent white lores and light grey plumage diagnostic. Iris orange-red; bill and feet dull black.

VOICE. Various calls. Harrisson notes a fast loud zizzy *dididididi*. "It has a wonderful power of changing its notes in imitation of those of other species, and I have often heard them calling out at night" (Whitehead).

HABITS. "Like *Garrulax mitratus* this bird is one of the ornithological features of the lower slopes of Kinabalu, being much more plentiful about the Dusun villages and rice fields than in the thick forest. It takes up its position on the edge of a small wood, and thence makes short flights after insects, often returning to the same spot" (Whitehead). Graceful and sculptured in flight, and when sitting lovely lines sweep to the tail, which is often flicked and fanned; it has a trick of diving *upwards* to catch insects (once about twenty-five feet up to take a bee from a passing swarm) (Harrisson).

FOOD. Wasps, small black bees, beetles, ants, locustids, grasshoppers, dragonflies (Harrisson).

NEST AND EGGS. "At one of my camps a pair had a nest at the end of a very long bough in a high tree, which, again, overhung a steep riverbank. The nest contained two eggs on 4 April" (Whitehead(. The nest is suspended by fibres, usually at a fork, far out;

t is made of fibres, roots, and coarse grass and reed material. The eggs (c/2 less often c/3) are laid in January and February and are pale pink when fresh, with a few to many spots, chiefly at the broad end. About 29×20 mm. (Harrisson).

RACE. *D. l. stigmatops* (Sharpe) 1879.

535. BRONZED DRONGO PLATE XLIII, 5

Dicrurus aeneus Vieillot 1817.

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo, but confined to primary forest.

DESCRIPTION. 8". The small size is distinctive. Iris grey; bill and feet black.

VOICE. Harsh call-notes.

HABITS. "Frequents open spaces in primary forest, and very commonly seen on rivers, where it skims the water, catching flies like a swallow" (Williams).

FOOD. Beetles, ants, insects.

NEST AND EGGS. Not described from Borneo.

RACE. *D. a. malayensis* (Blyth) 1846.

536. HAIR-CRESTED DRONGO PLATE XLIII, 4

Dicrurus hottentottus (Linnaeus) 1766

Widespread in S.E. Asia.

A submontane resident throughout Borneo in primary forest, and common in the Kelabit uplands to 5,000 feet. The Oxford University Expedition (1955) proved this to be the common drongo of the vast forests of the Usun Apau Plateau.

DESCRIPTION. 10". The shape of the tail is diagnostic, the outer feathers prominently curved outward and upward. The hairs springing from the forehead are not easy to see in the field, except with glasses in a good light. Iris scarlet to pale red-brown; bill and feet black.

HABITS. "Like its relation the Grey Drongo, it prefers the neighbourhood of clearings made by man, where no doubt the food supply is greater than in the thick forest. It frequents, however, the more open places in the latter up to about 5,000 feet" (Whitehead)

FOOD. Large hornets, wasps, cockchafers, ants, locustids, crickets, cicadas, longicorn beetles, green beetles, large black beetles—the diversity of diet of this bird is significant, indeed it will try anything,

and I have seen it fail to conquer a large swallowtail butterfly in flight and take the tail (only) of an agamid lizard (Harrisson).

NEST AND EGGS. Whitehead took nests, containing two eggs, on 20 March and 20 May. "After the manner of drongos the nest is placed at the end of a long bough at no great height from the ground; it is a shallow structure, consisting of roots neatly twisted round the fork of a slender bough." The eggs were a very pale salmon-pink in ground-colour, dotted all over with reddish spots and underlying grey spots and mottlings, chiefly collected near the larger end. Eggs also described by Gibson-Hill, about 29×20 mm.

RACES. (*a*) *D. h. suluensis* Hartert 1902, on the Maratuas; (*b*) *D. h. borneensis* (Sharpe) 1879, on the mainland of Borneo.

PLATE XLIII, 3 **537. LARGE RACKET-TAILED DRONGO** PHOTO PLATE 49

Dicrurus paradiseus (Linnaeus) 1766
Namak (M); *kampat tiang* (I)

Widespread in S.E. Asia.

A common resident throughout the lowlands of Borneo in primary and secondary forest.

DESCRIPTION. Unmistakable when the rackets are developed (tail 12") but in a series of 132 skins from all over Sarawak recently examined about 40 per cent. had the racket in various stages of development; in some the outer pair of feathers, though still shorter than the rest of the tail, showed the racket and bare shaft fully developed; in others the outer pair of feathers were shorter than, equal to, or up to two inches longer than the rest of the tail, but showed no trace of racket development or of bare shaft—and some of these could only be differentiated from *D. annectans* by a careful comparison of the crest on the forehead.

This tendency to abnormal development of the outer tail-feathers has been noticed by others. Thus Tweeddale (*Ibis* 1878: 71) says:

"The structure of the outer pair of rectrices is very unstable, the tendency being to revert back to the fully webbed feathers."

Vaurie (1949: 314) says:

"In the more primitive races of . . . *paradiseus*, a significant number of specimens either lack the racket or show some 'aberration' of the outer tail-feathers."

and

"An abnormality in the growth of the tail resulted in fully webbed outer rectrices, or, when there was no abnormality, the outer

rectrices in the adult might be emarginated but lacked the denuded shafts and rackets."

The danger of confusing one of these abnormal *paradiseus brachyphorus* with *annectans* is therefore stressed. The considerably forked tail and twisted outer rectrices of *annectans*, in addition to the more open country it frequents, may help in the field. In the hand a tendency to greyness on the flanks, and the development of the bushy frontal feathers, which in *annectans* hardly extend beyond the forward end of the nostril (whereas in *p. brachyphorus* they extend to the middle of the bill, and are longer, stiffer, and somewhat erected), are points to look for; there seems to be no perceptible difference in the bill, nor in wing measurements. Iris red or red-brown; bill and feet black.

Voice. Like most drongos it has a variety of striking call-notes. One of these Whitehead describes as a wonderful bell-like note.

Habits. This is the typical drongo of the lowland forests.

Food. Beetles, insects, large ants, green bees, caterpillars, stick insects (Harrisson).

Nest and Eggs. Not described from Borneo.

Races. (*a*) *D. p. microlophus* (Oberholser) 1917, in the N. Natunas; (*b*) *D. p. banguey* (Chasen & Kloss) 1929, on the North Bornean islands; (*c*) *D. p. brachyphorus* (Bonaparte) 1850, on the mainland of Borneo.

ORIOLES: Oriolidae

This family includes some of the most beautiful birds, in plumage and voice, of the tropical and temperate regions, from Europe and Africa to Australia, with two genera in America. In our area however they are seldom seen, only one species being at all common in the lowlands. Females are usually duller than males, and the young are heavily streaked below. They are birds of the tree-tops, rarely descending to the ground. The flight is swift and rather heavy, with long undulations and a curious unstable action. A typical oriole's nest is built in a large tree, suspended from a fork at a good height from the ground. From below it looks like a ball of grass wedged into the fork, and the sitting bird is completely hidden from view; but in the hand it proves to be a most beautifully woven cup, the ends of which are wound round and round the supporting twigs.

Sliman calls the yellow-coloured orioles *gading*, a name not given in Wilkinson's Dictionary for this genus.

538. BLACK-NAPED ORIOLE PLATE XLIII, 8

Oriolus chinensis Linnaeus 1766

Widespread in S.E. Asia.

It is odd that this bird, so common in Singapore, should be so rare in Borneo ; it is known from three skins collected by Croockewit in S. Borneo, and a few skins and sight records from S. W. Sarawak ; whether it is a resident or a visitor is unknown.

DESCRIPTION. ♂". The adult is unmistakable ; young birds are heavily streaked with black on the breast and belly, and the band through the eye to the nape is olive-brown instead of black.

HABITS. Those of the family.

RACE. *O. c. maculatus* Vieillot 1817.

539. INDIAN BLACK-HEADED ORIOLE PLATE XLIII, 7

Oriolus xanthornus (Linnaeus) 1758

Widespread in S.E. Asia.

In Borneo known only from the Maratuas and from the Tawau area, where it is presumably resident.

DESCRIPTION : 9". Yellow belly distinguishes the adult from the next species. The immature bird has the forehead streaked with yellow, throat and upper breast white streaked with black, whereas immature *xanthonotus* has no yellow streaks on the forehead, throat whitish only faintly streaked, rufous edges to feathers of median wing-coverts.

HABITS AND NEST. Not described from Borneo.

RACE. *O. x. tanakae* Kuroda 1925.

540. MALAYSIAN BLACK-HEADED ORIOLE PLATE XLIII, 10

Oriolus xanthonotus Horsfield 1821

Malaysia, Philippines.

Resident throughout Borneo in the lowland forests ; the only common lowland oriole in western Borneo. Not above 1,000 feet on Kinabalu (Whitehead).

DESCRIPTION. 7". Smaller than the preceding species, which see for other differences. Iris crimson ; bill dull orange or red-brown ; feet grey, claws horn.

VOICE. A long musical whistle. Continually repeats a loud rather thick call *kou-wit*, flicking its tail as it does so ; also a rusty-hinge note (Harrisson).

HABITS. Those of the family.

FOOD. Moth caterpillars four inches long have been taken. (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *O. x. xanthonotus*, in S. Borneo ; (*b*) *O. x. consobrinus* Wardlaw Ramsay 1880, in N. Borneo ; males have larger yellower areas on the tail-feathers ; females have the throat and breast suffused with dark grey, the underparts almost as heavily marked as the male, and the crown and nape darker than the mantle.

541. BLACK ORIOLE PLATE XLIII, 6

Oriolus hosei Sharpe 1892

Confined to Borneo. The only montane species unknown on Kinabalu ; it is very common on Mt. Dulit and occurs also on the Usun Apau Plateau, Mt. Derian (near Mt. Batu Lawi), and Mt. Murud Kechil.

DESCRIPTION. 8½". Entirely black except for chestnut under tail-coverts. Iris dull crimson ; bill dull pink ; feet greyish-black.

HABITS. A quiet but active bird of high elevations, usually in small parties feeding conspicuously on berry trees, the splendid chestnut showing in a strange way in the living bird's plumage (Harrisson).

FOOD. Fruit, insects, termites (Boys).

NEST AND EGGS. Unknown.

542. BLACK-AND-CRIMSON ORIOLE PLATE XLIII, 9

Oriolus cruentus (Wagler) 1827

Malaysia.

Common montane resident from Kinabalu along the spinal chain to the Tama Abo range and Mt. Mulu ; one specimen from Lio Matu.

DESCRIPTION. 8½". The breast is crimson in the adult, brown streaked with black in the immature. Iris dark brown ; bill light grey ; feet grey, claws horn.

VOICE. Its call is a nasal mew like some notes of other orioles. *Kek kreo, kreo kek* (Harrisson) ; a short melodious call (Boys).

HABITS. Frequents only the higher trees and never leaves the forest (Whitehead). On the Tama Abo range often seen in low bushes in the moss forest right to the summits ; behaviour much as in Hose's Oriole (Harrisson). Usually found among vines and creepers within twenty feet of the ground but they frequently occur in the sub-canopy (Boys).

1b
1a
3
2b
2a
4
5
6
7
8
9
10
0"
6"
12"
0
100
mm
200
300
1958

PLATE XLIV

Page

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Aplonis panayensis strigata

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Platylophus galericulatus coronatus.

7. MALAYSIAN TREEPIE. 510
Dendrocitta occipitalis cinerascens.

8. BLACK CRESTED MAGPIE 510
Platysmurus leucopterus aterrimus.

9. SLENDER-BILLED CROW 511
Corvus enca compilator.

10. JUNGLE CROW 511
Corvus macrorhynchos macrorhynchos.

FOOD. Caterpillars (hairy and hairless), insects, termites, grubs, berries, fruits. An outstanding eater of caterpillars. I once saw one which had located an army of hairy caterpillars on the move at 3,000 feet, and it was so intent on gorging itself on them that I got within two feet of it before it flew off; it was feeding just off the ground on a fallen tree, as it often does. It eats many other things so long as the food is soft, such as heath berries and rhododendron buds. (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACE. *O. c. vulneratus* Sharpe 1887.

JAYS, MAGPIES, TREEPIES, CROWS: Corvidae

The crows and their allies are found in all parts of the world and feature prominently in the bird-life of many countries. One has only to think of Rooks, Jackdaws and Magpies in England, or House Crows in India, Burma and Ceylon. In Borneo, however, the two species of crow are rarely seen, and the other members of the family are more or less restricted to primary forest, so that they contribute little to the ornithological scene. They are intelligent birds, but notorious for searching out and eating the eggs and young of other birds in the breeding season.

543. CRESTED JAY PLATE XLIV, 6

Platylophus galericulatus (Cuvier) 1817 *Bejampong* (I), an omen bird

Malaysia.

A common resident throughout the lowland forests of Borneo, ranging up to 5,500 feet in the Kelabit uplands.

DESCRIPTION. 10". Unmistakable. Iris dark brown; bill black; feet light blue.

VOICE. Robinson describes it as an extremely noisy bird with a harsh grating rattling cry. According to Hose it is known as the *kajampang* or Rain Bird from its unerring faculty of foretelling a storm—whenever its whistle is heard, rain is to be expected; the whistle is accompanied by a jerky erection of the long crest. A very fast reeling note, and a loud small-bird-sort-of call *tit-tut-tut-tut* (Harrisson).

HABITS. "It is one of the noisiest and sauciest birds of the primary forest, and will approach a man within a few yards whistling

and rattling, weaving its body, flicking its curious crest up and down, as if it owned the place but was hospitably glad to see a visitor" (Harrisson).

FOOD. Large beetles, locustids, insects, grasshoppers, cockroaches, cicadas, wasps, millipedes (Harrisson).

NEST AND EGGS. Not described from Borneo.

RACES. (*a*) *P. g. coronatus* (Raffles) 1822, in S. Borneo; (*b*) *P. g. lemprieri* Nicholson 1883, lighter in colour, in N. Borneo. Birds from Sarawak are unstable, some being nearer (*a*) and others (*b*). Amadon (*in litt.*) considers this species should be removed to the family Prionopidae. Sims informs me that *lemprieri* is not recognizable.

544. COMMON GREEN MAGPIE PLATE XLIV, 5

Kitta chinensis (Boddaert) 1783

Widespread in S.E. Asia.

Resident but apparently confined to N.W. Borneo, from Kinabalu down to the Kelabit uplands, at altitudes from 1,000 to 4,000 feet.

DESCRIPTION. 13". The colour changes rapidly to light blue in dried skins. Iris red; bill, feet and claws coral-red.

VOICE. "In the early morning and towards evening they become very garrulous, one bird whistling to another. The notes are many, the most peculiar being a three-syllabled whistle, from which it gets its Dusun name of *Ton-ka-kis*. I often shot specimens in the evening by watching birds as they called to each other from a long distance. As one bird finished whistling it would fly off and its place would be occupied by another bird, which would again commence calling to its more distant companions" (Whitehead).

HABITS. "Fairly common in the same kind of scrub-country as is frequented by the Treepie, but unlike that species it does not ascend Kinabalu, being confined to a level between 1,000 and 3,000 feet; it is, indeed, very rare at the latter elevation, though decidedly common lower down" (Whitehead).

FOOD. Feeds largely on bees; also insects including big coloured buprestid beetles, dragonflies, and locustids, as well as occasional seeds and fruit; once a bat (Harrisson).

NEST AND EGGS. "The natives often brought me nestlings in March . . . the nests were found in the thick undergrowth, and contained two young birds, in one case three" (Whitehead). In the Kelabit uplands eggs are laid in January and February, three being the regular clutch. Gibson-Hill describes eggs taken by Ryves at

PLATE XLV

SOME RARE BIRDS OF BORNEO

Page

1. MALAYSIAN HONEYGUIDE 319
Indicator archipelagicus.

2. GREAT TIT. 459
Parus major sarawacensis.

3. BALD-HEADED WOOD SHRIKE 491
Pityriasis gymnocephala.

4. SIBERIAN GROUND THRUSH 397
Zoothera sibirica sibirica.

5. ORANGE-HEADED GROUND THRUSH 397
Zoothera citrina aurata.

6. KUHL'S GROUND THRUSH 398
Zoothera interpres interpres.

7. BLACK-BROWED JUNGLE BABBLER 405
Trichastoma perspicillatum.

8. EVERETT'S GROUND THRUSH 398
Zoothera everetti.

1
2
3
4
5
6
7
8
0"
3"
6"
0
50
mm
100
150
1958

Kiau as "egg-shaped. Surface smooth, but coarsely pitted. Ground-colour white, finely flecked with pale neutral tint and medal-bronze." 30×23 mm.

RACE. *K. c. minor* (Cabanis) 1851.

545. SHORT-TAILED GREEN MAGPIE PLATE XLIV, 4

Kitta thalassina Temminck 1826

S.E. China, Indo-China, Hainan, Java, Borneo.

A montane resident, from Kinabalu along the spinal chain to Mt. Murud, the Usun Apau Plateau, and Mt. Dulit, ranging from 3,000 to 8,000 feet.

DESCRIPTION. 12". Old skins turn light blue like the preceding species, and the two are then puzzling to distinguish, but this bird has a shorter tail (5" as against 6–7"), the tertiaries are without black subterminal marks and the black subterminal marks on the lateral tail-feathers are narrower (under 8 mm.) and less distinct. In fresh skins Sharpe notes that a great difference is noticeable at once in the green colour of the bird, which is very decided, and no yellow of any kind appears on the crown; the tips to the tail-feathers are much narrower and distinctly greenish-white. Whitehead also notes that the bill and feet are deep lake-red, much darker than in *K. c. minor*; iris white, with a faint pink tinge round the pupil. On taking flight it dramatically reveals maroon-red wings, contrasting strikingly with general green colour (the preceding species also has wings of this colour).

VOICE. "I first met with this beautiful bird at 8,000 feet, and I could tell at once, from its note, that it was different from *K. c. minor*. . . . The note is not nearly so clear as that of *K. c. minor*, but is still a feeble attempt at *Ton-ka-kis*" (Whitehead).

HABITS. "While *minor* inhabits the more open and cultivated districts, *jeffreyi* even at its lowest altitude, never quits the true forest, and the ranges of the two species never overlap. On the higher slopes of Kinabalu this species was decidedly rarer, and I found it frequenting the twisted and moss-covered trunks near the ground, feeding on snails and probably the small frogs which were numerous" (Whitehead). Much shier than *minor*, but when it does appear is unmistakable—a gentle, elegant, chubby green jackdaw (Harrisson).

FOOD. A heavy insect eater, including caterpillars (Harrisson).

NEST AND EGGS. "In April the old birds had their families with them, consisting of two young ones" (Whitehead).

RACE. *K. t. jeffreyi* (Sharpe) 1888.

546. MALAYSIAN TREEPIE PLATE XLIV, 7

Dendrocitta occipitalis (S. Müller) 1835

Sumatra, Borneo.

Montane resident throughout the northern and central mountains of Borneo but absent from Mt. Penrissen, the Poi range, and the Kapuas and Mahakam drainages. In mountainous country it may be found in the valleys at a low altitude (*e.g.* in the Tengoa and Brayong valleys of the middle Trusan at a few hundred feet altitude, (Harrisson).

DESCRIPTION. Unmistakable. Tail up to 11". Iris bright red-brown ; bill and feet black.

VOICE. Whitehead describes a loud bell-like note, also a cackling cry like that of the European Magpie. A double whistle, very noisy (Banks). I have recorded a harsh and typically corvine chatter, which is probably Whitehead's cackling cry, and which according to Harrisson is the commonest single bird note of the heath forest in the Kelabit uplands—individual birds produce a great range of variations, as well as melodious fluty whistles.

HABITS. On Kinabalu, Whitehead found it from 1,000 to 9,000 feet, mainly in secondary jungle on fallow rice fields, less common in the primary forest higher up the mountain. In the Trusan valley bottoms Harrisson found it in parkland, rice clearings, bamboo thickets, and scrub-jungle adjacent to Murut villages ; he describes it as a slow moving, even clumsy bird.

FOOD. Green seeds, berries (mainly), cockroaches, beetles, insects (Harrisson).

NEST AND EGGS. Whitehead found a nest on 13 March on a low tree in scrub-jungle. It was a shallow nest of fine twigs and contained two eggs, very Magpie-like in appearance. Ground-colour greenish-white, dotted all over with brown markings, which increase in size towards the larger end, where there is a blotch of brown, forming a nearly complete ring. 30×23 mm. Harrisson found a nest with two eggs in the Kelabit uplands at 3,500 feet on 1 January.

RACE. *D. o. cinerascens* (Sharpe) 1879.

547. BLACK CRESTED MAGPIE PLATE XLIV, 8

Platysmurus leucopterus (Temminck) 1824

Bugnong, plaik (M) ; *burong ensong semayong* (I)

Malaya, Sumatra, Borneo.

A fairly common resident throughout the lowlands of Borneo.

DESCRIPTION. 14". Unmistakable. When perched it raises and lowers its crest. Iris red ; bill and feet black.

VOICE. I have heard in Kuching two distinct calls uttered by the same bird. One is a harsh corvine chatter of six to ten notes uttered rather faster than one can count. The other is a three-note whistle, consisting of a short high-pitched staccato *pip*, followed by two lower prolonged notes of a peculiar hoarse tone. This bird really has an enormous range of voice and also definitely mimics other birds, especially barbets (Harrisson).

HABITS. Whitehead described it as not at all crow-like in habits, frequenting the middle growth of the jungle. Davison found it very restless, flying about from tree to tree, sometimes close to the ground and sometimes high up, and even when perched it kept bobbing and bowing. I have seen pairs "across river" in Kuching where it seems to be quite at home. Harrisson has also noted it as common round Kuching in tall scrub jungle, often in parties of four to six or more birds, when it moves along in a peculiar way: one bird roughly following the next at some seconds interval, in "hops" of up to 200 yards at a time, including freely across roads and narrow open spaces. Unlike other crows they are also silent in flight, but perhaps as a substitute for normal corvine contact noise they fly with the tail partly open, with short wing beats, producing from the feathers a gentle *boobooboo* sound, which cannot be heard from far away. This flight is quite like that of the coucals, but more even and deliberate.

FOOD. Small mammals (Chavasse), fruit, large beetles.

NEST AND EGGS. Not described from Borneo.

RACE. *P. l. aterrimus* (Temminck) 1825.

548. JUNGLE CROW PLATE XLIV, 10

Corvus macrorhynchos (Wagler) 1827

Widespread in S.E. Asia. A mystery bird in Borneo, whence only four specimens are known: from S. Borneo (Croockewit), Muaratewe (Breitenstein), Labuan (collector not known) and Kinabalu (Everett).

DESCRIPTION. Very like the next species, but in the hand distinguished by more massive bill.

HABITS AND NEST. Not described from Borneo.

RACE. *C. m. macrorhynchos.*

549. SLENDER-BILLED CROW PLATE XLI, 9

Corvus enca (Horsfield) 1821 *Gagak* (M); *kak* (I)

Malaysia, Philippines, Moluccas.

A fairly common resident throughout the lowlands of Borneo, from the coast to the interior; also resident in the Kelabit uplands.

DESCRIPTION. As compared with *macrorhynchos* it has a greyish

bloom and not a greenish gloss on the abdomen, the voice is of lighter timbre, and it shuns the vicinity of men (Cairns). In the hand distinguish by slender bill and absence of hackles on the throat. Iris grey or brown ; bill and feet black.

VOICE. The usual note is a rather high-pitched caw, which would probably sound very different from the deep full-throated caw of the Jungle Crow if one could ever hear the two species in the same locality. At any moment one may start flying with rapidly vibrating wings, uttering a series of *kark-kark*, the notes shortening and rising in pitch *kak-kak* to a series of chuckles, ending in a number of most un-crow-like short, sharp yelps (Banks). The Kelabit name *teloha* is an attempt to report another call, and Harrisson also describes " banjo calls " in flight, erecting head and throat feathers and arching neck.

HABITS. I have met with it usually in small flocks along the rivers and forest edges, though Cairns states that (in Malaya) mangrove backed by sea-level forest is its favourite habitat. Normally very shy and keeping well away from human habitations, even camps, though Bartlett states that they may occasionally visit the gardens and plantations close to Kuching.

FOOD. Lizards, big beetles including stag beetles (Harrisson).

NEST AND EGGS. Bartlett found a colony of them in a tremendous solitary jungle tree at the 16th mile, Penrissen road ; the nest was a typical crow's nest of sticks, but the eggs could not be obtained. Harrisson found a nest on 1 September in the Kelabit uplands at 3,500 feet in a very big tree in the open, with one young ready to fly ; Kelabits say 1 egg is the normal clutch.

RACE. *C. e. compilator* Richmond 1903.

ADDENDA

(Some additions and corrections became necessary after the text had been made up into page proof and are therefore given below. This list was closed on 31 July 1959.)

P. 123, KEY TO THE WHITE EGRETS. It will be seen from the key that birds with a tarsus 83–97 mm. could be either *garzetta* or *eulophotes*. In an attempt to find some character by which these two species could be distinguished in non-breeding plumage I have examined the series of both in the British Museum. Not one of the labels on the 21 skins of *eulophotes* gives any detail of the colour of the bill or legs, but the upper mandible is either yellow or dark horn (*not* black) whereas in *garzetta* it is black. Living birds may be easier to separate, but more notes are required.

P. 154–5, WHITE-BELLIED SEA EAGLE. Add under NEST AND EGGS: On Talang Talang Island has young regularly in April (Harrisson).

P. 181, WATERCOCK. The first Bornean specimen in adult male plumage was obtained at Cape Sirik in 1958 by the Sarawak Museum. General colour blackish except for buff under tail-coverts. Bill mostly yellow, base of bill and frontal shield red.

P. 213–4. COLLARED PRATINCOLE. Add under FOOD: Harrisson has seen them at Kuching airport at dawn feeding like nightjars, frantically hawking food on the wing.

P. 249–50, BLYTH'S CUCKOO. G. C. A. Junge (1937) in "Further notes on the birds of Simalur" (*Temminckia* II: 198–202) distinguishes two races: (a) *C. s. saturatus*, wing (165) 168–194 (197) mm., breeding in S. Himalaya, Assam, Burma, S. Chinese provinces, Formosa; (b) *C. s. horsfieldi*, wing 192–215 mm., breeding in Japan, E. Siberia, probably Manchuria and N. China.

These two races apparently occur in Borneo in roughly equal numbers. The British Museum has ten skins of *saturatus* (including Waterstradt's skin cited in the Checklist) and five of *horsfieldi* from Borneo—all except two from Labuan. The Sarawak Museum series are mostly *horsfieldi*. The only montane specimen is an old mounted skin in the Sarawak Museum taken at 3,000 feet on Kinabalu in September 1913; it is so fragile that the wing cannot be accurately measured, but it is about 70 mm. In a forthcoming note in the *S.M.J.* I give reasons for believing that there is a breeding population of this cuckoo on Kinabalu; whether the birds are of the nominate race or of a hitherto undescribed race cannot be decided until more specimens from Kinabalu are available.

P. 314, WHITE-CRESTED HORNBILL. Add under VOICE: Harrisson describes this as a very noisy bird round the Niah caves where it is common and resident, making a vast prolonged uproar at times.

P. 355–6, YELLOW WAGTAIL. Add under RACES: (c) *M. f. tschutschensis*, J. F. Gmelin 1789, to which race Voous assigns one specimen in the Sarawak Museum.

P. 356, SIBERIAN or PETCHORA PIPIT. Add: RACE. *A. g. gustavi* (see Vaurie 1959, and *A. g. commandorensis* Johansen 1952 (one from Labuan).

P. 385–6, *Hypsipetes* Vigors 1831 antedates *Microscelis* Gray 1840 and must therefore be used for this genus (see A. L. Rand and D. S. Rabor (1959) in *Auk* 76: 102).

P. 388, BLUE SHORTWING. The note on HABITS needs qualification. Harrisson found it common on the bare rock faces of Kinabalu, but it is not there always; during five days spent above 10,000 feet in March 1959 I saw no sign of one—the only ones I saw were at 5,000 feet in thick forest, a more typical shortwing habitat.

P. 397, ORANGE-HEADED GROUND THRUSH. Add under HABITS: I saw one of these birds on the motor road below the Tenompok Pass on Kinabalu; it was shy and suspicious, and made off down the road, hopping fast, before rounding a corner and disappearing up the hillside.

P. 422, CHESTNUT-CAPPED LAUGHING-THRUSH. Add under VOICE: On Kinabalu it sets up a striking dawn chorus, which lasts for about half-an-hour, 6 to 6.30 a.m. Add under HABITS: I have seen a single bird at 10,500 feet.

P. 493, LONG-TAILED MUNIA. Add under RACE: Harrisson has drawn my attention to the fact that in the Sarawak Museum series we seem to have at least three distinct races, or possibly even species; these will be investigated further.

P. 497, WHITE-BELLIED MUNIA. For RACES substitute: RACES: See Kenneth C. Parkes (1958) "Taxonomy and nomenclature of three species of *Lonchura* (Aves: Estrildinae)" *Proc. U.S.N. Museum* 108: 279–293. In Borneo he recognizes (a) *L. c. castanonota* Mayr 1938 in S. Borneo, a distinctive race with much richer colouring, being deep rufous-chestnut above and jet black below; (b) *L. c. smythiesi* Parkes 1958, in S.W. Sarawak, which is nearest the Philippine race *L. c. everetti* (Tweeddale) 1877 but the upper tail-coverts are virtually concolorous with the back instead of a darker brown; (c) *L. c. manueli* Parkes 1958, in N. and E. Borneo and Brunei (not a montane race as stated by Parkes, but a lowland race that extends to the Kelabit uplands), with blacker anterior underparts and upper tail-coverts decidedly blackish.

GLOSSARY

Ensurai — *Dipterocarpus oblongifolius*, a riverine tree characteristic of the upper reaches of many rivers.

Lalang — *Imperata cylindrica*, a grass resistant to fire and able to carpet land cleared for shifting cultivation and burnt too often.

Nipa (nipah) — *Nipa fruticans*, a stemless palm lining the tidal reaches of Bornean rivers.

ERRATUM

The specific name of the Black-breasted Triller should be spelt *jefferyi* and not *jeffreyi* on pages 13, 363, 400, and 553.

APPENDIX A

HISTORY OF BORNEAN ORNITHOLOGY

Junge (1954) has recently published a summary in Dutch of past ornithological work in the East Indies ; the account that follows was compiled independently and then checked against Junge's summary to ensure that there were no important omissions.

The principal sources used were :

a) Flora Malesiana, Vol. 1, *Cyclopaedia of Collectors*. Fortunately most of the ornithologists in our area also collected plants at one time or another, and this invaluable compilation gives a potted biography, with itineraries, of all botanists who have worked in the East Indies.

b) The bibliography given at the end of Moulton's *Handlist* (1914), and reference to many of the publications cited therein.

c) Posewitz's book *Borneo* (1892) has itineraries in English of the early travellers down to Grabowsky.

Periods

It is convenient to divide the history of birds in Borneo into five periods, as follows :

1. Pre-scientific to 1826 (Diard) ;
2. 1826 to 1874 (Salvadori's book) ;
3. 1874 to 1914 (Moulton's handlist) ;
4. 1914 to 1947 (Delacour's " Birds of Malaysia ") ;
5. 1947 to present day.

First Period—Pre-scientific to 1826

Moulton (1914) gives the following details :

"The earliest note in literature on any Bornean bird appears to be that of the historian of the T'ang dynasty (A.D. 618–906). Groenevelt translates the passage thus :—' There is also a bird called s'ari (beo, *Gracula religiosa*) which understands human speech ; its body is black, its head red and it has claws like a hawk.' This note appears in an account of Poli, which Groenevelt, following all Chinese geographers, places on the north coast of Sumatra. Hose and Macdougall, however, give reasons for supposing it to be in Borneo."

In the history of the Ming dynasty (A.D. 1368–1643) among the products of the country of Bandjarmasin are mentioned peacocks and parrots, neither of which (*sensu stricto*) occur in Borneo, though we have of course a peacock-pheasant and parakeets.

Captain Daniel Beeckman visited Bandjarmasin in 1714. In describing the features of the country he writes : " As to the birds, I met with none such

as we have in England, except the Sparrow. Here are Parrots and Parrokets of various sorts and sizes, from the bigness of a Bullfinch to that of a Raven; particularly a sort called by the *Banjarcens* Luree (that are brought hither by the *Maccassars*) which they so much admire for their beauty, docility and sweet smell, that there are few houses without one of them; they give sometimes six or seven pieces of Eight for one; I bought several, but the cold weather at sea killed them."

Moulton goes on:

> "During the time of the Dutch East India Company which came to an end in 1796, nothing seems to have been done to explore the interior of Borneo, the Company contenting themselves with a few trading posts established on the south and west coasts. In 1820, however, a start was made by the Natural History Commission of Batavia, who appointed naturalists to collect and explore in Borneo."

Second Period—1826–1874

The principal pioneers of this time were:

a) Indonesian Borneo

Pierre Diard, a Frenchman who toured Borneo in 1826 in his capacity as an inspector of agriculture under the Dutch East Indies Government; he collected fifty species, the first beginnings of the Borneo list, and presented them to the Leiden Museum. His name is commemorated in Diard's Trogon.

H. A. von Henrici, an officer of the Dutch East Indies Army, who was in charge of the topographical survey of the Chinese districts of West Borneo in 1830–32, and in 1833–34 toured in South-East Borneo. The Yellow-crowned Barbet is named after him.

Some of the birds collected by the above were included by Temminck in his work *Planches Coloriées D'Oiseaux*, 1823–36.

F. W. Korthals, a Dutch botanist, who visited South-East Borneo with Müller and Horner in 1836.

Salomon Müller, a German taxidermist from Heidelberg, who visited South-East Borneo with Korthals in 1836. He added another seventy species to the Borneo list (mainly from round Bandjarmasin and the Barito River, or Douson River as it was sometimes called in his day). Both in the field and in the museum he was a first-rate ornithologist, and is commemorated in the genus *Mulleripicus*.

Dr. C. A. L. M. Schwaner, a German geologist from Mannheim, who travelled widely in South-East Borneo in the Barito and Kahajan drainages in 1843–48 examining coal-bearing strata. He was the first to travel through the interior, from Bandjarmasin to Pontianak (see his book *Borneo* published in Amsterdam in Dutch). He added over fifty species to the Borneo list, and his name is commemorated in races of the Banded Pitta and of the Bamboo Flycatcher-Warbler.

Dr. J. H. Croockewit, a Dutch geologist, also went to Borneo to study coal beds. In 1851 he was in South-East Borneo round Pagattan and Pusan, and in 1852 presented a collection of about 500 skins to the Leiden

Museum ; one or two species he obtained, e.g. the Little Black Cormorant, have not been seen again in Borneo.

General W. C. von Schierbrand collected birds round Bandjarmasin in the 1850s and presented them to the Austrian Frigate " Novara " during her scientific voyage round the world 1857–59. The birds are listed without comment in the report published by Pelzeln (1865) on the birds collected during the voyage.

J. Semmelink was an " offizier van gezondheit " and in 1867 made a small collection round Pelaihari in S. Borneo, which he presented to the Leiden Museum.

b) British Borneo

The three territories that now comprise British Borneo remained a *terra incognita* until the arrival of Sir James Brooke in Sarawak in 1839 and his subsequent installation as Rajah in 1842. He himself is responsible for some Bornean birds in the British Museum.

H. Low obtained an appointment with the Honourable East India Company, but happened to travel out in 1844 with Sir James Brooke, and this led to his quickly resigning his Indian appointment and joining the first Rajah as his Secretary, arriving in Sarawak early in 1845. In 1848 he published a book in London entitled : *Sarawak ; its inhabitants and productions : being notes during a residence in that country with His Excellency Mr. Brooke.* The Appendix to this work contains the earliest list of Bornean birds ; it appears to be a list of all Bornean species then in the British Museum—which had been enriched by Low's collections of mammals, birds, and insects.

He was transferred to Labuan as Colonial Treasurer in 1848, and remained there till 1877, when he was transferred to Perak as Resident. He retired in 1889 and died in 1905.

Low was a keen horticulturist, and primarily interested in botany and orchid hunting. Governor Ussher wrote in 1879 :

> Natural history in Borneo owes a large debt to Mr. Low, one of the oldest residents in Labuan, whose name is well known to science. His labours in every department of zoology and botany, as well as his numerous excursions and travels in Borneo, and his intimate acquaintance with the various tribes of the great island, make him a foremost authority on all matters connected with their part of the Malay Archipelago."

Low sent a number of bird collections home to England, the earlier ones all labelled "Labuan " although some of the specimens came from the mainland (c.f. Sharpe, 1879c : 318) ; the last two collections were examined by Sharpe, who notes :

> " A great tribute is due to Mr. Low for his last collection from Borneo, which contained a very large series of eggs and nests taken with the parent birds by his trained hunters, and described in this and the paper which I have sent to the Ibis on the birds of Lumbidan."

In 1851 he made the first ascent by a European of Mt. Kinabalu (not quite to the top), a climb he repeated with Spenser St. John in 1858.

J. Motley was a civil engineer who went to Labuan in 1851 or 1852 to work in the coal mines there (with one of the four companies that went bankrupt in quick succession). His work in collaboration with L. L. Dillwyn on the natural history of Labuan (1855) is the first to contain field notes on the commoner birds of Borneo; meanwhile in 1854 he was appointed Superintendent of a private company in the territory of the Sultan of Bandjarmasin, but was killed at Bangkal near there during the Malay insurrection of 1860 (see *Nineteenth Century Borneo* by Prof. Irwin); his bird collections and field notes survived and were the basis of Sclater's paper (1863). Motley added another 58 species to the Borneo list.

The famous naturalist Alfred Russel Wallace visited Sarawak from 1 November 1854 to 25 January 1856 (see *The Malay Archipelago*, 1869). He was, however, mainly interested in mammals and insects, and collected few birds; but some ten years later he published papers on the parrots, on the pigeons, and on the raptorial birds of the Malay Archipelago (*Ibis* 1864, 1865, 1868).

O. Beccari, one of the greatest botanical explorers of the nineteenth century, was in Sarawak 1865–67, accompanied initially by Marquis G. Doria, who returned to Italy in March 1866 owing to bad health; they made an important collection of about 800 skins, which were presented to the Genoa Museum and included over 40 species not previously recorded from Borneo; the collection was studied by Count Salvadori, who used it as the basis for his book on the birds of Borneo (1874). The author incorporated all previous literature on the subject, resulting in a fine volume of 430 pages, recording and discussing 392 Bornean species, besides indicating 54 more species which he thought would eventually be found in Borneo and in fact most of them have since been recorded. Apart from a few notes by Doria, the only field notes in this volume are an Italian translation of Motley's notes on the birds of Labuan and Bandjarmasin.

J. Xantus (spelt without an "h") collected 450 skins of 220 species in Sarawak and Brunei in 1869–71; the skins were deposited in the Hungarian National Museum, Budapest (vide Salvadori, p. xiii) but were all destroyed in the rising of October 1956. An obituary was published in *The Condor* just before the second German war (I am indebted to Dr. Andrew Keve for information about him).

Third Period—1874–1914

a) British Borneo

Hitherto bird collecting had been virtually confined to the lowlands; it was during this third period that the birds of the mountains were studied by a number of naturalists, and many new species added to the Borneo list.

A. H. Everett can possibly claim to have been in and out of Government service more often than anyone else in the history of Borneo. He went to Sarawak in 1869 for the purpose of making natural history collections but found (as others have since) that this afforded but a precarious livelihood, and after two years he entered the service of the second Rajah; he worked in the Rajang and in Bintulu. In 1875 or 1876 he resigned to resume collecting, but his health failed. Later he joined the

service of the British North Borneo Co. and was appointed Resident, West Coast, resigning in 1883; yet in 1885 he was back again, as Consul for Sarawak at the Court of the Sultan of Brunei. In the same year he was transferred to Trusan as Resident, and finished up as Resident, Fourth Division, resigning for the last time in 1890. He collected in various localities, including Mts. Poi and Penrissen, and the Natuna Islands (1893), and most of his specimens were studied by Bowdler Sharpe at the British Museum. Some of his early records are included in Salvadori's book. He was responsible for inspiring Hose with a desire to collect birds.

He was a collector of plants, including ferns and mosses, in addition to birds, of which he added 28 species to the Borneo list. His *List of the birds of the Bornean group of islands* records 570 species (including 34 found in Palawan but not in the Bornean province as defined in this book), and was the standard list until replaced by Moulton's. He also made important collections in the Philippines.

H. T. Ussher was the first (but not the last!) Governor to take an active interest in birds.

> "On being appointed to the governorship of Labuan, my old friend Governor Ussher at once set to work exploring the ornithology of his dominion, and, with his usual zeal, speedily sent a large series of skins to my care at the British Museum. This series embraced collections from several localities, all carefully separated and indorsed, the most complete being that from Labuan itself, where the Governor is a resident, and where he has worked personally and by means of trained collectors, many of the latter being educated to the work by Mr. Low" (Sharpe, 1879).

Even in those days Governors were overworked; Ussher notes:

> "My time is not sufficiently at my own disposal to permit me to record many of those valuable observations so useful to science"; and in a letter to Sharpe dated 18th June 1877 (MSS in Sarawak Museum):
>
> I am much flattered at Mr. Gould's letter; but you must not let him think me a *scientific* collector, I am only a field collector, passionately attached to it—and I only wish I could eliminate the hateful word 'coin' out of the business—but I am an absolute pauper, or worse, in debt—so it is of no use . . . my health continues poor, and the work is *too much* for me."

Shortly afterwards Governor Ussher was invalided home and succeeded by W. N. Treacher:

> "Mr. Treacher, after Governor Ussher's return to England, obtained a great many birds from the Lawas River, as well as from Lumbidan and from Brunei, together with a small collection from the neighbourhood of Kinabalu. Mr. Burbidge has also submitted to me a few birds from the Lawas River, which are likewise here noticed" (Sharpe, 1879 a).

F. W. Burbidge was a plant hunter employed by Messrs. Veitch. In 1877–78 he visited the Lawas district, going up the Lawas and Merapok rivers, and the Limbang district, going up the Limbang and Panderuan Rivers as far as Mt. Sagan; he made two trips to Kinabalu, and also visited

Sandakan and the Sulu Archipelago. His book on his travels is listed in the references.

JOHN WHITEHEAD was the first naturalist to make a prolonged survey of the wild life on Kinabalu; the following tribute was paid to his work by Pendlebury and Chasen, who visited the mountain in 1929:

> "We who followed in Whitehead's footsteps forty-four years later have the greatest admiration for this indefatigable collector: in spite of ill-health and obstruction by troublesome natives he made the then hazardous journey to Kinabalu and only established himself on the mountain after two unsuccessful attempts. His magnificent collections in the various museums in Europe bear testimony to his doggedness and skill as a collector. To Whitehead belongs the credit of the first extensive exploration of the mountain and to him we owe our first real insight into its zoological features."

Apart from Kinabalu, he collected on the Bengkoka River (opposite Kudat) (1 September–16 November 1885), on the Merapok branch of the Lawas River (mid-March to mid-April 1886), and on Tiga Island (21–28 April); an attempt to explore the Padas River ended in a fiasco. He was also in Java for nearly six months (mid-July 1886 to January 1887) and on Palawan for over three months (mid-June to end September 1887).

He added 59 birds to the Borneo list, mostly montane species. The promising career of this great naturalist was cut short by malaria at the early age of thirty-eight on Hainan Island off the South China coast, where he died on 2 June 1899 (*Bull. B. O. C.* 1899: liii). He had planned another single-handed expedition to the Philippines to round off his previous work there, but on landing there in February 1899 found fighting in progress between the Americans and the Tagalogs. He landed on Hainan to fill in time and was taken ill in the interior after collecting for little more than a month.

Whitehead's ambition was "to add some little everlasting stone to that ever-increasing cairn of human knowledge." He was modest about his literary efforts: "essentially and by choice a field naturalist, I find it far easier to explore an unknown tract of country than to write an account of my researches." Yet his great book *Exploration of Mount Kina Balu*, illustrated with many beautiful lithographs from his own water-colour sketches, and written with an engaging freshness of style, is surely his imperishable memorial.

E. G. LEMPRIÈRE collected on Labuan Island, along the Segilind River in N.E. Borneo, and at Silam in Darvel Bay; Nicholson (1883) reported on his collection.

J. S. JAMESON visited the Lawas River in 1877 and presented 59 specimens to the British Museum.

CHARLES HOSE landed in Kuching on 15 April 1884 and was appointed as a Cadet for duty in Baram district. In that district he remained, apart from periods of furlough, for 20 years. His last tour was spent in Sibu as Resident, Third Division, and he retired on pension on 20 August 1907.

He was an all-round naturalist who collected anything that aroused his curiosity—monkeys, bats, squirrels, rodents, deer, birds, scorpions, millipedes, molluscs, plants—in addition to studying the pagan tribes of

Borneo. In his paper on the birds of Mt. Dulit he tells us that he took up bird collecting in 1877, being stimulated to do so by A. H. Everett. Apart from this paper he did not himself publish much on birds, but provided many well prepared specimens for taxonomists to work on—ten new species were described from his collections. Most of these were obtained when he and Everett made the first ascent of Mt. Dulit in 1891; there is a pleasant photograph at page 168 of his book *Romance and Research* showing six strong men staggering under the weight of an enormous packing case of specimens for the British Museum.

His brother ERNEST HOSE, who is still alive, collected birds in the Natuna Islands, July–October 1894.

W. B. PRYER collected butterflies, beetles, and also bird skins in North Borneo, 1877–99, making many trips inland on the East Coast, e.g. up the Kinabatangan River; for part of the time at least he was an Agent and Resident of the British North Borneo Company. Sharpe's paper of 1881 is a report on one of his collections.

C. F. ADAMS collected from Sandakan round the east coast to Darvel Bay, 1887. The skins went to the American Museum of Natural History and were reported on by Elliott.

P. N. GRAYDON collected at Lamag on the Kinabatangan River.

C. D. HAVILAND joined the Sarawak Government as a medical officer in 1891, and was the first Curator of the Sarawak Museum, 1893–95. He was chiefly interested in botany, but also collected some birds, and visited Kinabalu in 1892. He later became Chief Medical Officer of Sarawak.

E. BARTLETT succeeded him as Curator, 1895–97, during which time he published valuable notes on the birds of the Kuching district. In 1888 he published a monograph on the weaverbirds.

R. W. C. SHELFORD succeeded him as Curator (1897–1905), retiring to the Oxford Museum, where he became a world authority on cockroaches. He spent a month on Mt. Penrissen in 1899 and wrote a short note (1900) on the birds found there; he also visited the Trusan River and the upper Sadong. A few bird notes are included in his posthumous book (1916).

FRANK SWIFT BOURNS and DEAN CONANT WORCESTER, the famous explorers of the Philippines, collected in Sarawak and on Kinabalu in 1892–93, judging by 44 skins of theirs in the U.S.N.M., but I have been unable to find any published account of their expedition. Worcester (1911) published a paper which gives some interesting breeding localities for the Sulu Sea.

GEORGE A. GOSS and H. D. DODGE (*Collocalia dodgei* is named after the latter) climbed Kinabalu in 1904 (a bottle containing their names was found on the top, vide Moulton 1915 a: 166) and some of their skins also went to the U.S.N.M.

J. WATERSTRADT (or WATERSTRAAT) born in 1869 of Danish parents, was a professional insect collector who spent a number of years in Borneo. In 1897–1900 he was in what is now the Lawas district (Lukutan River—a small stream about three miles up river from Lawas town, Mengalong, Punang, Merapok mountains) and from September to December 1897 in the adjacent Padas district. In December 1897 he was on Labuan.

From November 1899 to January 1900 he collected on Kinabalu. Some of his birds were reported on by Blasius (1901).

DR. PAUL BARTSCH of the Smithsonian Institution visited Malaysia and the Philippines on board the United States Bureau Fishery steamer *Albatross*. He collected at Sandakan 1–3 March 1908; the skins are in the U.S.N.M.

WILLIAM BEEBE, during his travels in S.E. Asia to study pheasants for his monograph, visited Sarawak in 1910. Unfortunately his book gives no detailed itinerary, but he appears to have spent most of his time up the Rajang River, travelling to Kapit and thence up the Baleh River and its tributary the Mujong, where he camped for some time.

ROY CHAPMAN ANDREWS collected a few birds on Sibatik Island in 1910 (see Amadon, 1943 b).

J. M. DUMAS was a Eurasian who travelled extensively (mostly in New Guinea) collecting birds and insects; he owned land in North Borneo, the tenants of which did not have to pay him any rent, but in return yearly a dozen of them had to follow him on his travels—a delightfully feudal arrangement! Birds collected by him on the Lawas River in 1900 are preserved in the Zoological Museum, Bogor (vide Kloss, 1930).

J. C. MOULTON succeeded Hewitt as Curator in 1908–15, and started the Sarawak Museum Journal in 1911. He was appointed Director of the Raffles Museum in 1919 and resigned in 1923 to return to Sarawak as Chief Secretary (at the age of thirty-seven, the youngest officer ever to hold that post?); his brilliant career was cut short at the age of forty when he died in London in 1926.

In 1910 he tried to reach Mt Batu Lawi, and got as far as the Medihit, a tributary of the Limbang River. In 1911 he tried again, and climbed to within 600 feet of the summit; he brought back specimens from there and from Mt. Derian. In 1913 he climbed Kinabalu, and spent six weeks on the mountain collecting at various altitudes. Later in the year he collected on Mt. Berumput, Poi range. In 1914 he ascended the Baram, and its tributary the Akah, but political considerations prevented further advance and he returned after obtaining a few montane species on Mt. Murud Kechil. In 1920 he made another attempt (accompanied by Prof. Harrison Smith and Mr. H. B. Crocker) to reach the Kelabit country, but was held up by ill-health and Kelabit perversity; however collections were made on the Tama Abo mountains and were brought down safely—native collectors working on Mt. Murud Kechil and the hills round Lio Matu lost all their skins when their boats overturned in rapids on the return.

His *Hand-list of the birds of Borneo* sums up all work down to the eve of the first German war.

b) Indonesian Borneo

DR. G. FISCHER and DR. H. BREITENSTEIN were medical officers who collected round Bandjarmasin and Muara Tewe; Brüggemann (1877, 1878) and Pelzeln (1879, 1880) reported on their collections. Fischer was the first collector of one of our rarest birds, *Polyplectron schleiermacheri*.

DR. C. C. PLATEN, a German naturalist and physician at Amoy, did several collecting trips in Malaysia and the Philippines. He collected at Paku and Jambusan, Sarawak, see Blasius (1881, 1882).

F. J. Grabowsky was a German zoologist who travelled widely; he spent three years in S.E. Borneo 1881–84, and his collections were reported on by Blasius (1883, 1884).

Dr. J. Büttikofer was zoologist on the Dutch scientific expedition to the upper Kapuas, Nov. 1893–July 1894. His own collection totalled 1500 skins, more than half of them from Mt. Kenepai (including Rumah Manual at the foot of it) and Mt. Liang Kubung. Smaller collections were made by others of the expedition: Moret (74 skins from near Pontianak), Westenenk (102 birds from Sanggau, all in spirit), Schaedler (26 skins from Pontianak). In describing the results of this expedition, Büttikofer wrote, somewhat plaintively (1900: 147):

> "The region of the Upper Kapuas having previously been entirely unexplored, I expected to obtain a number of new species, especially in the mountain forests, but although I worked very hard in collecting as many interesting species as possible, paying special attention to the smaller and more unobvious forms, there is not a single really new form among the 269 species collected, and only two species (*Harpactes orrhophaeus* and *Cyanoderma poliogaster*), already known from other islands or from the Continent, were obtained which had not been recorded before from Borneo.
>
> These facts are pleading very strongly for the perseverance and the great success with which Kinabalu and the mountainous interior of Sarawak have been explored by the energetic naturalists as Whitehead, Everett and Hose, who added so many new species, especially mountain forms, that we were not able to enrich this great number with a single new species."

Dr. A. W. Nieuwenhuis, a medical officer in the Dutch East Indian Army, was chiefly interested in ethnology, but made zoological collections during the course of the two further expeditions to Borneo which he organized (see Smythies, 1955). With the help of F. Freiherr von Berchtold and native collectors he obtained 1469 skins, all but 25 from the Mahakam and Kayan areas. Only one new species (*Pycnonotus nieuwenhuisii*) was described from this collection, which was reported on by Büttikofer (1900) and Finsch (1905).

Many months of intensive collecting by trained zoologists, yielding well over 3,000 skins, had resulted in only three species being added to the Borneo list, and in fact only two resident species have been added since Nieuwenhuis's Bulbul. Thus, as Dr. Mayr wrote (1938):

> "The exploration of the bird life of Borneo was considered more or less completed around the turn of the century."

Dr. William Louis Abbott (vide his obituary notice in *Auk*, 1936: 369): "was one of the greatest field naturalists that America has produced and his services to natural history and geography cannot be overestimated. No single explorer, as far as we know, has ever brought together such valuable collections and observations from such a wide range of territory. . . .

In 1897 he explored Siam and for the next ten years visited Sumatra and Borneo and in his own vessel, manned by Malay sailors, cruised the coasts of Siam and the China Sea, visited many small islands the fauna

of which had never before been studied. In these later explorations he devoted his attention mainly to small mammals."

He collected about 369 birds on the mainland of Borneo, mainly along the western and southern coasts from Pontianak round to Balikpapan, on a number of visits in 1905, 1907, 1908, 1909 (vide *Auk* 1936 : 369–370). The islands he visited included the Natunas (where he obtained 209 specimens, 23 May–13 August 1900), the Tambelans (where he collected 53 specimens with Boden Kloss, 3–15 August, 1899), and the Karimatas (1904 and 1908). His birds went to the U.S.N.M. and were studied by Oberholser (various papers). Prior to 1914 he was one of the best-known " characters " of Singapore and neighbouring regions.

HARRY CUSHIER RAVEN, a professional American collector who was subsidized by Abbott, spent two years (26 May 1912–6 July 1914) working in eastern Borneo from the valley of the Mahakam to that of the Berau and back again, taking up the work where Abbott left off. His explorations covered five areas :

27 May–2 July 1912. Mahakam River from the mouth to Tenggarong.
6 July–1 September 1912. Maratua Islands and neighbouring coasts.
5 September 1912–1 January 1913. Berau River and its tributaries.
17 January 1913–8 January 1914. Mangkalihat Peninsula together with its offshore islets and its interior via the Karangan River.
30 January–15 May 1914. Mahakam River again up to 0°30′ N. Lat.
16 May–5 July 1914. At Samarinda.

The collection of 2,292 skins is deposited in the U.S. National Museum ; it has never been written up as a whole, but Riley (1930) listed all the birds from the Maratua group of islands, and a number of subspecies have been described from the collection.

DR. VORDERMAN, a well-known Dutch ornithologist of the Malay Archipelago, listed the birds of Borneo in 1887. His collection of nearly 2,000 skins was presented to the Leiden Museum in 1900, but how many of these were from Borneo we do not know.

CARL BOCK, a Swedish explorer and ethnographer, was commissioned by the Government of the Dutch Indies to visit E. Borneo on a political-zoological mission. He travelled up the lower Mahakam, crossed the watershed to the Tewe River, and descended to Bandjarmasin (see his book, *The Head-hunters of Borneo*). In 1880 the Leiden Museum acquired 120 skins from him, collected on the lower Mahakam. *Cuculus bocki* is named after him.

CAPT. H. STORM collected some birds round Pontianak for the Lubeck Natural History Museum, see Blasius (1896). Storm's Stork is named after him.

BRITISH-DUTCH BOUNDARY COMMISSION. In 1912 a joint British-Dutch party demarcated the frontier between Dutch Borneo and British North Borneo ; the Dutch party collected some birds, which are deposited in the Zoological Museum, Bogor.

FOURTH PERIOD—1914–1947

a) British Borneo

There was seven years' lull, owing to the first German war and its aftermath.

DR. E. P. MJÖBERG, a Swedish zoologist-ethnographer, was appointed as Curator of the Sarawak Museum in 1922, and lost little time in organizing an expedition to Mt. Murud; he made the first ascent of the mountain (but did not reach the highest point) and spent six days at over 7,000 feet. In 1923 he spent four weeks on Mt. Dulit at 4,000 feet, and later the same year he camped for ten days at 5,200 feet on the summit of the Poi range. He left Sarawak in 1924, but in 1925–26 organized another expedition to climb Mt. Batu Tibang, travelling up the Mahakam, over to Long Nawang, climbed the mountain successfully, and then back down the Kayan river to the coast. He was not primarily interested in birds, but made collections at the above localities.

E. BANKS succeeded him as Curator. I have not seen a list of his journeys, which are not reported in Flora Malesiana as he collected no plants, but from his numerous articles it appears that he visited the Kelabit country in 1930, going up by the Baram and returning by the Tutoh-Akah route. In 1931 he went up the Trusan to Bah Kelalan; in 1932 he was with the Oxford University Expedition on Mt. Dulit; in 1936 he was back in the Kelabit country on archaeological work, leaving his bird-collecting to native collectors. He also collected on the Poi range, and paid short visits to Mt. Mulu (1934 and 1935), a peak that was first climbed by Shackleton of the Oxford Expedition in 1932, and to the Maga mountains (1939) on the Trusan-Padas watershed.

F. N. CHASEN, who was in charge of the birds in the Raffles Museum, and C. BODEN KLOSS, Director of Museums, Straits Settlements and Federation of Malaya, selected the lowlands of North Borneo and the islands off its northern extremity for a three months' expedition in 1927; the bulk of the collection was made at Bettotan (at the head of Sandakan harbour) in heavy forest, but brief visits were paid to Mallewalle (Malawali) Banguey (Banggi), and Balambangan islands.

In 1928 Chasen collected at Rayoh below Tenom in the gorge of the Padas River, and in the Natunas. In 1929 Chasen, with H. N. Pendlebury, spent about two months on and around Kinabalu, collecting anything of zoological interest.

His work culminated (as far as Borneo is concerned) in his invaluable *Handlist of Malaysian birds*; this has one drawback—no authority is quoted for the occurrence of a bird in a particular territory, so for the rarer birds of Borneo the older literature has to be re-examined to find out where the bird was recorded and by whom.

S. TANAKA made small collections in 1923 and 1931 in British North Borneo (east coast), which went to Japan and were worked out by Kuroda.

WALTER A. WEBER and FRANK C. WONDER were members of the Crane Pacific Expedition of the Field Museum of Chicago and collected 115 specimens of birds (see Mayr and Camras, 1938) in a locality eight miles west of Sandakan, 3–7 and 17–26 August 1929.

TOM HARRISSON and C. H. HARTLEY were members of the Oxford University Expedition of 1932 and collected birds in the Baram district, mainly on Mt. Dulit. They described (1934) a number of new races, and the material from this collection in the British Museum was examined by Banks (1949 a), but the collection as a whole was never listed or reported in detail.

J. A. Griswold, Jr., collected birds and mammals in 1937, 7 June to 20 August, for the Asiatic Primate Expedition, the specimens going to the Museum of Comparative Zoology at Harvard, U.S.A.

> "In North Borneo some collecting was done from Jesselton on the west coast, close to sea level. From this point Griswold made his ascent of Mount Kinabalu, the highest mountain in Malaysia. He collected for three months at varying altitudes, his principal base camp being at Lumu Lumu in the primary forest at 5,500 feet. He also had collecting camps at Bundutuan about 3,300 feet, Pakka Cave about 10,000 feet, Sayat Sayat at 12,000 feet, and reached the summit of Low's peak 13,455 feet."

H. G. Deignan collected lowland birds 20 June to 12 August for the same expedition on the east coast: in the forest close to Sandakan, at Merotai Besar, and at the mouth of the Kalabakang River not far from Tawau, and round the base camp at Abai at the mouth of the Kinabatangan River.

b) Indonesian Borneo

Carl Lumholtz, a Norwegian explorer, spent two years in Borneo between the years 1913 and 1917 (see *Through Central Borneo*). His principal journey was up the Barito River and its tributary the Busung to its source, over the watershed to the Mahakam, and down it to the coast. He also visited the lower reaches of the Kayan and the Kahanan. Specimens were obtained on these trips by native collectors, and later went to the Norwegian Museum.

J. van Dijl made a small collection in Central Borneo in 1916. Collection not reported on.

F. C. E. van der Putten made a small collection at Rantau, S.E. Borneo, also in 1916. Collection not reported on.

A. Blanchemanche collected along the Melawi river, a tributary of the Kapuas, in 1924–25.

H. C. Siebers, ornithologist at the Zoological Museum, Bogor, in 1925 collected birds in E. Borneo, mainly from the Telen River, a tributary of the Mahakam. This collection formed the bulk of the material in the Bogor (=Buitenzorg) Museum when Kloss examined it (1930).

L. Coomans de Ruiter made collections at various places in the low country round Pontianak in March and April 1931, including ten days on the Karimata Islands (vide Chasen & Kloss 1933).

Prince Leopold of the Belgians, in the course of a voyage to the far east in 1932, collected about 100 specimens in the Barito drainage which are now in the Brussels Museum (Dupond 1942).

Baron Victor von Plessen visited the Kayan River in 1935, primarily to film the natives (the film was later released under the title *Die Kopfjäger von Borneo*), but he also collected over 1,000 skins which went to the Berlin Museum (see Stresemann, 1938).

J. J. Menden of Java was a professional collector engaged by the American Museum of Natural History, New York, to collect in S. Borneo. He brought back 648 skins (of 157 species) from two localities:

a) Parit on the Tjempaga River, about 21 miles above its junction with the Sampit River;

b) Riam, Kotawaringin River.

It may be asked why, if the exploration of bird life in Borneo was more or less completed around the turn of the century, a Museum should consider it worth while to employ a professional collector. According to Dr. Mayr:

> "Our point of view on species and subspecies has been completely revolutionized since that date and it has become necessary to rework the avifauna of the various islands of Malaysia. An exploration of northern Borneo undertaken in 1927 by Chasen and Kloss yielded unexpectedly rich results. They were not only able to describe 19 new forms (i.e. subspecies), but their researches also indicated greater differences between the avifauna of the various parts of Borneo than had hitherto been apparent. It seemed desirable in the light of this recently gained knowledge to undertake a similar exploration of south Borneo."

Moulton's hand-list uses trinomials, a recent innovation in his day; the study of geographical variation and the definition of geographical races or subspecies requires a series of *fresh* skins from different parts of Borneo, so that colours and measurements can be compared.

As a result of intensive study of birds on a world-wide basis by the taxonomic experts in America, such as Dr. E. Mayr, Jean Delacour, H. G. Deignan, Dean Amadon, Dillon Ripley, Alexander Wetmore, etc., the whole system of bird classification has been revised in the last twenty years, the order of families changed, many genera abolished as unnecessary, former species demoted in rank to subspecies, and so on; with the result that the scientific names of many birds today bear little resemblance to their names in the British Museum Catalogue. The new classification was adopted by Delacour in his *Birds of Malaysia*, which marks the start of our fifth or present period.

Fifth Period—1947–Present Day

This period has so far been dominated by the Sarawak Museum activities, a collection of about 10,000 specimens having been made, partly under the direct supervision of the Curator and partly by local collectors trained at the Museum and working under his control. From 1951 to 1954 the well-known ornithologist-photographer Loke Wan Tho generously provided financial assistance, and that part of the collection is labelled the Loke Wan Tho/Tom Harrisson collection. Part of the earlier material collected by Harrisson before 1951, from the Kelabit uplands, has been examined by Dean Amadon at the A.M.N.H., and it is hoped that the report will be completed in 1959. The rest of the collection, amounting to over 7,300 skins, has been examined and listed by the writer, working at the Sarawak Museum.

Among the local collectors who helped in the Loke/Harrisson project, the following deserve special mention:

a) Sarawak Museum Staff

Sliman bin Salleh. Born 1888. Joined the Museum staff in 1923 and accompanied Dr. Mjöberg to the Kelabit country and Mt. Murud in 1923, collecting plants and birds. Under Banks he became chief field assistant and in 1932 was principal bird collector on the Oxford University Expedition to Mt. Dulit. Under Harrisson (from 1947) he took a leading part

in long expeditions to the Kelabit uplands and elsewhere, retiring on pension in 1957 after spending some years in training a team of younger men and part-time collectors to carry on the work. To quote Harrisson : " His sound, careful methods of observing, his intelligent and selective collecting, his accurate skinning, sexing and labelling, have set a standard which he has passed on to others . . ." some of whom are :

Gaun anak Sureng, now principal Museum collector.

Nyandoh anak Kadir, collected in Serian district (Tapuh) and on Mt. Trus Madi.

Junaidi bin Bolhassan, collected round Kuching and Matang.

Jommel bin Bogol, collected at Santubong and on Mt. Kinabalu.

b) Part-time Collectors

Padan, a Murut up the Trusan.

Nawan, collected on the Baram (Long Ikang), son of Temonggong Oyong Lawai, O.B.E.

Rufus anak Nanang, collected round Simanggang.

J. Bangga, collected chiefly on Mt. Matang, since died.

Oyau Madang, only son of Penghulu Balan Ding of the Tinjar, collected up the Plieran and round his house at Long Buroi, Tinjar.

Nondin bin Kadir, collected on Talang Talang Island.

Malays, Muruts, Ibans, Kenyahs, and Land Dayaks are represented in the above short list.

In 1950 Gaun anak Sureng was attached to Robert F. Inger and D. Dwight Davis of the Chicago Natural History Museum on the E. Coast of North Borneo ; birds were collected in the lowlands, partly at Kretam in Dewhurst Bay, and partly near Sandakan, from May to October. The birds went to the Chicago Museum for examination and a list has been received. He was again with Inger in 1956, see below.

David Horn Johnson collected mammals on Kinabalu in 1951. He also brought back to the U.S.N.M. a total of eighteen bird skins, of which seven are from the Menggatal Rubber Estate, eleven miles N. of Jesselton, and the remainder from Kinabalu at various altitudes.

Tom Chavasse of the Oxford University Expedition (1955), assisted by Gaun anak Sureng, Oyau Madang and a Kenyah trained locally, brought in a collection of 543 specimens, partly from the Usun Apau and partly from the Baram lowlands, which have been determined and listed by the writer working in the Sarawak Museum.

R. W. Sims and E. Banks of the British Museum (Natural History) North Borneo Expedition (referred to in the text as the B.M. expedition 1956) spent four months April to July 1956 collecting on the east coast of British North Borneo, and brought back 560 skins of 191 species. Some swiftlets with their nests were obtained in the Gomanton caves, which it is hoped will throw some light on this genus. Two mountains were visited ; Mt. Ensuan (=Tonsuan of some maps) a peak of 4,500–4,900 feet six miles S.W. of Mt. Meliau ; and Mt. Magdalena. In the lowlands and coastal areas collecting stations included the Labuk River area round Beluran, Sandakan, Semporna and adjacent islands, and Tawau. I am indebted to Sims for this information and for showing me the collection and sending me a complete list of the species in it.

Dr. Robert Inger of the Chicago Natural History Museum revisited Borneo in 1956. As in 1950, Sarawak Museum collector Gaun accompanied the expedition throughout and made collections of birds in N.E. North Borneo and in the upper Baleh, Sarawak. Skins in the Sarawak Museum.

Dr. Peter Bell of London University (Dept. of Botany) ascended Mt. Poi in August 1956, accompanied by three Sarawak Museum staff and two Land Dayak part-time collectors. About 100 skins were taken between 2,000 and 4,500 feet, and are now in the Sarawak Museum.

The Cambridge University Expedition to North Borneo, 1956, on the suggestion of the Curator (Harrisson) worked mainly on Mt. Trus Madi, c. 8,400 feet, the second highest mountain in Borneo and the only major peak previously unexplored. The expedition's ornithologist was J. V. Boys of Trinity College, Cambridge, who was accompanied throughout by R. Nyandoh, Sarawak Museum collector. Ten days were spent by Boys and Nyandoh in extreme discomfort at the summit and two months (August, September, 1956) in the field. About 250 skins were obtained, including nearly all the highest montane forms, some only before known on Mt. Kinabalu—*Turdus p. seebohmi*, *Bradypterus accentor*, *Brachypteryx montana*, etc. These collections are now in the Sarawak Museum and have been preliminarily examined by Harrisson.

Lord Medway (son of Lord Cranbrook, who made an important contribution to our knowledge of the birds of far northern Burma) worked as a technical assistant in the Sarawak Museum, September 1956–July 1958. His most important work was a detailed study of the cave swiftlets in collaboration with Tom Harrisson, the results of which will, I hope, be published in due course.

Mr. Pfeffer collected about 300 skins of 110 species in the upper Mahakam in 1957. The collection has been examined by Professor Berlioz at the Paris Museum, and it is hoped that a paper will be published in due course.

List of Museums with Important Collections of Bornean Birds

A. Britain

1. British Museum (Natural History) London. One of the largest and most complete Bornean collections in existence.
2. Liverpool Museum. Has the important Tristram collection, of which there is a catalogue in the Bird Room of the British Museum; the Bornean section includes specimens collected by Wallace, Motley, Low, Lemprière, Pryer, Whitehead, Everett, Bock.
3. Royal Scottish Museum, Edinburgh. Has 56 specimens.
4. University Museum of Zoology, Cambridge. Has a few of Hose's duplicate skins.
5. University Museum of Zoology, Oxford. Has Treacher's collection.

B. Europe

1. Rijksmuseum van Natuurlijke Historie, Leiden. Has the most complete collection in existence from S. Borneo.

2. Museo Civico di Storia Naturale, Genoa. Has the important Sarawak collection of Doria and Beccari.

3. Zoological Museum, Berlin. Has over 1,000 skins collected by Von Plessen (Stresemann 1938).

4. Braunschweig Museum. The collections made by Platen in Sarawak and by Grabowsky in S. Borneo were split with (5) below.

5. Naturhistorisches Museum, Wien. See Braunschweig Museum. (*Note*.—Fischer's collection of over 1,000 specimens in the Hesse Museum, Darmstadt, and Storm's collection of 81 specimens in the Lubeck Museum were destroyed in the 1939–45 war, Stresemann *in litt.*)

6. Hungarian National Museum, Budapest. Had the Xantus collection of 450 specimens, from Sarawak and Brunei (Salvadori 1874 : xiii). Destroyed October 1956.

7. Norwegian Museum, Oslo. Has the Lumholtz collection from S. Borneo.

8. Musee Royal D'Histoire Naturelle de Belgique, Brussels. Has the Leopold collection of 100 specimens from the Barito.

C. Malaysia

1. Sarawak Museum, Kuching. The largest Sarawak collection in existence, dating from 1890 ; and 500 specimens from North Borneo.

2. Raffles Museum, Singapore. A valuable and well-arranged collection, much of it obtained by Chasen and Kloss personally in North Borneo.

3. Buitenzorg (Bogor) Museum, Java. The Bornean birds in the collection were listed by Kloss (1931).

D. United States of America

1. American Museum of Natural History, New York. A large collection from all parts of Borneo, including half of Harrisson's Kelabit upland material.

2. United States National Museum, Washington. About 3,000 skins from all parts of Borneo.

3. Museum of Comparative Zoology, Harvard. Has the collection made in North Borneo by the Harvard Asiatic Primate Expedition (see Peters, 1940).

4. Chicago Natural History Museum. Has two collections from the east coast of North Borneo.

5. Peabody Museum, Yale. Has about 3,000 specimens from the Loke/Harrisson collection.

APPENDIX B

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(iv) A note on the *Baza* of Borneo.

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INDEX TO PLACE NAMES

This list includes only names of places, rivers, etc., *not* marked on the map. Most of them appear on the larger scale maps issued by the various Governments.

ADANG	Near the first " M " of " Mt. Murud ".
ANDULAU FOREST	Covered by the letters " RIA " of " SERIA ".
AWAT AWAT	A fishing village on the coast of Brunei Bay near the mouth of the Trusan River.
BAH KELALAN	Near the source of the Trusan River.
BAKO	A fishing village N.E. of Kuching adjacent to the Bako National Park.
BALAI RINGIN	15 miles S.E. of Serian.
BARREN I.	In the South China Sea on the steamer route from Singapore to Kuching, Lat. 1° 32′ N., Long. 106° 26′ E.
BELANGSAT FOREST	On the coast near Lawas (q.v.).
BELIDAH	Somewhere near Bau.
BERAU R.	Lower reaches of Kelai R., opposite Maratua I.
BERHALA I.	At the entrance to Sandakan Harbour.
BIRANG R.	A left-bank tributary of the Kelai R. (or Berau R.) in Lat. 2° N.
BONGON R.	S. end of Marudu Bay.
BRAYONG R.	A right-bank tributary of the upper Trusan R.
BRUNY R.	A tributary of the Blu'u R., upper Mahakam.
BUNTAL	A fishing village north of Kuching.
BURONG I.	Off the mouth of the Lupar R.
CAPE SCINPANG-MENGAIO	The northern tip of Borneo.
DAPOI R.	Rises on the Usun Apau Plateau and joins the Tinjar R.
DARO FOREST	In the Rajang Delta W. of Sibu.
DATU I.	In the South China Sea.
DERAWAN I.	One of the Maratuas.
DOUSON R.	An old name for the Barito R.
ERABAN I.	(=Pulan Ulaban) 1° 24′ N., 118° 32′ E.
GOMANTON	A limestone hill a few miles S. of Sandakan Harbour.
KAKIET I.	I cannot find this.
KAMPONG GANA	A small village on the Seria-Tutong road.
KEJIN R.	Joins the Baram R. 4 miles above Long Lama.
KINABATANGAN R.	The principal river of North Borneo, passing Kuamut and Lamag.
KUALA LENGARI	Close to Awat Awat village (q.v.).
KUALA PUNANG	N.W. of Lawas (q.v.).
KUPANG R.	I cannot find this. Probably lower Barito R.
LABI HILLS	A range of low hills 20 miles S. of Seria.
LABUAN KELAMBU	1° 14′ N., 118° 42′ E.
LADAN HILLS	A range of low hills along the Brunei border W. of the Limbang R.
LAKE ANSOK	One of Hose's Baram localities that cannot be traced.

Lake Gadang Morong	One of the lakes of the lower Mahakam.
Long Peleben	On Bulungan R., 2° 50′ N., 116° 35′ E.
Laki I.	A small island near Cape Po.
Lawas	District headquarters on the Lawas River, 5 miles N.E. of the "T" of "Trusan River".
Loagan Tujoh	One of Hose's Baram localities that cannot be traced.
Lihong Bahaja	Somewhere in the lower Barito R., see Blasius 1883.
Long Buroi	On the Dapoi R. (q.v.).
Long Buya	Usun Apau area.
Long Ikang	On the Baram R., 7 miles above the Tutoh junction.
Long Lopeng	Upper Trusan. The principal right-bank tributaries, going down, are the Lopeng, Brayong, and Tengoa in that order.
Long Luar	On the upper Plieran.
Long Medalam	On the Limbang R. east of the "I" in "BRUNEI".
Lumbidan	Not marked on Government maps, but somewhere on the mainland opposite Labuan.
Maga Mountains	On the watershed between the upper Trusan and the upper Padas.
Mangsi I.	N. of Balambangan I.
Marudi	Headquarters of the Baram district, 8 miles N. of the Baram-Tinjar junction.
Matu	16 miles S.W. of Igan.
Mengalong R.	Just north of the Sarawak-North Borneo boundary.
Menganne R.	0° 49′ N., 117° 57′ E.
Merapok R.	A right-bank tributary of the Lawas R., running parallel to the Mengalong R. just inside the Sarawak boundary.
Mindai	One of Grabowsky's localities in the lower Barito area.
Mt. Apad Runan	c. 20 miles S.E. of Bario.
Mt. Berumput	One of the peaks in the Poi range.
Mt. Derian	Near Mt. Batu Lawi.
Mt. Kanji	Highest peak of the Poi range.
Mt. Murud Kechil	Near Mt. Murud.
Mt. Selidang	The highest point of the Usun Apau Plateau.
Mt. Sepali	30 miles S.E. of Kanowit.
Mt. Taman	One of the peaks in the Hose mountains.
Muara Tebas	Entrance to Kuching River south of Cape Po.
Mujong R.	Lowest right-bank tributary of the Baleh R.
Nanga Raun	A Dayak house in the Mandai valley, a left-bank tributary of the Kapuas just below Putussibau.
Pa Brayong	See Brayong.
Paku R.	A right-bank tributary of the Saribas R., near the "R" of "Lupar R.".
Paloh	Rajang R. delta.
Pangkalahan R.	(Muara Pangkalan Batu) 0° 52′ S., 117° 18′ E.
Pangkalan Buun	(Kotawaringin) 2° 40′ S., 111° 35′ E.
Patah R.	Right-bank tributary of Baram R. at "R" of "Baram R.".
Pa'un	Village near Tebakang, S.W. of Serian.
Pelagus R.	Right-bank tributary of Rajang R. near "K" of "SARAWAK". The Pelagus rapids extend four miles along the Rajang R. above the junction.
Peleben	See Long Peleben.
Pulau	In the Sibau R. (q.v.).

RAMBUNGAN R.	A creek due S. of Satang I.
RAYOH	In the gorge of the Padas R. below Tenom.
RITAN R.	Rises on Mt. Tingan and flows into the Belajan R. from the west, c. 0° 25′ N., 116° 08′ E.
SAMARAHAN R.	The mouth is 5 miles E. of Muara Tebas (q.v.).
SAMBAJARAN	I cannot find this ; in S. Borneo.
SANTUBONG	Fishing village and prominent peak north of Kuching.
SAPAGAYA R.	Leads to Gomanton caves (q.v.).
SARI I.	Somewhere near Bandjarmasin ; not traced.
ST. BARBE I.	(= Pulau Pengiki Besar = Pedjantan) 0° 07′ N., 107° 13′ E.
SEBUYAU	At the S. bank entrance to the Lupar R.
SEGAH R.	The left-bank tributary of the Kelai R. marked on the map in Lat. 2 N.
SEGILING R.	Near Bettotan.
SEMATAN	On the coast S. of Talang-Talang I.
SEPING R.	A right-bank tributary of the Balui R. rising in the Usun Apau Plateau.
SIBAU R.	Right-bank tributary of Kapuas R. just above Putussibau.
SILAM	9 miles S.W. of Lahad Datu in Darvel Bay.
SKRANG R.	Right-bank tributary of the Lupar R., joining it just above Simanggang.
SUANLAMBA R.	5° 49′ N., 118° 00′ E.
SUNDAR	On the Trusan R. near its mouth.
SUT R.	Tributary of the Plieran R. in the Usun Apau area.
TABANIO	On the coast W. of Pelaihari.
TAMA ABO MTS.	A range W. and S.W. of Bario forming western boundary of Kelabit uplands.
TAMALUANG	Bird's nest caves, up the Bangkalaan R. inland from Klumpang Bay in 3° S. Lat. c. 15 miles N.W. of Kota Baru.
TAMBELAN IS.	About half-way between Singapore and Kuching, south of the steamer route.
TAMPASUK R.	Rises on Kinabalu and comes out near Kota Belud.
TAPUH	Land Dayak village S. of Serian.
TEBAKANG	6 miles S.W. of Serian.
TEGORA	8 miles S. of Bau.
TELANG	One of Grabowsky's localities in the lower Barito area.
TENGAH R.	Small stream W. of Kuching, near Mt. Matang.
TENGOA R.	Right-bank tributary of Trusan R.
TEPAI	Upper Mahakam.
TOKONG ARA	A rock near Satang Kechil I.
TUMBANG HIANG	One of Grabowsky's localities in the lower Barito area, see Blasius 1883.
TUTOH R.	Principal right-bank tributary of the Baram R.
TUTONG R.	In Brunei State, between Seria and Brunei.

INDEX OF MALAY AND IBAN NAMES

(See Introduction, p. 2)

Alau babi, *Anthracoceros malayanus*
— buloh, *Aceros leucocephalus*
— pedada, *Anthracoceros coronatus*
— sangoh, *Aceros undulatus*

Bangau, *Storks and Egrets*
Bayan, *Psittacula*
— keladan, *Psittinus*
Bedat, *Rhipidura javanica*
Bedidi, *Treron capellei*
Bejampong, *Platylophus*
Bekakak, *Halcyon chloris*
Bekia, *Lophura bulweri*
Belatok, *Woodpeckers*
— batu, *Meiglyptes tristis*
— cheriang, *Micropternus*
— kesumba, *Picus puniceus*
— kunyit, *Dinopium javanense*
— mahkota, *Dryocopus*
— pedada, *Dendrocopos moluccensis*
— tawang, *Dryocopus*
Beragai, *Harpactes duvauceli*
Beras-beras, *Motacilla*
Bibit, *Cacomantis variolosus*
Bisek kapan, *Terpsiphone*
Briak, *Orthotomus*
Bubut, *Centropus sinensis*
Bugnong, *Platysmurus*
Burik enchauit, *Chalcites xanthorhynchus*
Burong abu, *Greybirds*
— akar, *Babblers*
— Ali Baba, *Platalea*
— apuh, *Bubulcus ibis*
— binti-binti, *Alcedo meninting*
— bunga api, *Dicaeum trigonostigma*
— empak-empak, *Nyctiornis*
— ensong semayong, *Platysmurus*
— hantu, *Phodilus*
— kangan, *Hypothymis*
— kawok, *Otus bakkamoena*
— landas, *Eudynamis*
— lilin, *Aplonis*

Burong—*continued.*
— pama, *Batrachostomus auritus*
— rawa, *Ducula bicolor*
— tukang kayu, *Caprimulgus macrurus*

Dogan, *Bubo*

Embok tanah, *Chalcophaps*
Empak jerok, *Nyctiornis*
Emperegam, *Ducula aenea*
Empitu, *Coturnix*
Empuloh, *Bulbuls*
— arang, *Irena*
— buaya, *Pycnonotus zeylanicus*
— lalang, *Pycnonotus goiavier*
— lilin, *Pycnonotus atriceps*
— ragum, *Criniger ochraceus*
Engkachong, *Babblers*
— kaban, *Stachyris nigricollis*
— randau, *Pomatorhinus*
— tunggal, *Macronus ptilosus*
Engkejirah padi, *Prinia*
Engkerasak, *Arachnothera*
— kampong, *Arachnothera crassirostris*
Engkruak padi, *Amaurornis*
— tepang, *Ixobrychus cinnamomeus*
Ensing, *Alcedo*
— batu, *Ceyx*
— — , *Enicurus leschenaulti*
Entebar, *Calyptomena viridis*
Entegaleh, *Microhierax*
Entelah, *Artamus*
Entlit, *Loriculus*
Entrokok melai, *Centropus bengalensis*
Entukar, *Rhizothera*

Gagak, *Corvus*
Ganggang merah, *Cymbirhynchus*
Gendang pelandok, *Eupetes*

Imbok buau, *Macropygia phasianella*
— gunong, *Macropygia ruficeps*
Indu gara, *Mulleripicus*
— labi, *Anhinga*
Itek badan, *Nettapus*

Jako, *Aceros leucocephalus*
Jaloh, *Sasia abnormis*
Jerrwit, *Orthotomus sepium*

Kak, *Corvus*
Kampat tiang, *Dicrurus paradiseus*
Kangking, *Rhizothera*
Kangkok, *Cuculus vagans*
Kanji, *Rhipidura javanica*
Karoh, *Merops viridis*
Katupong, *Sasia abnormis*
Kedidi, *Tringa hypoleucos*
Kekalau, *Anorrhinus*
Kelit, *Loriculus*
Kenyalang, *Buceros rhinoceros*
Kepiet, *Picus mentalis*
Kerasak, *Arachnothera*
Ketik, *Lanius cristatus*
Ketitir, *Geopelia striata*
Kikih, *Sasia abnormis*
Kopua, *Carpococcyx*
Kriok, *Merops viridis*
Kruak, *Amaurornis*
Kuang, *Argusianus*
Kubok, *Stachyris*
Kulang-kulang, *Merops viridis*
Kunchit, *Flowerpeckers*
— berapi, *Pericrocotus igneus*
Kungkong memadi, *Eurylaimus ochromalus*
Kuong kapong, *Cuculus micropterus*
Kutok, *Blythipicus*

Lang, *Hawks and Eagles*
Lang katak, *Circus aeruginosus*
Langgai lemujan, *Terpsiphone*
Layang (lelayang), *Swifts, swallows*
— lumut, *Collocalia esculenta*
— rangkang, *Chaetura gigantea*
— — , *Hemiprocne comata*
— ujan, *Artamus*
Mantorek, *Numenius arquata*
Madi besar, *Eurylaimus javanicus*
— kechil, *Eurylaimus ochromalus*
— hitam, *Corydon*
Mantis, *Ceyx*
Membuas, *Lacedo pulchella*
Menaul, *Hawks and Eagles*
— buau, *Bubo sumatrana*
— buntau, *Bubo ketupu*
— malam, *Bubo ketupu*
Mendu, *Malcohas*
Mendu beruang, *Phaenicophaeus diardi*
— — , *Phaenicophaeus sumatranus*
— bukit, *Phaenicophaeus javanicus*
— elai jugam, *Phaenicophaeus javanicus*
— — — besai, *Phaenicophaeus curvirostris*
— — — mit, *Phaenicophaeus diardi*
— — — — , *Phaenicophaeus sumatranus*
— — tuntong, *Phaenicophaeus chlorophaeus*
— mengelai, *Phaenicophaeus chlorophaeus*
— tengar, *Phaenicophaeus curvirostris*
Muala, *Psittinus*
Murai, *Copsychus saularis*

Namak, *Dicrurus paradiseus*
Nendak, *Copsychus malabaricus*

Paat, *Pitta caerulea*
Pangkas, *Blythipicus*
— Api Sali, *Clamator*
Pantak daun, *Chloropsis*
Papau, *Harpactes diardi*
Pergam, *Ducula aenea*
— bukit, *Ducula badia*
Pianglin (pilin), *Aplonis*
Pipit, *Munias*
— antu, *Melanoperdix*
— banda, *Lonchura malacca*
— jawa, *Padda*
— lansi, *Erythrura prasina*
— — , *Lonchura leucogaster*

Pipitkan, *Coturnix*
Pito, *Aegithina tiphia*
Plaik, *Platysmurus*
Poak, *Otus bakkamoena*
Pontianak manok, *Eudynamis*
Punai, *Treron*
— jambu, *Ptilinopus*
— kawan, *Treron olax*
— siol, *Treron vernans*
— tengar, *Treron fulvicollis*
— tunggal, *Treron curvirostra*
Puyoh, *Coturnix*
Punggok, *Ninox*
Puso, *Nyctiornis*

Raja Udang, *Pelargopsis*
Rajawali, *Falco japonensis*
Rangak, *Anthracoceros malayanus*
Rara, *Philentoma*
Rawa kelabu, *Columba argentina*
Ruai, *Argusianus*

Sakit tuboh, *Pycnonotus melanoleucos*
Sambang, *Fregata*
Selasih, *Pericrocotus*
Sempidan, *Lophura ignita*
Sengayan, *Rollulus*
Sentuku, *Berenicornis*
Semalau, *Copsychus saularis*
Simatong, *Arachnothera robusta*
Singalang burong, *Haliastur indus*
Singgir, *Lophura erythrophthalma*
Siol, *Rollulus*

Tajai, *Rhinoplax*
Tandok ulat, *Aegithina tiphia*
Tapa lelabi, *Butorides striatus*
Tara-tara, *Terns*
Tasau siu, *Calorhamphus*
Tawau, *Macropygia phasianella*
— , *Chlamydochaera*
Tegok, *Megalaima*
Tekukur, *Streptopelia chinensis*
Telassi, *Pericrocotus*
Terkup, *Centropus bengalensis*
Tertala besar, *Batrachostomus auritus*
— kechil, *Batrachostomus javensis*
Timbok, *Batrachostomus*
Tinjak pelandok, *Pellorneum*
Tiong, *Gracula*
— bali, *Eurystomus*
— batu, *Pityriasis*
— tanah, *Pitta*
Tiup api, *Cacomantis merulinus*
Tocktor, *Carpococcyx*
Tok tadau, *Eurostopodus*
Tok tok, *Caprimulgus macrurus*
Tripas, *Loriculus*
Tungguk, *Batrachostomus*
Tuntong berutak, *Corydon*

Ujoh laut, *Egretta sacra*
Ujoh (ujok), *Butorides*
Undan, *Aceros undulatus*

INDEX OF GENERIC SYNONYMS

The object of this list is to enable scientific names used by former writers, particularly Sharpe and Whitehead, to be linked with the names used in this book. It must be remembered that the specific name used by these writers may since have been demoted to subspecific rank, and may therefore appear in the paragraph "RACES". If the bird still cannot be traced, a reference to Chasen's *Handlist* will solve most problems.

Old Names	*Names used in this book*
Abroscopus	Seicercus
Aethorhynchus	Aegithina
Aethostoma	Trichastoma
Allocotops	Garrulax
Alophoixus	Criniger
Alophonerpes	Mulleripicus
Alseonax	Muscicapa
Androphilus	Bradypterus
Anorrhinus (part)	Berenicornis
Anthothreptes	Anthreptes
Anuropsis	Trichastoma
Ardeola (part)	Bubulcus
Brachypodius	Pycnonotus
Buchanga	Dicrurus
Burnesia	Prinia
Butreron	Treron
Callolophus	Picus
Calornis	Aplonis
Carcineutes	Lacedo
Carpophaga	Ducula
Centrococcyx	Centropus
Cerchneis	Falco
Chalcostetha	Nectarinia
Chaptia	Dicrurus
Charadrius (part)	Pluvialis
Chibia	Dicrurus
Chloropicoides	Dinopium
Chlorura	Erythrura
Chotorea	Megalaima
Chrysococcyx	Chalcites
Chrysophlegma	Picus
Cinnyris	Nectarinia
Cissa	Kitta
Cittocincla	Copsychus
Coccystes	Clamator
Corone	Corvus
Cranorrhinus	Aceros
Crocethia	Calidris
Cryptolopha (part)	Phylloscopus
Cryptolopha (part)	Seicercus
Cyanoderma (part)	Stachyris
Cyanoderma (part)	Trichastoma
Cyanops	Megalaima
Cyanoptila	Muscicapa
Cyornis	Muscicapa
Demiegretta	Egretta
Dendrochelidon	Hemiprocne
Dendrophila	Sitta
Dissemurus	Dicrurus
Dissoura	Ciconia
Drymocataphus	Pellorneum
Dryobates	Dendrocopos
Erolia	Calidris
Erpornis	Yuhina
Erythrocichla	Trichastoma
Euptilosus	Pycnonotus
Excalfactoria	Coturnix
Gauropicoides	Dinopium
Gecinus	Picus
Geocichla	Zoothera
Graucalus	Coracina
Hemichelidon	Muscicapa
Hemixus	Microscelis
Herpornis	Yuhina
Heteroscops	Otus
Hierococcyx	Cuculus
Houppifer	Lophura
Huhua	Bubo

Old Names	*Names used in this book*
Hydrocichla	Enicurus
Hyloterpe	Pachycephala
Iole	Microscelis
Ixos	Microscelis
Iyngipicus	Dendrocopos
Ketupa	Bubo
Kittacincla	Copsychus
Lalage (part)	Coracina
Lepocestes	Blythipicus
Leptocoma	Nectarinia
Lophotriorchis	Hieraetus
Lyncornis	Eurostopodus
Melanocichla	Garrulax
Merula	Turdus
Micropus	Apus
Microtarsus	Pycnonotus
Mixornis	Macronous
Munia	Lonchura
Muscicapula	Muscicapa
Myristicivora	Ducula
Neopus	Ictinaetus
Nyroca	Aythya
Ophrydornis	Trichastoma
Oreicola	Muscicapa
Oreoctistes	Pycnonotus
Orthnocichla	Cettia
Palaeornis	Psittacula
Penthoceryx	Cacomantis
Phyllergates	Orthotomus
Piprisoma	Dicaeum
Polioaetus	Icthyophaga
Poliococcyx	Phaenicophaeus
Poliomyias	Muscicapa
Ptilopus	Ptilinopus
Ramphalcyon	Pelargopsis
Rhinocichla	Garrulax
Rhinortha	Phaenicophaeus
Rhopodytes	Phaenicophaeus
Rhyticeros	Aceros
Rubigula	Pycnonotus
Scops	Otus
Siphia	Muscicapa
Spatula	Anas
Squatarola	Pluvialis
Staphida (or Staphidia)	Minla
Stoporala	Muscicapa
Sturnia	Sturnus
Syrnium	Strix
Tarsiger	Muscicapella
Thriponax	Dryocopus
Trachycomus	Pycnonotus
Trichixos	Copsychus
Tricholestes	Microscelis
Trichostoma	Trichastoma
Turdinulus	Napothera
Turdinus	Napothera
Vivia	Picumnus
Xanthopygia	Muscicapa
Xylolepes	Chrysocolaptes
Zanclostomus	Phaenicophaeus
Zanthopygia	Muscicapa
Zosterops (part)	Oculocincta

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TOPOGRAPHICAL SKETCH MAP OF BORNEO

The primary triangulation of British North Borneo is in progress, and I am indebted to the Chief Computer in the office of the Directorate of Overseas Surveys for the following revised heights:

Mt. Trus Madi	.. ..	8670 ft.
Mt. Mentapok	.. ..	5190 ft.
Mt. Alab	.. .. ..	6450 ft.

(highest point in Crocker Range).

The following copying errors need correction:

Mt. Nuit should be Mt. Niut.
Mt. Meutapok should be Mt. Mentapok.
The dot marking the position of Bandjarmasin should be just below the " D " of BANDJARMASIN, and not in the position shown.

Topographical sketch map of

BORNEO

SCALE 1 : 3,500,000 OR 55·24 MILES TO AN INCH

105 0 10 20 30 40 50 60 70 80 90 100 MILES

Over 3,000 feet

600 – 3,000 feet

0 – 600 feet

Mangrove and peat swamp

SOUTH CHINA SEA

SULU SEA

CELEBES SEA

STRAIT OF MACASSAR

NORTH BORNEO

BRUNEI

SARAWAK

INDONESIAN BORNEO

SANDAKAN

JESSELTON

KUCHING

PONTIANAK

BANJARMASIN

TARAKAN

BALIKPAPAN

Mt. Kinabalu +13,455

Mt. Trus Madi +9134

Mt. Meutapoh (Meliau) +8660

Mt. Murud 7950

Mt. Batu Lawi 6800

Mt. Batu Song 7600

Mt. Kalulong 5400

Mt. Kana 3512

Mt. Mersing +3344

Hose Mountains 6083

Linau-Balui Plateau

Usun Apau Plateau 3800

Mt. Kong Kemul +6758

Mt. Nicoba +4183

Mt. Murjapo +6562

Mt. Magdalena 4418

Mt. Saron +6786

Mt. Rongga +6460

Mt. Sebojan +4517

Mt. Balikpapan +2117

Mt. Lumut 4752

Mt. Penrissen 4350

Mt. Matang 2999

Mt. Poi 4000

Mt. Lawit 5760

Mt. Loie 6100

Mt. Kemodi 4782

Mt. Liang Kubung 4332

Mt. Raya 7000

Mt. Tabang +3604

Mt. Kadamai +3604

Mt. Lumut +3604

Mt. Kalimantang +3604

Mt. Batu Tibang 7389

Mt. Lumut +3604

Mt. Kalimantang +3604

Mt. Kadamai +3604