

REPORTS ON THE CORYNDON MUSEUM EXPEDITION TO
THE CHYULU HILLS.

PART 2.

THE BIRDS OF THE CHYULU HILLS.

1. Introduction.
 - (a) General topography.
 - (b) General description of avifaunal zones.
 - (c) Bird fauna.
2. Systematic List, Field Notes, and Taxonomic Notes.

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GENERAL INTRODUCTION.

A general outline of the topography of the range has been given in the opening narrative; it remains now to supply a more detailed description of the area covered by this report, in relationship to the avifauna. The Chyulu range is entirely volcanic in origin and would appear to have erupted through a line of faults in the basement complex from about the junction of Lat. 20° S. and Lg. 38° in a N.W. direction towards Simba, and now separating the Kibwezi plains from those of the Kilimanjaro-Laitokitok area.

The Kibwezi plains now fairly dry, and covered with an Acacia-Commiphora-Baobab-Euphorbia association, and later by a Combretum-Acacia, the so-called orchard or park-land associations, had been in parts considerably heightened by a series of lava flows from the Chyulu hills, most of which run in a southeasterly direction. The country is fertile and the grass and bush growth dense. The drainage off the hills to the east follows the general line of the lava flows and permanent surface water is present in the Kibwezi river valley.

The level of the plains can be taken as between 2,000 and 3,500 feet with a gradual rise by laval terraces towards the hills, interrupted at points by laval ridges on which vegetation is modified and more prolific. A different association of trees is present, and many of those noted, are common in the dry "closed" forests around Nairobi (Teclea, Olea, Drypetes, Strychnos, Piptadenia, etc.). The elevation of these mixed forests is approximately 3,000-4,000 feet. On some of the larger more disinte-

grated flows, cedar is present especially toward the north of the Chyulu hills. Nearer the base of the hills the lava ridges are more abrupt, the depressions between them have been partially silted up. Vegetation is rank and the atmosphere humid and definitely tropical. It is in such places that one finds species of *Liptenines* and other Lepidoptera usually associated with these particular climatic conditions. Toward the bases of the outer volcanic cinder cones, the lava flows take the form of wide terraces with intervening depressions containing disintegrated larva and humus washed down from the hills, thus forming extremely fertile pans at roughly 4,000 feet. In such places Wakamba natives had at one time established "shambas" of sugarcane, maize, muhogo, and bananas. From this level the hills rise abruptly in a series of cinder cones, many of them with marked erosion lines forming dongas and crevices. The volcanic cones are interrupted here and there by lava flows which have arisen from the main ridge of long extinct volcanoes. Some of the outlying cones have craters of varying dimensions with small commencing forests. In the valleys and on the lava flows the dominant trees are *Erythrina*, *Combretum*, *Cussonia*, and species of *Acacia*. Up to this point the bird fauna is typical of the plains and bush country. Amongst others we find the following:

<i>Mirafr</i> <i>fischeri</i> .	<i>Anthoscopus</i> .
<i>Mirafr</i> (<i>africana</i>) <i>herterti</i> .	<i>Parus</i> <i>afer</i> .
<i>Lamprocolius</i> <i>chalybeus</i> .	<i>Rhodophoneus</i> <i>cathemegmanus</i> .
<i>Erythropgyia</i> <i>leucoptera</i> .	<i>Laniarius</i> <i>funebri</i> .
<i>Cisticola</i> <i>cheniana</i> .	<i>Nilaus</i> <i>minor</i> .
<i>Cisticola</i> <i>cinereola</i> .	<i>Telophorus</i> <i>quadricolor</i> .
<i>Calamonastes</i> <i>simplex</i> .	<i>Tschagra</i> <i>senegala</i> .
<i>Andropadus</i> <i>insularis</i> .	<i>Indicator</i> <i>indicator</i> .
<i>Batis</i> <i>molitor</i> .	<i>Indicator</i> <i>minor</i> .
<i>Buchanga</i> <i>adsimilis</i> .	<i>Cinnyris</i> <i>albiventris</i> , etc.
<i>Coracias</i> <i>caudatus</i> .	
	<i>Lophocerus</i> <i>erythrorhynchus</i> .
	" <i>deckeni</i> .
	" <i>flavirostris</i> .
	<i>Phoeniculus</i> <i>p. marwitzi</i> .
	<i>Corythaixoides</i> <i>leucogaster</i> .

(In addition several species of Weavers and Finches not met with on the hills.)

* The birds are referred to binomially; the racial designation is given in the systematic list which follows.

In the north-eastern portions of the foot-hills, and to a lesser degree along its eastern aspect, all about the 4,000 foot level we find patches of mixed savannah forests, and in these, certain of the "thorn-bush" "parkland" birds find their way toward the hills. A few of these extend up to about the 4,500 feet level for feeding purposes. As already mentioned, these sparse forests are situated on the lower lava flows and their depressions, where cultivation has at one time existed. The birds round here feed and roost in these places. The chief species are as follows:

Oriolus monachus.	Sitagra ocellaria.
Batis molitor.	Polioptila angolensis.
Smithornis capensis.	Anaplectes melanotus.
Prionops poliocephalus.	Estrilda estrild.
Malaconotus approximans.	Estrilda rhodopyga.
Dicrurus adsimilis.	Streptopelia torquata.
Melaenornis ater.	Pternistes leucoscepus.
Telophorus quadricolor.	Numida mitrata.
Lybius leucocephalus senex.	Cossypha semirufa.
Melittophagus cyanostictus.	Camaroptera brevicaudata.
Amblyospiza albifrons.	

Above this elevation the ground rises steeply to the outlying volcanic cones and is entirely grass covered. Between these outer hills are a series of higher lava flows in terrace form, entirely grass covered, and carrying small scattered clumps of bush and what I have called an "Erythrina-Cussonia-Combretum association." Some of these flows are of considerable extent and carry a large acreage of this "Erythrina association," and bird life is here numerous, but of a type largely associated with the low country. The average elevation is about 4,500 feet, but some of the flows are 5,000 feet. The principal species found here are:

Campothera nubicus.
Halcyon chelicuti.
Tricholaema lachrymosa.
Pogonilius pusillus.
Indicator indicator.
Indicator minor.
Sigmodius retzii.
Nilaus minor.
Laniarius funebris.
Eurocephalus ruepelli.
Chlorophoneus sulphuripectus.
Tschagra senegala (in bush and grass).
Turdoides hypoleuca.

Centropus superciliosus (bush and grass).
Parus albiventris.
Parisoma böhmi.
Eremomela griseoflava.
Nectarinia kilimensis.
Chalcomitra senegalensis.
Sylvietta whytii.
Cisticola brachyptera.
Mirafraga fischeri (grass lands).
Dinemellia dinemelli.
Anaplectes melanotis.
Estrilda estrild.
Euplectes capensis.

On the higher ground or moorlands between 5,000 and 6,500 feet, where the grass is associated with woody herbs, as *Sopubia*, various Composites (such as the large yellow *Coreopsis*), *Diplolophium*, *Artemesia Indigophora*, Lupin, and the orange and red *Gladiolus*, a more limited bird fauna is found, which is definitely associated with these higher elevations. The most plentiful amongst them are:

Nectarinia formosa (feeding on *Gladiolus*).
Cisticola natalensis.
Cisticola aridula.
Schoenicola brevirostris.
Melocichla mentalis.
Saxicola torquata.
Tschagra senegala (for food only).
Anthus nicholsoni.
Francolinus africana.

It is at these elevations that we find the first patches of true alpine forest, but limited entirely to the craters of the many volcanic cones which form the central or main ridge of the range. A detailed botanical survey of this forest was carried out and is embodied in the Botanical Report, Cf.

The forests of the northern end of the range are evergreen, but compared to those of the southern portion are, on the whole, much drier. The exceptions are those contained within deep craters where evaporation due to sun and wind is reduced to a minimum. At the central portion of the range there is a definite constriction due to the "tail-out" of the subsidiary volcanic cones, especially on the eastern aspect, leaving only the main ridge which rises to an average of 6,500 feet and carries on to the highest peak at 7,200 feet. This high ridge is almost devoid of



Tailor-breasted Roller (*Corrcias caudatus*).

forest on its eastern face and is deeply scored by erosion trenches and gullies. At the point where the last subsidiary cone ends there is a considerable lava flow which carries a commencing valley forest and this extends eastward and becomes contiguous with a low mixed forest on a lava flow at 4,000 feet. It is along this belt that many species of birds and lepidoptera of the low country have extended on to the upper lava flows at 5,000 feet. The western aspect of the main ridge, however, carries a heavy forest, the result of confluent crater and valley forest formations, and these are continuous with the southern forests and so on to the Great Chyulu Forest of the southern end of the hills. The range widens out just north of the highest point in the form of an eastern series of cones set in a semi-circle, and a western series of lesser cones, with between them, a very large lava flow long since entirely covered with a dense forest growth, the result of confluent crater forests. This block is now referred to as the Great Chyulu Forest. This extensive forest, roughly 12 miles by four to five wide, is a typical rain or mist forest. It is continually drenched with mist and heavy dew, and the floor is perpetually wet and sodden. It is in this section of the range that the tree trunks and branches are covered in moss and ferns, whilst the canopy is thick with beard moss and dripping wet throughout the day. This portion of the Chyulu forests contains such species as *Geokichla*, *Bradypterus*, *Turdus*, *Pseudoalcippe*, *Pogonocichla*, *Cryptospiza*, and *Aplopelia*, to mention only a few, in the greatest numbers; in fact they are here, exceedingly common. Most of the timber trees here grow to well over 100 feet with clean boles and many carry a tangled mass of lianas of various species. The mid-growth is heavy, whilst the undergrowth consists largely of *Piper*, giant ferns, and ground-orchids.

The montane forests can be divided into zones, working from the periphery inward, and into strata, horizontally and vertically. Thus we record a marginal zone, an edging or fringing forest zone and a mid zone; forest floor, undergrowth, and mid-stratum and canopy.

In the outer or marginal zone we find a definite association of woody herbs and creepers: *Leonotis*, *Vernonia*, *Artemesia*, *Coreopsis*, *Heteromorpha*, *Lantana*, *Desmodium*, and *Cissus*, and in the central and southern portions, giant *Lobelia*. In some of the northern drier forests *Erythrina* still exists as marginal or fringing trees. (With the outward extension of the forest *Erythrina* die.)

This marginal zone has its quota of bird life for part of the day, if not at all times. Here at the 5,000-7,000 levels we find:

Prinia mystacea.
Zosterops (feeding on *Lobelia*).
Nectarinia formosa (feeding on *Lobelia* and *Leonotis*).
Nectarinia reichenowi (feeding on *Lobelia* and *Leonotis*).
Cinnyris mediocris (feeding on *Lobelia* and *Leonotis*).
Cyanomitra olivacea (feeding on *Lobelia* and *Leonotis*).
Laniarius ferrugineus.
Alseonax murinus.
Lagonosticta rubricata.
Coccopygia melanotis.
Melocichla mentalis.

Within this marginal fringe, the edge of the forest growth forms the feeding ground of various species, and the roosting site of many others. These edges are characterised by a dense tangled mass of creepers: *Cissus*, *Clematis*, *Jasmin*, *Hibiscus*, and Composites, associated with marginal forest trees such as *Rapanea*, *Catha edulis*, and *Celastraceae*. The species usually noted are:

Francolinus squamatus (on the ground).
Laniarius ferrugineus (among the creepers).
Cossypha caffra " " "
Cossypha semirufa " " "
Dryoscopus cubla " " "
Tschagra australis " " "
Dendropicos fuscescens (on trees, hunting for food or
Viridibucco leucomystax roosting at night)
Colius leucotis " " " "
Pycnonotus tricolor " " " "
Dioptrornis fischeri " " " "
Alseonax murinus " " " "
Seicercus umbrovirens " " " "
Ploceus reichenowi " " " "
Ploceus nigricollis " " " "
Nectarinia formosa " " " "
Nectarinia kilimensis " " " "
Zosterops sp. " " " "

In the body of the forest, there are strata as already indicated, which are frequented for purposes of food or for roosting, and certain species are to be noted in these, as follows:

FOREST FLOOR:

Francolinus squamatus (roosting in mid strata or fringing trees).
Aplopelia larvata (feeding on ground; roosting in mid-strata).

- Geokichla gurneyi* (feeding on ground; roosting in mid-strata or thick undergrowth).
Turdus olivaceus (feeding on ground as well as on berries, roosting in mid and fringing trees).
Pogonocichla stellata (feeding, roosting in mid-strata).
Phyllastrephus fischeri (when feeding on ant trails).

FOREST UNDERGROWTH AND MID-STRATUM:

- Aploderma narina* (mid-stratum for food and roosting).
Phyllastrephus fischeri (food and roosting).
Seicercus umbrovirens (food, and roosting in mid-stratum).
Pseudoalcippe abyssinicus (food, and roosting in mid-stratum).
Turdus olivaceus (food, and roosting in mid-stratum).
Pogonocichla stellata (food, and roosting in mid-stratum).
Bradypterus cinnamomeus (food, and roosting in undergrowth).
Bradypterus mariae (food, and roosting in undergrowth).
Zosterops sp. (food, roosting in mid-stratum).
Cryptospiza salvadorii (feeding on special grasses, roosting in mid-stratum).
Cyanomitra olivacea (roosting in mid-stratum).

THE BIRDS OF THE FOREST CANOPY.

The majority of birds found in this stratum during the day time are engaged in hunting for insect food or feeding on fruits. Very few actually spend the hours of night in this stratum or in its vicinity. The groups may be divided as follows:

- Columba arquatrix* (feeds in the canopy and roosts just below, but more often seeks its food away from the forest).
Vinago calva (feeds in canopy of fruit-bearing trees, often out of the forest proper; roosts below the canopy).
Pholia femoralis }
Pholia sharpei } These feed on fruits in the canopy
Cinnyricinclus } or on trees outside the forest,
leucogaster } roosting just below the canopy.
Apalis nr. *moschi* (feeds in canopy).
Apalis griseiceps (feeds in restricted places in canopy; roosts in thick cover of mid-stratum).
Seicercus umbrovirens (feeds partly in canopy, roosts in mid-stratum).
Zosterops sp. (feeds in canopy, roosts in mid-stratum).

- Dryoscopus cubla* (feeds in canopy (partly) and roosts in mid-stratum).
- Viridibucco leucomystax* (feeds in canopy (partly); roosts in lianas and mid-stratum).
- Buccanodon leucotis* (feeds in canopy of fruiting trees; roosts in old nest holes).
- Arizelocichla milanjensis* (feeds in canopy of fruiting trees, roosts in lianas and mid-stratum).
- Anthreptes collaris* (feeds in canopy, roosts mid-stratum).
- Cinnyris mediocris* (feeds in canopy (partly), roosts in mid-stratum).
- Cyanomitra olivacea* (feeds partly in canopy, roosts in mid-stratum).
- Dioptrornis fischeri* (feeds partly in canopy, roosts edge of forest).

I have endeavoured in the preceding notes to indicate the distribution of the bird fauna, within certain types of environment, such as we noted them, on the Chyulu hills. In some cases, it is difficult to assign a species to any one environment, for the periodical variation in food supply, whether insect or vegetable, governs the movements of the birds to a considerable degree.

Birds are affected by climatic conditions in a marked way; thus on a day when mist clouds were still passing over the forests as late as noon, birds usually found hunting through the canopy would be found on the sheltered side of the forest, at its edges. Again, with the approach of late afternoon, before sunset, one often found the birds to move over to that part of the forest edge which was in the full rays of the sun. If the weather was very cold, one found them in the sheltered portions of the forest.

It was my practice, just before sunset, to walk very slowly along one of the many forest traverses in order to note the movement of the birds when seeking their roosting places. One obtained much information in this way.

SYSTEMATIC LIST
AND
TAXONOMIC NOTES,
WITH
DESCRIPTIONS OF NEW RACES.

FALCONIDAE.

GYMNOGENYS TYPICUS. Long-legged Harrier-Hawk.

Raptorial birds were remarkably scarce on the range and this species was noted on three occasions only. Skinks of various species were plentiful on the moorlands and on each occasion this hawk was noted, it was on the ground eating one of these lizards.

The single adult female obtained has enlarged ovaries.

SPECIES IDENTIFIED BUT NOT OBTAINED:

Buteo rufofuscus augur. Augur Buzzard

At Camp I a pair of *Buteo rufofuscus augur* were seen daily in one of the large shallow craters uncovered by forest. They hunted the grass lands around the camp and were often noted to take "mole-rats," other rodents and a few lizards. They used to circle out over the lower lava flows just about 4 p.m. and invariably returned to roost in a large *Cussonia* tree about half a mile from our camp site.

Falco peregrinus minor. African Peregrine.

A pair were noted on the Great Lava Flow at 4,500 feet during the last week of June.

Falco chiqueri ruficollis. Red-naped Falcon.

On the south-western slopes of the range where there was a deep valley between the main volcanic ridge and the western out-lying volcanoes, a beautiful pair of these birds haunted the small patches of crater forests. On many occasions one saw them flying high over a patch of forest then they would turn and divide; one bird, usually the male, would then fly low over the trees while the hen skimmed the margin at about the level of the tree tops and swiftly passed to the far side, then up. The flight of the male would invariably cause some bird, usually a Pigeon, to leave the shelter of the trees, when the hen would then make a dive and strike. I tried hard to obtain this pair, but they outwitted me on all occasions.

Terathopius ecaudatus. Bateleur Eagle.

A few were noted over the western plains but none actually on the range.

Milvus migrans parasiticus. African Brown Kite.

A few were noted on the lower western lava flows, in July.

Gypaetus barbatus? African Lammergeyer.

A single bird undoubtedly of this species was twice seen circling round the "Needle" Gneiss outcrop on the western plains. One obtained an excellent view of the bird with binoculars.

Aquila rapax. Tawny Eagle.

Two birds were seen flying over the face of "Hyrax Cliff" on the western aspect of the northern Chyulus. I was at the bottom of the cliff, observing a *Cossypha* when my attention was drawn to a chorus of chuckling from the Rock Hyrax and looking up, these birds were noted passing slowly along the cliff.

VULTURES.

Three species of Vultures, *Pseudogyps africanus*, *Trionyx occipitalis*, and *Necrosyrtes monachus pileatus*, were common on the lower plains especially on the western side, and resorted to a few tall dead trees on the west of the Great Chyulu Forest for roosting purposes.

PHASIANIDAE.

NUMIDA MITRATA REICHENOWI. Reichenow's Helmeted Guineafowl.

Several nomadic flocks were encountered on the hills, but they never stayed in any one spot for more than a couple of days. They frequented the sides of the hills where the grass had recently been burnt off, and the new grass was not more than a few inches high. There was evidence in the smaller forest patches that the floor had been thoroughly scraped over for food. They roosted in the trees of the smaller patches of forest. The highest elevation at which a flock was noted was 6,500 feet.

GUTTERA PUCHERANI. Blue-necked Crested Guineafowl.

This species was not met with on the range, but in many of the lowland forest patches it must have been plentiful, judging by the numerous scapes and dropped feathers. It was not noted above 4,000 feet.

PTERNISTES LEUCOSCEPUS INFUSCATUS. Kilimanjaro
Bare-throated Francolin.

Several small coveys of this "Spurfowl" were noted on the lower slopes of the range, but did not extend higher up than about 4,500 feet. They were most plentiful in places where old cultivation had been allowed to go back to bush.

I am unable to see any difference between the Chyulu birds and those from the type locality of this race, Lake Jipe.

In view of the recently published opinion regarding this species within Kenya and Uganda, I take this opportunity to draw attention to an undescribed race and to discuss the races of the species as accepted by me.

PTERNISTES LEUCOSCEPUS OLDOWAI. Subsp. Nov.

Grant and Praed have recently reviewed the races of this species (*Ibis*, 1935, pp. 881-883) and recognise only two throughout its entire distribution, Eritrea to Central Tanganyika Territory.

Doubtless many workers on East African ornithology have been surprised at the sweeping way in which names have been synonymised with the race *infuscatus*, type locality Lake Jipe. The reason for this daring action is indicated by a statement on page 882, that the comparative material was only sixty-four specimens representing the species throughout its entire range.

Sclater, in Jackson's book, would accept only one race in Uganda and Kenya, *infuscatus*, thus agreeing with the opinion of Grant as stated above. Recent correspondence with Capt. Grant has elicited the fact that he now recognises a third race, "since our note appeared in the *Ibis*, 1935 (additional material) clearly shows that on general characters a third race may be recognised, i.e. *muhammed-ben-abdullah*, which has the widest distribution in Uganda, and the whole of Kenya except S.W." He limits *infuscatus* to south-western Kenya and Tanganyika Territory.

I have a limited material from the Juba River which is toponymical *muhammed-ben-abdullah*. In my notes on the species, *Birds of Kenya*, Part II, 1925, *Jrnl. E.A. & U. Nat. Hist. Soc.*, I admitted this race as extending to Marsabit. I have at the moment no reason to alter this view, and it is for the most part in agreement with the lately expressed views of Grant, cited above. I still suggest the retention of *takora*, Stoneham, for the birds to the west and S.W. of Rudolf. Of *infuscatus*, Lake Jipe area, I have a good series, and it would appear that this race extends northward to the highlands of Kenya. As expressed in

my previous paper *op. cit.* we are unable to deal satisfactorily with the assessing of the value of named forms or races, such as *keniensis*, Mearns, until much more material has been assembled. I have already expressed the view that the material available to Grant was insufficient to form a conclusive opinion, and in view of the fact that Sclater utilised the same material and came to a different opinion as to values, strengthens my view. Nevertheless I have no hesitation in adding yet another racial name to the species as we find it in the area of Oldowai in Tanganyika Territory. This area appears to have been omitted in the range of any described species, except in the general wide distribution given for *infuscatus* by Grant, viz. Tanganyika Territory as far south as the Central Railway. The Oldowai area is to the west of the "Highlands of the Great Craters," N.E. Tanganyika Territory, i.e. N.W. of Mbulu and south of the Tanganyika Serengetti. In this region we find a race which is described as follows:

Underside, predominant colour white with sparse triangular chestnut marks on feathers of flanks, with greyish and chestnut margins enclosing white triangles on the breast feathers; ashy-brown on the crown greyer than in other races; hind-neck equally white and ashy-brown; mantle, scapulars, and long inner secondaries without any solid white central lines, these being broken up into two wavy broken streaks; the secondaries, rump, and rectrices paler ashy-grey with wavy lines and vermiculations in whitish. The dorsum thus shows a pattern associated with the juvenile or sub-adult stages of other races, but here it is retained in very old birds. The secondary and major wing-coverts are widely edged with dirty-white. The general aspect is of a pale race with very white underside.

Type male, Oldowai, 2/12/36, Cambridge Expdt., Oldowai. Dr. Leakey-Bell Coll. now in Coryndon Museum. Paratypes, similar in colouration, six. Obtained from several coveys in the district.

Remarks: A specimen of this race was sent to Grant, who remarks, "Your one bird being whiter below, less marked, is rather aberrant." It is not aberrant for the area cited, and is thus described as a distinct race.

* Further correspondence with Capt. Grant has elicited the fact that he is now prepared to recognise a further race—*Kilimensis*, Mearns (Mr. Kilimanjaro), with a range N.W. and S.W. of that mountain to as far as the Central Railway.

FRANCOLINUS SQUAMATUS CHYULUENSIS. Sub-sp. Nov.

Messrs. Grant and Praed have recently reviewed the races of the *squamatus* group of Francolins (*Ibis*, 1936) and suggest that the race *schuetti* is the one that ranges (so far as the area I am now dealing with) through Uganda and western Kenya Colony, synonymising with it *dawashanus* (Amala river) and *zappeyi* (east shore of Lake Victoria). By "western Kenya Colony" it would appear that they include the central Kenya Highlands east of the Rift, including Mt. Kenya, thus embracing within *schuetti*, the race *keniensis*, Mearns.

The authors do not refer to this racial name in the list of synonyms of *schuetti*; neither is it mentioned in Jackson's "Birds of Kenya and Uganda, Vol. I."

From the series available to me now, it would appear that my suggestion in Nov. Zool., 1922, p. 27, that some of Mearn's names would have to be adopted is strengthened.

Where Grant and I would appear to differ is in his acceptance of *schuetti* for all birds extending through Uganda, crossing the Rift and passing as far east as Mt. Kenya. I accept the Rift as the dividing line between *keniensis*, Mearns, and *zappeyi*, Mearns (antedating *dawashanus*, Madaraz). Grant would restrict the name *maranensis* to the birds inhabiting Kilimanjaro, but to me, it would have been more understandable if he had suggested that *maranensis* extended north, to the Kenya highlands east of the Rift to Mt. Kenya, for birds from Mt. Kenya district, and the Kikuyu country are of the same brownish tone above, and have more or less the same coalescing colouration on the underside as in Kilimanjaro birds. This distribution seems to be indicated by Moreau's remarks on page 866, P.Z.S., 1936. This same writer directs attention to the fact that birds from Mt. Meru, west of Kilimanjaro, are not similar to the Kilimanjaro birds and places them as near *dawashanus*. He further observes that south of Kilimanjaro, the race *usambarae* exists. I now suggest that the race on the Chyulu Range, north-east of Kilimanjaro, is not *maranensis* for the reasons I give later. Referring to the recently published work "Birds of Kenya and Uganda," Jackson, edited by Sclater, 1938, we find it stated that the race *marenensis* extends north to Mt. Kenya and the highlands east of the Rift, and *zappeyi*, west of the Rift, and through Uganda.

One further reference: When Granvik suggests the name *dawashanus* (Rev. Zool. Bot. Afr., p. 14) as applicable to the birds east of the Rift, he is surely in error, as the type locality Engare Dawash (Amala River) is west of the Rift.

DESCRIPTION OF THE CHYULU RACE.

Nearest geographically to the race *maranensis*, Mearns, of Kilimanjaro, the Chyulu birds are very much darker above, less brown tinged, the centres of the mantle feathers and wing coverts being almost black with the lateral margins faintly greyish. This race is more blackish than any of the Kenya forms. On the underside the centres of the feathers are very dark brown-black contrasting very strongly with the marginal whitish; the dark central area is carried quite a long way up the central rib. The upper breast is very dark, due to a widening out of the central blackish area; the neck colouring is equally black and white, this speckling being carried up to the cheeks and lores; the throat is white. There is a superficial resemblance between this race and birds from the Amala-Sotik-Mau area, but the latter are not nearly so dark above. They are distinct from the race *usambarae* with which I have compared them. When seen in the field, they give one the impression of an almost black bird with black and white necks and underside. Thirteen specimens of this new race were taken on the Chyulu Range at altitudes of 5,500-7,000 feet.

Type, male, Chyulu Mts. 6,500 feet, 16/7/38. Coryndon Museum Expedition, 1938. Distribution: Limited to the Chyulu Range. Examples of this new race were submitted to Capt. Grant, who writes as follows: "Your pair of *F. squamatus* are unquestionably a new race and from an area where, I believe, *F. squamatus* has not been recorded.

The races and distributions of *F. squamatus* within Kenya and Uganda and immediate neighbourhood which I uphold are as follows:—

- F. s. maranensis*, Mearns, Kilimanjaro (type locality Marangu on Kilimanjaro).
- F. s. usambarae*, Con., Usambara Mts. (type locality Magambe, Usambara).
- F. s. chyuluensis*, van. Som., Chyulu Range (type locality, upper zone of that range).
- F. s. zappeyi*, Mearns, Amala-Sotik-Mau, to Kaimosi, Kakamega (type locality, east shore Lake Victoria). With this I unite *dawashanus*, Mad. Amala River, antedated by *zappeyi*. It is unfortunate that no more exact locality than "east shore" was given.
- F. s. keniensis*, Mearns, Mt. Kenya, Fort Hall, Kikuyu, Nairobi, and Aberdares (type locality, Mt. Kenya).
- F. s. schuetti*, Cab., Uganda, east to Mt. Elgon and north Kavirondo, meeting with *zappeyi* here.

FRANCOLINUS AFRICANUS MACARTHURI, van Som.
Chyulu Grey-wing Francolin.

The species *F. africanus* has hitherto been recorded in Kenya as represented by one race, *uluensis*. During the course of an ecological survey of the isolated Chyulu Range, by the staff of the Coryndon Museum, Nairobi, a series of this Francolin was obtained. When the first specimens were shot, it was at once noticed that they differed from examples of this species from the mid-Kenya savannah and parklands, and a series was obtained to test the constancy of this difference.

The original description has appeared in the B.B.O.C., Vol. LIX, Nov., 1938. Typical examples of this race are to be found only on the range which is in effect an "inselberg" rising to 7,200 feet from the surrounding plains of 2,000-3,000 feet. They were found only on the moorland zones at 5,500-7,000 feet and represent a dark montane race. They were met with in pairs or small coveys of 4-5, and lie very close, allowing one to approach to within a yard or so before they would get up and disappear in several directions. Their presence was usually made known by their distinctive call—uttered shortly after sunrise or late in the evening.

DESCRIPTION:

A race of *F. africanus*, geographically nearest to *uluensis* of the mid-Kenya savannah and parkland (type locality Machakos), but differing from this in being generally darker above, the dark centres to the feathers of the crown, the spotting of the neck, the dark areas to the mantle feathers, scapulars and secondaries being black, instead of blackish-brown; the dark markings and cross-bars below, which are carried on to the abdomen and under-tail coverts, are black; the chestnut of the breast and flanks is darker. The wing-coverts are greyer and more distinctly barred. The black spotting of the neck is more distinct and plentiful and in some of the females the spots extend up toward the chin, as in the race *psilolaemus* of Shoa.

The race *uluensis* has been recorded from Taveta, and in the Tanganyika Serengeti. I have no specimens from the former and an examination of these birds should be made to ascertain to what degree they approach this montane form. The birds from Apis Rock to the west of the "Highland of the Great Craters" and just northward, at Pussumuru toward the Kenya-Tanganyika border, are not typical *uluensis* and exhibit characters which approach the Chyulu birds, especially on the under-side.

FRANCOLINUS SEPHANAE nr. GRANTI. Red-legged Bush
Francolin.

The Red-legged Bush Francolin was scarce on the hills and as a result an insufficient number were obtained to make any satisfactory comparison.

Such birds as were noted were always below the 5,000 feet level, in the scattered bush country on the lower lava flows.

RALLIDAE. SAROTHRURA.

SAROTHRURA ELEGANS ? LORINGI. Buff-spotted Pigmy
Crake.

As was to be expected, Rails and Crakes were almost entirely absent from the range. There is no free water in the whole thirty miles of their length (apart from water held up in hollow trees and dew), indeed the only water is at the one small drip toward the north end. Nevertheless one knows that certain of the small crakes of the genus *Sarothrura* are not infrequently met with in rank grass where no free water exists. We were thus fortunate in obtaining a single male of the *elegans* group in the "Mbuga" near the Great Chyulu Forest. With the exception of *Sarothrura pulchra centralis*, which is almost entirely a forest bird, these crakes are exceedingly difficult to secure. One may flush them unexpectedly and after a very short flight they drop and simply disappear. One may hunt for hours in the vicinity where they have pitched and one won't find them again. A dog is occasionally successful in flushing them a second time. If one is aware of their presence in a given stretch of grass land or forest it is best to secure them with snares set in artificial runs made in several directions.

Taxonomic Notes on SAROTHRURA CRAKES.

Praed and Grant made a survey of the *Sarothrura* Crakes and published their results in the *Ibis*, 1937. The *elegans* group dealt with on page 632 is divided into two races, the nominate from Durban, and *reichenovi* of Cameroons. All other described races are synonymised with the nominate form. In *lit* dated 8/9/38, Grant now informs me "that *reichenovi* is a synonym" of *elegans*; in other words there is only one race throughout the range of the species in Africa. (The authors claim the same for *S. rufa*; one race throughout Africa.)

Are the birds then migratory, or do they merely move from one feeding ground to another (if associated with temporary water pans, as these dry up)? What are the habitats of the various species? Published data is meagre.

In the summary, the authors suggest that the species have a much wider range and distribution than was at one time supposed and that some, or all of them, are subject to local migration. It would have been of great utility in demonstrating these two points if they had tabulated the localities from which each species or supposed races had been obtained, the time of year when the birds had been taken, and further the general environment and altitude of each. To emphasise these points I append such information as I have, from material at my immediate disposal, and published records applicable to Kenya and Uganda. I have adopted the general classification advocated by Praed and Grant, though I do not thereby necessarily agree with their opinions regarding races.

I should like to record here that the specimen of *elegans* obtained on the Chyulu Range is jet-black in ground colour on the upperside and flanks; the buff spotting is not so large as in Uganda and Kaimosi birds. Wings 85 mm. If we accept the views of the authors, then *languens*, Friedmann, from Tanganyika; *loringi*, Mearns, from Mt. Kenya; *reichenovi*, Sharpe, from Cameroons; *buryi* Og. Grant, British Somaliland, all become synonyms of the nominate South African race *elegans* of Durban.

I am not aware as to how the authors interpret the expression "local migration" as used on page 633, but if by this they merely mean a local movement from one feeding ground to another as suitable swamps dry up (presuming the species has this kind of habitat) then I am prepared to support the suggestion of movement. If, on the other hand, it is a movement within Africa for breeding purposes, then my data will supply a little information on the point.

Species.	Locality.	Alt. ft.	Date.	Environment.	Adults and/or Juveniles.
Eastern Africa:					
<i>S. ELEGANS</i> (In my collection)	Kyetume, Uganda	4,000	February	Long grass away from water	Male, adult
	Kaimosi, N. Kavirondo	4,740	February and April	Swamp grass	Males, adults breeding, testes large.
	Nairobi	5,600	May	River margin in grass	Male, adult, in breeding cond.
	Ngong	5,800	June	Grass-land	Female, adult.
	Chyulu Range	6,000	July	Grass near forest; no surface water	Male, adult
Published records:					
(Loveridge)	Kaimosi	4,740	February	Swamp-grass	Male, adult
(Loveridge)	Uluguru	5,000	May	Near forest edge.	Female.
(Moreau)	Sigi valley	1,500	April	Grass-land	Female, ovaries slightly enlarged.
(Mearns)	W. side Mt. Kenya	8,500	October	Bamboo	Female.
NOTE.—No records for six months, but breeding birds obtained April-May.					
<i>S. PULCHRA centralis</i> (In my collection)	Uganda, Budongo, Bugoma, Mabira, Buyuma Isls. Mubango, Lugalambo Kyetume Kaimosi, N. Kav.	3,560-4,500	January February September October November December March April May	Forest " " " " Forest and swamp	15 Adult males. 8 Adult females, Juveniles in March and September. 6 males, adult. 5 females, adult. 1 juvenile.
(Loveridge)	Sesse Islands Budongo Kaimosi	3,400	July May February	Forest Forest Forest	1 male, 1 female. 2 males, adult. Males.
NOTE.—Apparently resident; breeding February, September.					

Species.	Locality.	Alt. ft.	Date.	Environment.	Adults and/or Juveniles.
<i>S. RUFA</i> . My collection	Kyetume Mpumvu Kisumu Kiamosi. N. Kavirondo	4,000 4,000 3,600 4,740	February June March March, April, May	Forest stream Stream edge Forest stream Forest stream and swamp	Male, adult. Male, adult. 2 males, adult. 16 males, adult. 8 females, adult. Breeding; eggs. 3 males, adult. 3 females, adult. Male, adult. Male, adult. Males and females. Male, adult.
(Loveridge) (Moreau)	Yala River Nairobi Kyambu Kaimosi Amani	4,700 5,600 5,800 4,740 3,000	October, November June June February April	River margin River margin Swamp River swamp Dense low grass near marsh	Males and females. Male, adult.
NOTE.—Would appear to be resident; breeding April, May.					
<i>S. BOHMI</i> . My collection	Kisumu	3,500	May	Temporary swamp	Male adult in full breeding; very large testes.
(Hinde, B. M.)	Nairobi Machakos	5,600 5,100	July August	River margin Temporary swamp	Male, adult. Female.
NOTE.—This species definitely breeds in Kenya.					
<i>S. LINEATA</i> Antonit (Meinertzhagen) (Stoneham)	Mt. Kenya Aberdares Trans-Nzoia	11,500- 12,100 11,100	February August May and June.	Montane swamp Savannah	Males, females. Females and eggs, males noted.
NOTE.—Would appear to be resident, and breeds in Kenya.					

COLUMBIDAE.

COLUMBA ARQUATRIX ARQUATRIX. Speckled Forest Pigeon.

Throughout the whole of our stay on the Chyulu Range, extending over a period of nearly four months, these birds were present in hundreds. It was not that they were congregated in large flocks in any one patch of forest, but more or less evenly distributed. At each of our principal camps several pairs were noted to have a more or less set daily routine. They were one of the first birds to bestir themselves at dawn. Their distinctive call could be heard just as the first streaks of daylight showed above the horizon. By 7-30 a.m. they had gathered together and as a flock they flew down the slopes of the hill to an old cedar tree above the water drip. If no one was about they dropped down to the water in twos and threes, then back to the tree until all had drunk their fill. A brief rest, and the flock flew back to the forest and then split up. This flight was again repeated between 5-30 and 6 p.m. At Camp 3 (when our water supply was very low indeed, and water had to be carried about 15 miles), by observing the regular line of flight of these birds to a certain patch of forest some 2,000 feet below the camp, we were able to locate a small collection of water of roughly 20 gallons in an old *Cussonia* tree. It was one of the features of early morning to watch these birds and hear the swish of their wings as they took the downward slope at a terrific speed. They appeared to literally hurl themselves from the treetops and down the steep slope. Their "braking power" was a sight well worth observation. Examination of stomachs showed that they fed largely on the small fruits of *Rapania* and *Cornus* and also *Trema*, obtained from the upper, hill forests, and on olives which could only be from the lower plains forests on the lava flows at 3,500-4,000 feet.

In the twelve birds obtained, there is considerable variation in the amount of white spotting and in the degree of greyness to white on the occiput.

STREPTOPELIA SEMITORQUATA SEMITORQUATA

< MINOR.

Grey-vented Dove.

This species was only met with at the northern end where numbers were seen in the vicinity of the old cultivations; a few frequented recently burnt land at 5,600 feet. A young bird newly from the nest was obtained on May 18th.

TYMPANISTRIA TYMPANISTRIA FRASERI. White-breasted Forest Dove.

A few examples of this species were noted in the underbush of the forests, but the majority frequented the drier patches of

the smaller forest clumps, 5,600 feet, but the species was more plentiful in the old cultivations where bush growth had grown up into an impenetrable mass.

APLOPELIA LARVATA ? KILIMENSIS. Cinnamon-breasted Dove.

This species was abundant in the Great Chyulu forest and to a lesser degree in the forests of the central portion of the range. One noted several of them in a day's tramp through the forest, but after traverses had been cut in various directions they were much more observable. Thus of an evening as one walked along a mile stretch of forest path, at least a dozen pairs could be put up along the clearing. In no other forest in Kenya have I found the species so common. It is for the most part terrestrial and on being flushed will fly up into the mid-strata to drop again when one had either passed on or remained quiet.

The floor of the Chyulu forests is eminently suitable to these birds, for they appear to favour ground which is damp and covered with a thick layer of leaf-mould. It is in such surroundings that their chief food abounds; small mollusca and coleopterous larvae, wood lice, etc. They also eat a certain amount of small berries which are taken from the ground. Another type of food frequently recovered from the stomachs was a small bulbous root which I have been unable to identify. In captivity these Doves will take small grain, but to keep them in condition one has to supplement this with grated cheese and mashed hard-boiled egg.

The breeding season was well over by the end of April, and such young birds as were noted were unattended by their parents.

TAXONOMIC NOTE: I have placed the Chyulu birds with a query as the race *kilimensis*, Neumann. Although this name has been synonymised with that of the nominate race, all the Chyulu birds, some 16 in number are very much darker than any material from the Kenya highlands: 12 skins. It is possible of course that the Kilimanjaro bird may differ from Chyulu ones, and that the former may agree with the nominate race, but a series from Kilimanjaro would have to be compared before this point can be decided. Wings 145-155 mm.

VINAGO CALVA BREVICERA. Green Fruit Pigeon.

Fairly numerous in those forests where a small fruited parasite *Ficus* was in bearing. They were more often heard than seen. Two Kilimanjaro birds have quite a wash of green on the tail suggestive of possible intergrades with *wakefieldi*, and all the Chyulu birds have a wash of greenish on the outer edges of the rectrices.

MUSOPHAGIDAE.

TURACUS HARTLAUBI HARTLAUBI. Hartlaub's Blue- crested Plantain-Eater.

A very common species in all the larger forests on the Range, particularly the southern end; in the north, one occasionally heard it, but the forests in this area are rather small and contain very few fruit-bearing trees. On the evidence of a long series from the Chyulus and Kilimanjaro, it would appear that *medius*, Mearns, holds good for birds east of the Rift, from Machakos northward; the Chyulu birds belong to the nominate race.

MEROPIDAE.

MELITTOPHAGUS PUSILLUS CYANOSTICTUS.

Kenya Blue-eyebrowed Bee-Eater

All along the lower lava flows this species was noted in small flocks or companies; two pairs were observed at the edge of the great forest at 7,000 feet, but the bulk of the birds did not range above 6,000 feet. Several tunnels in which the birds had evidently nested recently were noted near the water drip at Camp 1 and a few more were noted on the western side in an eroded donga.

MEROPS APIASTER.

European Bee-Eater.

Large flocks of these birds were noted as passing over the Range at Camp 1, moving in a northerly direction (3rd week of April) at about 4 p.m.

ALCEDINIDAE.

HALCYON CHELICUTI CHELICUTI.

Striped Kingfisher.

A few Kingfishers were noted on the hillsides at between 4,000-5,000 feet. They spent most of the time hunting from the tops of the *Erythrina* trees, dropping down on grasshoppers and other insects in the grass below. One bird was seen catching a small red-bellied skink and swallowing it.

CUCULIDAE.

CEUTHMOCHARES AEREUS AUSTRALIS.

Green yellow-
billed Coucal.

A single specimen of this race was recovered at 4,000 feet on the eastern side of the range. No others were seen or heard.

LAMPROMORPHA KLAASI. White-bellied Emerald Cuckoo.

Cuckoos were poorly represented on the Chyulu Range. This species was seen on many occasions in the more open forest patches, and one young bird was heard as it was being fed by a Yellow-vented Bulbul. There is not the slightest doubt that on occasion, adults of Klaas' cuckoo will feed the young of their own species. I have noted this twice, and the same has been seen by my son, and furthermore has been also noted by Moreau.

CHRYSOCOCCYX CUPREUS CUPREUS. Yellow-bellied Emerald Cuckoo.

No specimens were obtained but the species was heard on more than one occasion during April-July. I should like to take this opportunity of recording the fact that a young of this species was reared in the grounds of the Museum this year, by a pair of *Pycnonotus t. fayi* and fed almost exclusively on the berries of *Erythrococca rigidifolia*.

I had the birds under observation throughout the day from 6 a.m. to 6 p.m. for several days and practically no insects were taken.

CENTROPUS SUPERCILIOSUS FURVUS. Hackled-neck Cuckoo.

Common in the grasslands and bush of the lower levels. Seven specimens were obtained; none have wing measurements over 155 mm.; the majority are 153 mm. I am satisfied that the coastal birds and those of the immediate hinterland are smaller than highland and Uganda birds, and therefore retain the name *furvus*. This is contrary to the views expressed in Jackson's Birds of Kenya

TROGONIDAE.

APALODERMA NARINA NARINA \gtrsim LITTORALIS. Chyulu Trogon.

It was surprising to me to find that this species was not met with in any of the high forests except that of the southern end, in the Great Chyulu Forest, 6,000-7,200 feet. Even here it was very scarce for during a two months' collecting in the area, only some half dozen birds were noted. On the other hand, I had noted several pairs in the low mixed forest at 3,500 feet between Noka and the lower lava flows on the Italweni track.

I examined the stomach contents of the birds procured and found them to consist of several species of insects such as

Coccinellid beetles, Pentatomid and Coreid bugs, Ichneumon flies, Diptera, and what interested me most of all, two almost full-grown larvae of *Charaxes fulvescens acuminatus*; of these one was intact, the other was identified by the complete head-mask.

I have placed these birds as intermediate between the small coastal race and the inland highland form. Two males have wings of 127 mm., one sub-adult male 129 mm.

BUCEROTIDAE.

LOPHOCEROS MELANOLEUCOS SUAHELICUS.

Red-billed Pied Hornbill.

Hornbills of all species were extremely scarce on the range, thus during the three months only one specimen of *suaelicus* was seen and obtained. It was in a small valley forest at 6,000 feet. The species was extremely plentiful in the savannah forests on the plains at 3,500 feet.

In the Great Chyulu Forest a small flock of BYCANISTES CRISTATUS was heard and located but no specimens were obtained as the position they took up was at that time without a traverse, and it was impossible to come up to the birds.

CAPRIMULGIDAE.

CAPRIMULGUS POLIOCEPHALUS PALMQUISTI.

Kilimanjaro White-tail Nightjar.

Here and there where there were slight exposures of lava in the grass lands of the hill sides, one would put up these Nightjars during the day. At dusk, many flew around the camp fire and caught up insects as they were disturbed by movements of the "boys" through the grass and bush. I noted only this one species, and they were most in evidence at the southern end of the range, but were by no means plentiful. One occasionally heard them "churring" but as the breeding season was over they were on the whole silent.

I am satisfied as to the distinctness of these birds when compared with the race of the north-central Kenya highlands.

MICROPIDAE.

MICROPUS AEQUATORIALIS. Kilimanjaro Giant Swift.

Although not actually shot on the Chyulu range, these birds were noted to pass over in large flocks at about 9 a.m. from the direction of Kilimanjaro. I obtained the series now under consideration at an artificial dam on the Masongoleni-Noka-Italweni track.

When we first visited this water we noted hundreds of these birds circling overhead and after a time they came in bunches swooping down to the surface of the water, just touching it, then wheeling around would repeat the manoeuvre several times and then make off over the wooded plains. The time was then about 10 a.m. On our first visit I had no gun and returned to the spot next day, arriving about 9 a.m. No birds were in evidence except *M. affinis*. By 10 a.m., the first batch of birds arrived and wheeled around the dam at about 200 feet. They did not start to fly over the water until their numbers had been considerably increased, and then one heard an intermittent swish of wings as batch by batch they swooped down the valley, touching the water at about its mid-line and rising parallel to the dam face they wheeled about at a terrific pace. For many minutes I sat and enjoyed the wonderful sight of these master fliers at exercise and taking water. In about half an hour hundreds of birds were taking part in the flight. One heard a constant "fruuu" as, in dozens, they touched water. On the previous day we had noted a few *M. melba*, but on the second day none were in evidence, although I waited for more than two hours for their arrival.

TAXONOMIC NOTE: Several races of these giant Swifts have been described and in nearly every case doubt has been expressed as to their validity. Six specimens from Naivasha-Nakuru-Nairobi area are uniform ashy-brown from crown to rump with a slight greenish wash on the mantle; the undersides vary as to the degree of dark and white mottling. The five Chyulu-Noka birds are very much darker with a strong greeny-black gloss from crown to rump; the undersides are darker, whilst the throats are whiter. These birds have smaller wings: 186-198 mm. as against the former 205-208 mm.

HIRUNDINIDAE.

HIRUNDO RUSTICA RUSTICA. European Swallow.

During the first part of our stay on the range, these Swallows were numerous for a few days. The last birds were noted on the evening of April 25th. Only two specimens were shot; one has the underside strongly washed with pink-buff and might pass as the race *transitiva*, the other is almost white below.

PSALIDOPROCNE ALBICEPS. White-headed Sand-Martin.

A few pairs of this little Martin were resident at the north end of the range and were nesting during April-May. One pair had built in the bank above the "water drip." One could see the beard-lichen nest at the end of a short tunnel of eight inches,

by means of reflected light. Two fresh eggs were noted. Another nest constructed in a slight wash-out in a bank contained two young.

The birds were exceedingly tame and flew in and out of their nest hole while the porters were actually drawing water a few feet away.

The female of this nest was caught on the nest by a porter and brought into camp, much to my annoyance, so I took the bird back and released it; within a very short time she had recovered sufficiently from her fright to return to the nest. Strict orders were given that she was to be left alone. Unfortunately, she was shot two weeks after by a new arrival in camp.

UPUPIDAE.

UPUPA AFRICANA.

African Hoopoe.

A somewhat rare bird on the range, but plentiful in the plains country below. Two pairs were noted at the 4,000-5,000 foot level amongst the bush and *Erythrina* on the lower lava slopes. They were not noted at the southern end of the hills.

PHOENICULIDAE.

RHINOPOMASTUS CYANOMELAS SCHALOWI.

East African Scimitar-bill Hoopoe.

Toward the north and central portions of the hills one noted these birds on the lower levels at 4,000-5,000 feet on both eastern and western slopes. They were seen in pairs or small flocks hunting over the lichen-clad branches of the *Erythrina* trees.

STRIGIDAE.

TYTO ALBA AFFINIS.

African Barn Owl.

At night one heard the unmistakable call of the Barn Owl from the forest behind the camp, but it was some considerable time before specimens were obtained. One occasionally saw them flying silently past the tents just after dark but it was not until we reached Camp 2 that any attempt was made to procure specimens. At this camp we found them common and, whereas rodents had been rather scarce at the north end, here we found them to be numerous, and owls correspondingly plentiful. At Camp 3 they were more numerous still and numbers could have been obtained had we wished. The Chyulu birds are very strongly grey above, more so than any of the 20 odd with which I have compared them.

There is some variation on the lower surface; two are pure white with small blackish spots; another is buffy below with a tendency to barring on the flanks.

STRIX WOODFORDII NIGRICANTIA. Brown Forest Owl.

The distinctive call of this bird was a feature of the early night at Camp 3, and to a lesser degree at Camp 2. It was neither seen nor heard at Camp 1. The variation in the plumage of these birds has led to the description of several races. There are two phases in the adult plumage as I have proved in captive birds kept under observation for three years on end; one is a brown dress, the other almost black on the mantle. These are not related to sex. Nestlings kept under close scrutiny have taken 18 months to reach a definite intermediate or sub-adult plumage; the full mature plumage is not assumed until two years old. The stomach contents show small rodents and shrews, beetles, long-antennaed grasshoppers (Tettigoniidae). These last move about at night, and if Moreau's birds took this group of grasshoppers, it does not follow that they were taken during the hours of daylight (Cf. P.Z.S., 1936, p. 870).

In addition to the two Owls mentioned above, Grass Owls, *Asio helvola* were not infrequently flushed.

CAPITONIDAE.

POGONIULUS PUSILLUS AFFINIS. Red-fronted Pigmy Barbet.

Wherever there were clumps of *Erythrina* surrounded by bush, as on the lower lava flows, this little Barbet was invariably present. They are most active during the morning and toward the latter part of the afternoon. Their food consists almost entirely of insects, but odd berries are also taken. One may meet with them in pairs or singly, and when engaged in hunting for food their actions are restless. Watching a bird foraging for food shows that a very methodical method is adopted. As a bird enters the one side of a clump of bush it scans all the branches around with a rapid rather jerky movement of the head; hopping amongst the twigs it picks an insect off here and there, and in a very short time it has scoured the entire clump, having gradually worked its way to the far side in so doing. It then flies off to the next clump and repeats the same tactics. During the heat of the day one may just by chance catch a sight of a bird as it sits in some shady spot either motionless or preening itself. At such a time I have noted a bird to sit stationary for more than two hours on end. The nesting hole has a very small opening, just large enough for the bird to squeeze its way in; the tunnel descends almost vertically for about three inches and ends in a chamber of roughly 2½ inches across. As in the case of other Barbets, these birds use their

nesting holes for sleeping quarters. Two of these nests were found in stumps of *Cussonia* in small patches of forest.

TAXONOMIC NOTE.

The type locality of the race *affinis* is Kipini on the Tana River from whence I have topotypical material. Its distribution covers practically the whole of the dry thorn-bush country of Kenya, westward into Tanganyika. It is fairly constant in its type of plumage throughout its range but shows a tendency to darkening on the lower surface as it goes westward, more particularly in the region of the Mara River in the northern portion of the Masai country; and in the reverse direction, toward the Juba River, it becomes paler and smaller. These Juba River birds I have separated under the name *lolleseid*, for the above mentioned reasons. None from the Juba River have wing measurements over 50, with a minimum of 46 mm. The western birds run from 53-58 mm. Claude Grant, *B.B.O.C.*, Vol. lviii, p. 141, does not accept the validity of the Juba race, but in this I think he is in error if we are to accept the 75% convention as a basis. He admits, in this same Journal, p. 119, that the birds of the Juba area run small. *Vide* his remarks regarding *Ind. minor*.

One difficulty is that the type of *affinis* came from an intermediate locality between the small Juba birds and the larger darker south and western Kenya birds; nevertheless my birds from Kipini are large having wings of 58 mm.

Two birds from the Chyulu range have orange red at the base of the rump, a character on which the race *uropygialis* was founded.

TRICHOLAEMA LACRYMOSUM LACRYMOSUM.

Spotted-flank Barbet.

This was the common Barbet of the *Erythrina* bush and the donga or valley forests, and was encountered from 4,000 to 6,000 feet. Occasionally it was found in the smaller forest patches and along the edges of the larger forests. Several of their nest and sleeping holes were located, and these were invariably quite low down, not more than six feet, often as low as three, in the trunk of some dead, or partially dead tree. I have recorded the call note as "quek" repeated several times in succession, but on the whole I found it a rather silent bird.

At our Noka camp, on the way to the southern end of the range, a solitary bird was found excavating a hole in an inclined tree trunk just at the back of our tent. The presence of human

beings in close proximity did not appear to worry the bird, for it continued its laborious task throughout the afternoon until almost dusk. When I examined the half-finished hole by electric torch at about 9 p.m. the bird was in occupation. This species takes insects as well as fruits, and quite a number of stomachs examined contained termites which had been secured by opening up the earth-works on trees.

The breeding season was over by mid-April, and numbers of young in first plumage were noted and secured. In the series of 20 odd birds obtained, eight are young of the season just over. There is no great difference in the plumage compared to that of the adults. Young birds have the median wing-coverts edged with yellowish-green; these in the adult male are somewhat pointed and have a yellowish tip only.

VIRIDIBUCCO LEUCOMYSTAX CHYULU. Subsp. Nov.
White Moustached Pigmy Olive Barbet.

These little Barbets were only met with in the forests at altitudes of 5,600 and 7,000 feet. They were observed in the canopy of the trees and again in the tops of the trees at the edges of the crater forests. The birds met with on the Chyulu range were silent, possibly because the nesting season was well over (April), but in other places I have heard them utter a semi-metallic note which is repeated rapidly.

TAXONOMIC NOTE.—Among the specimens of this species from the Chyulu Range are four adults which I have compared with a series from Sotik (type locality of *leucomystax*), Mau, Nairobi, Meru (Kenya), Elgon, also four from Kilimanjaro.

The Chyulu bird is purer green on the head and mantle and wing edges; they are also more strongly washed with green, less greyish on the underside, whilst the throat is darker, and the abdomen lacks the buffy tone found in typical birds. In the series of 18 birds from the Kenya highlands I cannot match the Chyulu birds and consider them to be a recognisable race.

The type is a male, 14/6/38, Chyulu Mts., 6,000 feet. Coryndon Museum Expedition, 1938. Paratypes three. Wings 56-58 mm. In nominate race 53-58 mm.

I treat this bird as a species distinct from *simplex* for both occur over part of their distribution and appear not to interbreed. I unite with the nominate race, specimens from Kilimanjaro.

LYBIUS LEUCOCEPHALUS SENEX.

White-headed
White-bellied Barbet.

This White-headed Barbet was not uncommon, and numbers were seen and heard on the lower slopes in the vicinity of the old Wakamba plantations. All round these old cultivations were many wild figs, and on these we found the birds to be feeding in numbers. They were also noted as feeding on the ripening bananas.

Several nesting and sleeping holes were noted in the dead branches of the fig trees. As with many other species of Barbets, this bird will make use of old nesting holes for sleeping quarters, and it is no uncommon thing to find, by closing up a nest hole with a butterfly net and then disturbing the roosting birds, that very often half a dozen birds will emerge one after the other. On one occasion I trapped no less than eleven birds from one sleeping hole. Through several seasons this bird has nested in the Museum grounds and on each occasion I have noted that up to four adults will attend the young in one nest-hole. It has been impossible to ascertain whether more than one female has laid eggs in the one nest, or whether the male is polygamous. I doubt if the latter is so, for on many occasions I have found nests at which only one pair were in occupation throughout the whole period. These birds are very noisy and keep up a continuous chatter.

TAXONOMIC NOTE.

It is of interest to note that the race found on the Chyulu Range is *senex*, whereas, as has been often recorded, *albicauda* is the race found on Kilimanjaro and at Taveta, just south-east.

This has led me to examine the whole series of White-headed Barbets in the Museum, and to map out the distribution of each as shown by this material and published records. In my paper published in *Nov. Zool.*, 1922, I placed *senex* as a race of *albicauda* and stated my reasons for so doing. Sclater treats them as species in the "Systema," but places *senex* as a race of *albicauda* in the recently published Jackson's Birds of Kenya and Uganda, 1938. From the extensive material now before me it is suggestive that both *senex* and *albicauda* are geographical representatives of *leucocephalus*.

We have evidence in the young of *senex* to indicate its affinities with *albicauda*, in that the white scapular patch of the adults is only represented by a few white-centred and white-tipped feathers; that the abdomen is strongly greyish or blackish with white central streaks and tips such as we find in the adults of

both *albicauda* and *leucocephalus*; and in many of the young birds the tails are either entirely or strongly blackish, in fact some of the old birds have black feathers amongst the rectrices.

If we examine the young of *albicauda* we find the same thing, viz. that in many the rectrices are entirely or partly black as in *leucocephalus*. And as we know, the scheme of colouration in *albicauda* is similar to that of *leucocephalus*, except that in the latter the tail is black. Nevertheless, some Uganda *leucocephalus* have white feathers in the tail. It is suggestive that we are in reality dealing with one species of which the race *leucocephalus* is the recessive or parental type, with the other two as recent developments, which, in the young in many instances, exhibit reversion to type, which evidence is eliminated as maturity is reached. Such a state of affairs is not without parallel.

Examining now the known distribution of the three, *leucocephalus*, *albicauda*, and *senex*, we find that this conforms to the suggestion of a common ancestry for the three. We find that *leucocephalus* ranges through Uganda, east to Elgon and north Kavirondo; that *albicauda* extends from South Kavirondo, through the Mara and Narok, the north and north-eastern portions of Tanganyika to west of Kilimanjaro and through the Pare gap to Taveta; we find that *senex* ranges from the north and north-east of Mt. Kenya, through the Kikuyu highlands to Ukambani and the south Masai to the Chyulu Range. There is thus a possible contact between the black-bellied *leucocephalus*, and the less black-bellied *albicauda*, and the latter with the white (in maturity) bellied *senex*. I cannot find evidence of overlap of any two, with full maintenance of characteristics of each in the area of overlap. To what extent *leucogaster* and one or two others may come into this "circle" I cannot suggest for want of comparative material. It is a point worth investigating.

For the time being, I would suggest that as *leucocephalus* is the oldest name, it should be applied as the nominate race of the three geographical races. As regards the name *usukumae*, Neum., we find that Granvik, *Jrl. f. Ornith.*, 1923, p. 87, uses it for birds from Kendu Bay, Kavirondo, and as a race of *leucocephalus*. Friedmann, in referring to this, suggests that Granvik is wrong in assuming *usukamae* to be a race of *leucocephalus*. I suggest that Granvik was right, in that I consider the latter to be the nominate race, as indicated above. I further suggest that *usukumae* is the intermediate between *leucocephalus* and *albicauda*, but I am not satisfied that the name can be upheld on the grounds that it does really represent an intermediate aggregate occupying a definite area between two recognisable races, *leucocephalus* and *albicauda*.

Again as regards the name *abbotti*, Richmond, Taveta, I am inclined to suggest that this is an intermediate between *senex* and *albicauda*. If we refer to Sclater in the "Systema" we find he suggests that both *abbotti* and *usukumae* should be synonymised with *albicauda*. Again, Friedmann, op. cit., says definitely they are synonyms. Claude Grant, *Ibis*, 1915, p. 438, suggested that *leucocephalus* will prove to be an immature dress of *senex*. Doubtless he has altered his views since.

Stated briefly, my conclusions are based on the following:

L. leucocephalus: Adults and young are blackish on back and abdomen with white flecking; tails black (occasionally with some white). This I take to be the ancestral race.

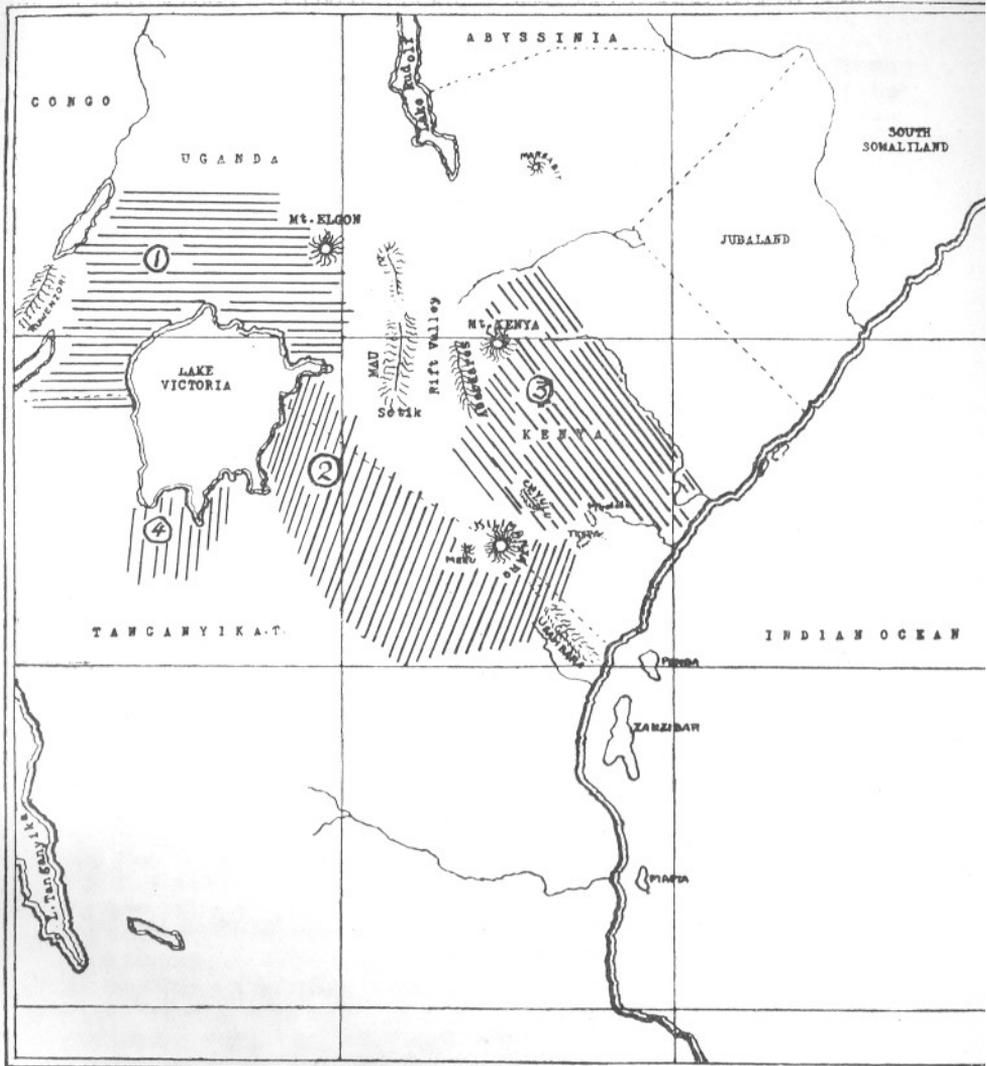
L. leucocephalus albicauda: Adults and young somewhat as in *L. leucocephalus leucocephalus*, but not so black, but with white flecks on abdomen, wing coverts, and inner secondaries; tails white, but often with base of central feathers black, or with two or three black feathers, or, in young birds mostly black with triangular white at tips. This I interpret as a reversion to ancestral type. Such young are shot with adults of normal *albicauda* plumage. The black bases to the rectrices is the main character of the newly described race *leucocephalus lynesi*.

L. leucocephalus senex: Adults without black or just a few black feathers on the abdomen; mantles black with variable degree of white on the scapular region, usually more white in very old birds (this is contrary to Granvik's views, q.v. op. cit., as my series of 11 very old birds have more white than the young and only three have reduced white on the scapulars). Tails usually white, but some with black feathers in the rectrices. On the other hand, the young have blackish tails entirely or partly, and the abdomen is strongly or slightly blackish, and the scapulars and inner secondaries flecked with white, and some have small white central flecks to the tips of the coverts. Again a reversion to ancestral type. Furthermore, one adult has white triangular tips to the inner secondaries and inner greater coverts; further evidence of reversion.

And last of all we have evidence of intermediates in the two supposed races *usukumae* and *abbotti*.

It is to be noted that the Chyulu birds are blacker than birds from the surrounding plains around the type locality of *senex*.

Since writing the above independent observations, my attention has been drawn by Moreau to the paper by Admiral Lynes in *Jrl. f. Ornith.*, 1934, on pages 64 and 65 of which he expresses the view that all are geographical representatives of one (*leucocephalus*) species. In the Editorial footnote, attention is drawn to a paper by Stresemann and Grote, Internat. Kongress, Kopen-



Sketch map showing races of *Lybius leucocephalus* within Kenya and Uganda.

- | | |
|----|--|
| 1. | <i>Lybius leucocephalus leucocephalus.</i> |
| 2. | " " <i>albicauda.</i> |
| 3. | " " <i>senex.</i> |
| 4. | " " <i>usukumae.</i> |

hagen, 1926. In acknowledging these prior conclusions, I should like to state that they coincide with my views to a marked degree.

BUCCANODON LEUCOTIS KILIMENSIS. Pied Barbet.

The Pied Barbet was a plentiful species in those parts of the range where fruiting trees, especially figs, were common. In practically all cases, the stomachs examined showed that fig was the most sought-after fruit; this was followed by *Rapania* and *Sapium*. At certain spots one could count as many as fifty individuals, all busy eating the fruit and chattering continuously. Bowen has suggested that this species utters a call note like "ho-ho-ho" answered by a high-pitched "ha" probably by the female (quoted in Jackson's Birds of Kenya), but this was certainly not my experience, and I had the opportunity of listening to hundreds of them, nor is it Moreau's (in. lit.). In my notes I have likened the call to a frequently repeated "ka-ka-ka" with an occasional "kak" or "kark" rather long-drawn, or as Moreau puts it, "a squawk." I have elsewhere referred to the likeness of these birds to *Pholia femoralis*, Abbott's Starling, when seen at a distance at the top of a tree, without the aid of glasses. These birds are entirely confined to the forest, and although Moreau does not record it above 6,000 feet, we often met with it at 7,000 on the Chyulu range.

TAXONOMIC NOTE.

In dealing with the very long series of this species from the Chyulu hills, I have taken the opportunity of looking up the references to the race *kenyae*, Bowen.

Sclater, in Jackson's Birds, merely directs attention to it and states that there are no specimens from Kenya in the British Museum. Grant and Praed, *B.B.O.C.*, lviii, 1938, p. 140, are satisfied "that the characters given by Bowen do not hold good," and make *kenyae* a synonym of *kilimensis*. In 1923, I obtained a series from Mt. Kenya, Mau, Embu, Meru, Nanyuki. The former I found to differ from *kilimensis* and submitted them to Dr. Hartert, who replied that some specimens of *kilimensis* had dark rumps. I refrained from separating the Kenya birds. Bowen did so in 1930, using as one of his characters the dark rump. I stated in *Nov. Zool.*, 1932, that I was prepared to accept the race on the usual 75% convention. I now have before me 70 odd specimens from Kilimanjaro and the Chyulu Range. Only three out of the total have the rump dark, the others being white with a very narrow, if any, dark streak. One of the characters which distinguish *kilimensis* from nominate *leucotis* is the white rump.

Although I published my remarks on the Kenya race in 1932, Sclater does not include the localities given, in the Jackson "Birds of Kenya."

The Chyulu material is constantly blacker, especially on the back, and sides on the lower surface and flanks than Kilimanjaro birds. Furthermore, the birds from the low forests at Ganda north of Shimoni, 1,000 feet, are strongly brown, not blackish, on these areas (12 examples), but as these were all taken in one month, I await further material to ascertain if this colouration is constant. This species has been recorded from Nairobi, but although I have collected in this locality for the past twenty odd years I have never seen or heard the bird in that area.

A point to be noted is that the young in first plumage has the sides and the breast, black without any blue glossing.

PICIDAE.

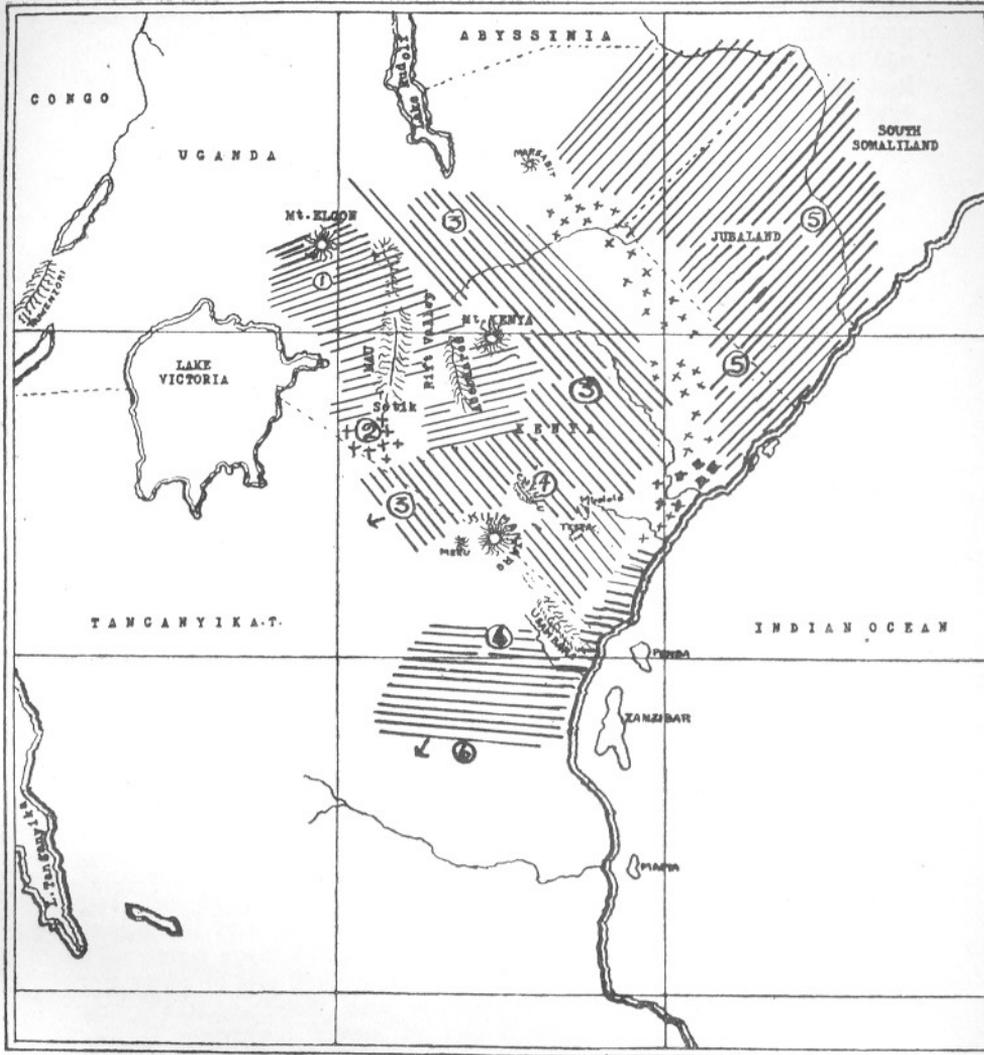
DENDROPICOS FUSCESCENS CHYULU, subsp. nov.

Chyulu Little Barred Woodpecker.

These Woodpeckers were quite numerous along the edges of the forest from 4,500-7,000 feet. One family party of four occupied a hole in a dead *Cussonia* at the back of Camp 1. At Camp 3 they were frequently noticed searching the flowering spikes of the Giant *Lobelia* from which they obtained numbers of spiders. Stomach contents showed that they fed also on beetle larvae, ants, and termites.

TAXONOMIC NOTE.

The increasing evidence and accumulation of material representing the hitherto accepted species *lafresnayi* and *fuscescens* go to indicate that we are really dealing with only one species, *fuscescens*. I have before me nearly 200 specimens representing the species in its distribution through Uganda and the whole of Kenya, from the Abyssinian border and Juba River to the Kilimanjaro-Usambara line and thence into Tanganyika, Morogoro, Dar-es-Salaam, and Lumbo, P.E.A. Arranging the material geographically, it appears that birds with green backs, uniform or only slightly barred, extend through Uganda to Elgon, through the forest country of the Cherangani, Kakamega, and Mau-Sotik, thence across the Rift to the Aberdares, Kikuyu, and Mt. Kenya. It is at once noticeable that the birds from the Sotik area are becoming barred, in fact some are hardly to be distinguished from the Morogoro bird which is *hartlaubi*, nor from the Usambara birds which also belong to that race. We thus find that



Sketch map showing races of *Dendropicos fuscescens* within Kenya and Uganda.

- | | | |
|----|-------------------------------|-----------------------|
| 1. | <i>Dendropicos fuscescens</i> | <i>lepidus</i> . |
| 2. | " | " " <i>massaica</i> . |
| 3. | " | " <i>massaica</i> . |
| 4. | " | " <i>chyulu</i> . |
| 5. | " | " <i>hemprichi</i> . |
| 6. | " | " <i>hartlaubi</i> . |

the species, as it extends south from Uganda becomes barred on the back. Assuming the Morogoro-Usambara birds to be *hartlaubi*, and I am assured that they are, we next trace them up along the coast, but how far? Sclater says (*Systema*) not along the coast south of Mombasa. Friedmann says more or less the same. I have in my large coastal series, individuals which, had they a Morogoro label on them, would, on the strength of their colouration, be identified as *hartlaubi* unquestionably. They come from Vanga, Takaungu, and Lamu.

Turning now to the group accepted as *fuscescens*, birds with well marked barring on the back, we first have the race *hemp-richi* which, according to Friedmann, ranges through eastern Abyssinia, south Somaliland, Jubaland, and the Northern Frontier of Kenya. These are represented in my collection by birds from the Juba River, Marsabit, and Archer's Post. The next race is what has been accepted as *massaica*, type locality Ngurumansee. They, according to Friedmann, range from just within the Kenya-Uganda border, Turkana, through the whole of central Kenya to south of Lake Victoria, north-eastern Tanganyika (S.E. Lake Victoria), through Kilimanjaro, Usambara to the Kenya coast. In other words they are said to occupy a considerable tract of Kenya where *lafresnayi lepidus* occurs. I do not know whether he had actual material of *massaica* which can be definitely associated with the area he has shown on his map in which *lepidus* occurs. I have carefully checked my material, and in no place do the two overlap. A passage in Vincent's recent paper, *Ibis*, 1935, p. 20, is pertinent to the matter: "It has been hinted at for years that somewhere *fuscescens* and *lafresnayi* were side by side but where is it? I think the answer is nowhere."

This is not really the correct answer, if by "side by side" Vincent means occupying the same territory and/or running parallel. Let us take for example the Elgon-Turkana area: on Elgon, in the forest we find *lepidus* (my specimens and Granvik's), but outside the forest area in the bush and acacia we get the barred-back *massaica*. Note then that there is an ecological change in environment, vegetational, and altitudinal. The same applies to birds from Cherangani: *lepidus* in forest, *massaica* in the Suk plains. Again *lepidus* in the forests of Mau and Kericho, Sotik, and *massaica* in the savannah forest and acacia country. Again, in the forests of Nairobi and Kiambu, *lepidus*; in the Ukamba country to the south *massaica*. In the Usambara—what has been called—*hartlaubi*, in the high and moderate rainfall areas: to the north of the Uмба steppe, *massaica*. But in this last case, with the change from forest to savannah and steppe forest we find *hartlaubi* is strongly barred

on the back, and indeed where this race merges into the coastal *massaica*, some of the birds are difficult to assign to a specified race.

A glance at the accompanying map will show the distribution as represented by my material. It appears reasonable that we are dealing with one species, so far as the evidence of East African birds are concerned. The foregoing is my independent view.

Here again, Moreau has drawn my attention to Lynes's paper in *J. f. Ornith.*, 1934, on page 69 of which he suggests exactly what I have written. Grant (in lit.) 5/10/38 agrees that there is only the one species, *fuscescens*, with so many races.

Comparing the Chyulu birds of 4,500 and 7,000 foot edge of forest with *massaica* and *hartlaubi* we find them to be definitely different. The ground colour is darker, blacker so that the white barring is in more contrast, yet the dorsum is that of a darker bird than *massaica*, and with very much less greenish-yellow and yellow wash than *hartlaubi*. The streaking on the breast is stronger.

There is greater difference between these Chyulu birds and *massaica* than between the latter and *hemprichi*.

Type: Male, 19/5/38, Chyulu Range, 6,000 feet. Coryndon Museum Expedition, 1938. Paratypes 4 males, 4 females, 3 sub-adults.

CAMPOThERA NUBICA NEUMANNI \geq PALLIDA.

Red-headed Spotted Woodpecker.

There were a few examples of this species to be noted along the range but they were few and far between and limited to the lower slopes where *Erythrina* and *Cussonia* were the dominant trees of the lava flows, 4,000-5,000 feet. In the specimens obtained, there is an indication of intermediate characters between two races. I retain the name *neumanni* for the large Kenya Highland birds, for with further material the view is strengthened that they do run larger than northern birds, i.e. we have a greater preponderance of large birds of 114-116 mm. in wing length, in the Kenya Highlands. Birds which have small white spots on the head are always immature, or juveniles of both sexes.

INDICATORIDAE.

INDICATOR INDICATOR.

Common Honey-guide.

Although very common all along the route from Kibwezi to the hills, this species was scarce on the range. It was seen at and obtained in the *Erythrina* clumps on the east and western lava flows at 4,500 and 5,000 feet. During the time of our visit,

mens. I think Grant and Praed are premature in sinking this name.

INDICATOR MINOR. Lesser Honeyguide.

This species was numerous especially in the more open forests and amongst the *Erythrina* patches, 4,500-6,500 feet. One bird was secured near the edge of the great forest where some of our porters were smoking out a bees' nest.

TAXONOMIC NOTE.

Grant has recently stated, *B.B.O.C.*, 1938, p. 119, that the race *teitensis*, Neum., is untenable. It is admitted by Sclater in Jackson's Birds of Kenya. In *Nov. Zool.*, 1922, I suggested that if the races are separable on size only, it would appear that no great reliance could be placed on this character. I gave a series of wing measurement of series from the coast up to Lake Rudolf, grouping them according to general colouration.

The Chyulu Expedition secured eight more specimens and as the Chyulu Range is within the "terra typica" of *teitensis* (recognising that we are dealing with a somewhat nomadic species not restricted to any one type of country, as my series shows), and they give the following wing measurements: Males, 85, 86, 87, 88. Females, 84, 85.

The material loaned by me to Grant and referred to by him, with additional material since collected, give the following: Kenya Highlands, Aberdares, Nairobi, Kyambu, Kikuyu: Males, 91, 91, 93, 93, 93, 95, 98 mm. Females, 86, 87 mm. Kilimanjaro: Male, 91. Female, 86mm. Lake Victoria area: Males, 93, 96, 96 mm. Female, 92 mm. Rudolf area: Males, 86, 86 mm. Females, 85, 85, 85, 83 mm. Kenya Coast: Males, 83, 87 mm.

From the above data it will be noted that the largest birds are from the Kenya Highlands, Kilimanjaro to Lake Victoria. The Coastal birds are smaller, as are the birds from Lake Rudolf area. These latter show an approach to *diadematus*.

Two birds from the Yala-Kaimosi forest are much more golden above and much darker grey below than any others. Two of the Chyulu birds are strongly washed with green all over the underside; they are sub-adult.

INDICATOR MINOR ERLANGERI.

Grant does not deal with this race under the races of *minor* op. cit., but discusses it on page 141 under *exilis*.

I think he rightly places it in the *minor* group, but surely he disposes of the name in a very casual way. Because Zedlitz gave the wing measurements as 80-84, and Grant finds that in the aggregate of what he takes to be *minor minor* the minimum is

81 (? female), he states that the name *erlangeri* cannot be upheld. On page 119, Grant mentions one of my birds from Unsi, Juba River as having wings of 76 mm. It is a female, and also from this river there was a male of 80 mm. which he does not mention. There is also a bird from Lugh with wings of 76 mm. Referring to the bird of 76 mm. he says "There is no doubt that it is *I. minor minor*. This is in keeping with the known fact that birds from the lower and middle Juba River area run small in size, though they are seldom so constant as to be recognisable as good races." I am not satisfied that he is right in this last statement nor yet that the Juba birds are *minor minor*.

It would appear that apart from my two birds which he examined, he had no further material from this area. The Juba birds are paler above and below than *minor minor* and I uphold the race *erlangeri*.

PRODOTISCUS REGULUS REGULUS.

Brown Pigmy
Honeyguide.

A solitary bird was noted in the *Erythrina* trees below Camp 2 at 5,000 feet and was secured. It was the only specimen of this species observed throughout the range. Its stomach contained a mass of Coccids which had been removed from a *Loranthus* parasitic on the *Erythrina*.

COLIIDAE.

COLIUS STRIATUS CHYULU. Subsp. Nov.

Chyulu Coly,
or Mouse Bird.

The Colies of the Chyulu hills, unlike the birds of Nairobi and Mombasa, were extremely shy, and one could seldom come near them. They were plentiful all along the range, and were most numerous on the western side at the 5,000-6,000 foot level, and extended up to the higher forests of 7,000 feet. These birds were definitely associated with the forests, for on many occasions I noted them feeding on fruit-bearing trees in the middle of forests of 20 acres in extent. At other times one would note them in the smaller patches, but invariably they came to the bigger forests to roost. It was at this time, just about sunset, that one was able to secure a sufficient series. During the day, one might hear the birds in a particular clump of trees and perhaps see a few on the outer branches, but as soon as one approached, the birds dropped into the thick trees and made their way towards the off side. The call of the Chyulu birds, though somewhat similar to that of the coast or inland, has a distinctive intonation.

Dissection of stomachs showed that the birds fed largely on figs, *Lantana*, *Rapana*, shoots of *Catha edulis*, and fruits of Jasmin. An occasional insect was also found. These birds were associated in groups of six to as many as twenty in a bunch, and could be considered as common. About 16 specimens were collected so as to ascertain by series what position they held in regard to the distribution of the races of this widely spread species.

TAXONOMIC NOTE.

In order to ascertain the position of these birds from the Chyulu Range, I have arranged in series all the material available representing the distribution of the races of this species from the coastal belt of Eastern Africa (Dar-es-Salaam to the Juba River), inland to Marsabit and Lake Rudolf and Uganda, some 235 specimens, represented by series throughout.

In considering the possible position of the Chyulu birds we may eliminate, as comparable, *C. s. affinis*, type locality Dar-es-Salaam, so also *C. s. mombassicus*, type locality Changamwe. In *affinis* the throat is grey with no black, and the head and mantle are without barring. In *mombassicus*, the head is greyer than *affinis*, as is also the mantle; the latter is barred, and the underside darker. There are also other differences which need not be detailed here. We may also eliminate the inland race *kikuyuensis*, *ugandensis* (*jebelensis* ?) as well as *marsabit*. These are darker, more brownish birds with very black throats. We are then left with the birds from the Usambaras, Kilimanjaro, Mt. Meru, and Oldowai, the country just north of the Ngurumans, Mara River, and Sotik. In other words, with the birds on either side of the Kenya-Tanganyika boundary line.

I find the Usambara birds to be intermediates between the race *mombassicus* and a race found on the Chyulu Hills, and quite distinct from a further race at the south of Mt. Kilimanjaro at Marangu which will be referred to later. The relationship toward *mombassicus* is indicated by the general type of the throat-upper-breast barring, but the general tone of the upper side is greyer, and the mantle barring is not so distinct. In the type of throat patch they show an approach to *affinis*, but are much nearer to *mombassicus*. The greyish tone to the brown upper side appears to show influence of *cinerascens* (Irangi) from due west, but they are not to be confused with that race. They do indeed approach very near to the Chyulu birds but differ from them in that the throats are not nearly so dark. In the Usambara birds the eyes are brown. The indications then are, that the Usambara birds are an intermediate aggregate with tendencies toward *mombassicus*, *affinis*, and *chyulu*, which is now described.

DESCRIPTION: Nearest to *cinerascens*, but differing from that race by being less pure greyish on the crown and mantle, wings and tail, which are only slightly more greyish than the Usambara birds, but differing from these latter by having a much blacker throat, strongly barred upper breast but paler undersides. Associated with these birds are specimens from North Kilimanjaro and Mt. Meru, which show an undoubted tendency towards *cinerascens*, being more greyish than Chyulu birds but not as grey as *cinerascens*. Furthermore, they have brown eyes like *chyulu*, not yellow or cream as in *cinerascens*.

Type: Male, Chyulu Range, 5,500 feet, 23/5/38, Coryndon Museum Expedition, 1938. Paratypes twelve. Altitude range, 4,500-7,000 feet. **Distribution:** Chyulu Mountains, and on north Kilimanjaro at Ngare Rongai, and Mt. Meru.

Through the kindness of Mr. Moreau, I have been able to examine specimens from Mbulu and Monduli, and I associate with these, birds from Oldowai. They are characterised by a decidedly grey crown and mantle, wings, and tail; eyes cream or yellow. These are *cinerascens*, Neum., type locality Irangi.

Birds to the north of the Ngurumans, at Pusumuru, north to Mara, Sotik, and Kericho, show an affinity toward *cinerascens* and *kikuyuensis*; they are intergrades between these two.

I propose now to revert to the birds of south Kilimanjaro taken at Moshi and Marangu. They differ from the birds of the Usambaras, Chyulu, and north Kilimanjaro by being very much browner on the head, mantle, wing, and tail, darker brown on the underside, and the eyes are yellow. From the brown race *kikuyuensis*, they differ in being less dark brown, and paler on the belly. COLIUS S. MARANGU. Subsp. n.

Type: Male, Marangu, south Kilimanjaro, 9/8/20, in my collection; six paratypes. **Distribution:** South Kilimanjaro, Moshi, and Marangu.

The views I have herein expressed are in no way contrary to those already published in Nov. Zool., 1922 and 1932; rather do they substantiate and amplify them in accordance with additional material now available. The birds recorded as *affinis* in Jackson's book, 1938, edited by Sclater, are not typical of this race. I do not consider that *affinis* enters Kenya at all.

EURYLAEMIDAE.

SMITHORNIS CAPENSIS.

Chyulu Broadbill.

This bird was apparently very rare, for although a sharp lookout for it was kept throughout the three months we were on the hills only two specimens were shot. I did not hear the call of this bird and so cannot contrast it with that of the Nairobi

race *medianus*. The Chyulu birds are not so streaked with black on the underside, in fact the lines are very sparse, and the amount of greyish and buffy wash of the breast found in *medianus* is absent except for a slight trace of the latter colour.

Usambara birds have been recorded as *medianus* (*Ibis*, 1932, p. 669), but Stresemann, after comparing them with the type of *suahelicus*, Grote, considers that they should bear that name (Moreau in lit.).

The exact determination of the Chyulu bird must await further material from the range. The Chyulu birds have the streaking on the under side and above, narrower, and less extensive.

ALAUDIDAE.

MIRAFRA FISCHERI.

Flappet Lark.

This characteristic bird of the more open bush and acacia country was the only species of Lark which might be admitted to the bird fauna of the Chyulu hills. It was very plentiful in the country between Kibwezi and the foot of the range at 3,500 feet, but it was not found on the higher elevations of the main ridge. It is of interest to find the bird on the lower lava flows, for on these more or less flat areas, especially the larger ones towards the base of the hills, the vegetation conforms to that type usually associated with the species.

The two specimens taken were at about their highest line of distribution, viz., 4,500 feet. One is in the very dark blackish phase, the other in the dark brown but not rufous-rusty plumage. They were collected on 19/5/18 and 5/6/38.

MOTACILLIDAE.

ANTHUS NICHOLSONI CHYULUENSIS. Chyulu Long-billed Pipit.

Apart from migratory Pipits (*Anthus trivialis*) this was the only species met with on the whole range. It is of interest to note that these birds were always in the vicinity of the forest patches on the higher levels and when flushed, invariably flew to some tree in the forest rather than to some bush in the grassland. I did not record this bird from elevations lower than 4,500 feet and at the same time it ranged to the 7,000 feet level. In the field one at once noted that these birds appeared very much darker than any of this species I had met with elsewhere and for this reason a good series was collected. They are more partial to the short-grass moorlands, where, on account of the very shallow depth of soil, the grass grew to no great height,

rather than to the tall oat-grass slopes. Where this latter had been burnt off and the new grass had assumed no great length one found the birds. They were very timid and most had to be shot as they got up, for had one waited until they rested on the top of a forest tree, the chances were that the bird would not be recovered in the thick growth of the forest margin. The food taken consisted of small mollusca, nymphal grasshoppers, bugs, and termites, and other insects which were indeterminable amongst the stomach debris.

The only call noted was made as the bird was flushed, a double "swi-swi." We found no signs of nesting, but obvious young of the season just over were about.

TAXONOMIC NOTE.

The twelve birds secured by the Museum Expedition to the Chyulu Range are darker than any of the comparative material available, some 30 skins, and this dark colouration is maintained in all stages. If one examines the new feathers of any specimen from the Kenya Highlands, none have the same blackness centrally as the full plumaged Chyulu birds. These, without doubt, are a dark montane race with a limited distribution in the Chyulu Range, for we find that the next geographically is a paler bird. I refer to those birds which are to be met with in the region of Apis Rock about 20 miles north of the Oldowai Gorge, in Tanganyika Territory. This area is a dry one, and not montane, nor is it subjected to mist clouds. The Chyulu birds were located at the edge of mist-forest. Birds from the Kedong Valley through Naivasha, Nakuru, to Mau are only slightly darker than these Oldowai birds; on the other hand, birds which show an approach to the material from Chyulu are to be found in the Marsabit area, but even these are not so dark. The Chyulu birds may be described as follows:

DESCRIPTION: General plumage above from forehead to rump, darker than the race *neumannianus*, Hartert (Nom. nov. for *longirostris*, vide Friedmann, *Bull.*, 153, *U.S. Nat. Mus.*, pp. 251-252), of southern Ethiopia south to Kenya, Rift Valley as far as Lukenia. They are very much darker than birds from Oldowai. The dark portions of the feathers of the mantle, inner secondaries, and wing-coverts and tail blackish with a strong green-blue reflection; breast with spotting more numerous, and distinct. Type: Male, Chyulu hills, 6,000 feet, 4/5/38. Coryndon Museum.

Comparative wing measurements:

Chyulu birds: Males, 95-100 mm.; females, 90-96 mm.

Oldowai: Males, 102-105 mm.; females, 95-97 mm.

Nakuru, Naivasha, Lukenia: Males, 100-102 mm.;
females, 97 mm.
Northern Guasso, Marsabit: Males, 100 mm.; females,
90-92 mm.
Rudolf, S.W.: 89, 92, 98 mm. (unsexed).

Moreau has recorded *longirostris* from Oldeani, south-east of Apis Rock, and notes that this is a southward extension of the range of the bird, from Naivasha, the last recorded locality. In my 1922 paper in *Nov. Zool.*, No. XXIX, I recorded it from Sagala, Teita. These are near the Chyulu race, but are not so dark.

TIMALIIDAE.

TURDOIDES HYPOLEUCA ? Sub-species. Pied or White-bellied Babbler.

This was the only Babbler found on the Chyulu range and was observed to extend from the lower bush and acacia country of 4,000 feet up to the 5,000 foot contour, whereas in the Kibwezi area up to the foot hills one met with *Argya rubiginosa*, but the latter did not ascend the hills. It is not a forest bird but was always found in the small scattered clumps of bush and trees surrounding the *Erythrina* association. These clumps of *Erythrina* colonisation were particularly plentiful on the larger lava flows between the main and lateral series of volcanic cones, and again on the large flow between the south end of Chyulu proper and the Southern Chyulus. In these localities several flocks of *hypoleuca* were located. They were always associated in flocks of four to eight or so and attention was invariably drawn to them by their harsh and persistent cries.

Of the series collected on the Chyulu Range, one is an almost complete albino. There is a certain amount of variation in the series *inter se*, but the series, compared with typical material from Kitui and Machakos to Nairobi, etc., is very much darker than any of these. Comparing fresh plumaged typical birds with birds in similar state from the Chyulu Range, we find the latter to be blacker above from crown to rump, wings, and tail, and the half-breast-band is equally brown-black; the lores and below the eye are black, while the ear-coverts are brown-black streaked with white. Contrasting with the black lores, there is a greyish to white spot in front of the eyes which is carried back as a pale greyish supercillium. Examining the freshly moulted-in feathers of *hypoleuca hypoleuca* we find that they are never as dark as the fresh plumage of Chyulu birds.

A dark race has recently been described by Vincent, *B.B.O.C.*, lv., p. 176, as *T. h. kilosa*. The description applies very

well to these Chyulu birds, but that district is hundreds of miles from the Chyulu Range, and in between we have the race named by Neumann, *rufuensis*, on the grounds of paler dorsal colour (compared to nominate *hypoleuca*), the rump and upper tail-coverts lighter than the back, the forehead light grey and the feathers of the dorsum with pale edges. Ref. Friedmann, *Bull.* 153, U.S. Nat. Mus., 1937.

This race is said to range from Pangani to Kilimanjaro, and is supported by Sjostedt.

PSEUDOALCIPPE ABYSSINICUS CHYULU. Subsp. nov.
Grey-headed Forest Babbler.

A long series of some thirty odd skins was obtained from the great forest at the southern portion of the main range, and a few were taken in its northward extension, but the species was entirely absent from the central and northern drier forests. The altitude variation of the forest areas in which the bird was noted was approximately 5,000-7,000 feet; the undergrowth and the floor of the forest being wet or constantly damp as a result of the heavy mists and dew fall.

Stomach examination of over 20 individuals showed that the diet is a mixed one, consisting of small berries (indeterminable) insects and small molluscs. Most of the insects were in larval form (Noctuid and Geometrids and Coleoptera).

TAXONOMIC NOTE.

The racial forms of this species, so far as Eastern Africa is concerned, present some difficulty. According to Sclater, *Syst. Av. Aethiop.*, p. 364, one racial form extends from Abyssinia to Tanganyika, through Kilimanjaro to the Usambara range.

In 1922, I accepted the name *kilimensis*, Shelley, for the race inhabiting Kilimanjaro, and in 1932, *Nov. Zool.*, p. 341, indicated that there appeared to be a transitional trend in colour toward the Kilimanjaro race, in specimens from South Mau, Aberdares, and Mt. Kenya, the latter according to Sclater being *abyssinicus* of which he made *kilimensis* a synonym. Being aware of the uncertainty of validity of forms, a considerable series (30 odd) was collected on the Chyulus. I am satisfied that these birds are not similar to material from central Kenya Highlands, nor do they agree with Kilimanjaro material; they in fact represent a distinct geographical race.

DESCRIPTION: Compared with birds from Elgeyu, Mau, Aberdares, and Mt. Kenya, they have the crown and nape a purer blue-grey, not ashy-grey; the mantle has a distinct olive tinge as

against the rufescent wash in the northern birds; the tails are darker, less rufescent; the underside is a purer blue-grey, thus the white flecking on the throat and the white in the middle of the abdomen is in greater contrast. Furthermore wing and tail measurements show that the Chyulu birds are smaller.

COMPARATIVE MEASUREMENTS:

Chyulu birds.		Kenya Highland birds.	
	2 birds 64 mm.		4 birds 71 mm.
	6 " 65 mm.		2 " 67 mm.
	3 " 66 mm.		5 " 68 mm.
Wings	11 " 67 mm.		2 " 69 mm.
	5 " 68 mm.	Wings	6 " 70 mm.
	3 " 69 mm.		11 " 71 mm.
			5 " 72 mm.
Wing average	67 mm.		7 " 73 mm.
Tail average	57 mm.		1 " 74 mm.
		Wing average	73 mm.
		Tail average	64 mm.

Because there is an overlap between the maxima of the one and the minima of the other, some might query the status of the Chyulu birds, but taking these measurements along with the definite colour differences, one is justified in recognising a local race. Type, male, Chyulu Camp 3, 5,800 feet, 29/6/38. Coryndon Museum Expedition, 1938. Paratypes 32 specimens.

In 1928 Grote (*Orn. Monatsb.*, 1928, p. 77) described a race from the Usambara range as *micra*. This is relegated to the synonyms of *abyssinicus* by Sclater (*Systema Av.* and Jackson's Birds, 1938). Mr. Moreau has kindly supplied me with material from Pare and Usambara. Wings 66-68 mm., and I have Kilimanjaro birds with wings 66-71 mm. It is a remarkable fact that this material shows no or very slight colour differences to the Kenya Highland birds, thus differing from the Chyulu race, which, because of their isolated range, have become differentiated to a greater degree than have the Usambara birds.

PYCNONOTIDAE.

PYCNONOTUS TRICOLOR CHYULU. Subsp. nov.

Chyulu Yellow-vented Bulbul.

The Yellow-vented Bulbul of the Chyulu range was found at altitudes varying from 4,000-7,000. They were invariably in pairs, or pairs with young just from the nest. In the smaller

patches of forest up to five acres or so these birds were often met with in the canopy of the interior, but for the most part, and certainly in respect to the Great Chyulu forest, they were usually associated with the outer margin where the bulk of their food was to be found. Such nests as were found were in the marginal fringe of woody herbs, *Vernonia* and *Leonotis* mixed with *Lantana*, *Cissus*, and *Celastraceae*. It was usually in the last that the nest was located. These birds are largely frugivorous but quantities of insects are also taken. Stomach contents were examined and found to contain berries of *Rapania*, *Lantana*, *Jasmin*, *Fig*, and *Erythrococcus*, together with nymphal forms of grasshoppers and other insects. The call of these birds is hardly to be distinguished from that of the plains race *teitensis*, van Som.; it is perhaps fuller, less high pitched, but the phrasing is identical. In common with others of this group, these birds have a low call "cheedle-lit" as they sidle up to one another (for they are fond of sitting alongside each other), and the song (sic) composed of four notes is like "Chee-chidle-chidle-lit." The only time when these birds were noted in numbers together was in the early morning or in the late afternoon when they congregated round the only water drip at the north end of the range. Here perhaps four or five pairs might be seen, but at the central and southern end no congregating was noted; a sufficiency of water was obtained from the vegetation which held the heavy dew and mist throughout the entire day. As in the highland race, these birds were sociable and two pairs hung around our camp 1, in the vicinity of the "cook-house" and the porters' quarters; when the remains of "posho" and other food debris was thrown out they would help themselves freely, though such diet was actually foreign to them.

TAXONOMIC NOTES.

I was not a little surprised to find that the *Pycnonotus* of the Chyulus was of the "plains" type and not *micrus*, Mearns, associated with Kilimanjaro and the surrounding districts. They are of the speckled-breast, white-neck-spot group more allied to *dodsoni*. The nearest race of this type is *teitensis* (*peasei*), but it is quite obvious that the ecological conditions of the range have given rise to a local race which cannot be united with any of the described forms. The colour of the mantle, back, wings, and tail is very much darker; the entire head is blacker, less brown-black; the ashy breast band is darker while the underside is pure white, thus in greater contrast to the breast band; the vent and under tail-coverts are paler lemon yellow. Under wing-coverts at bend of wing washed with yellow; wing-coverts with distinct yellowish-green on margins.

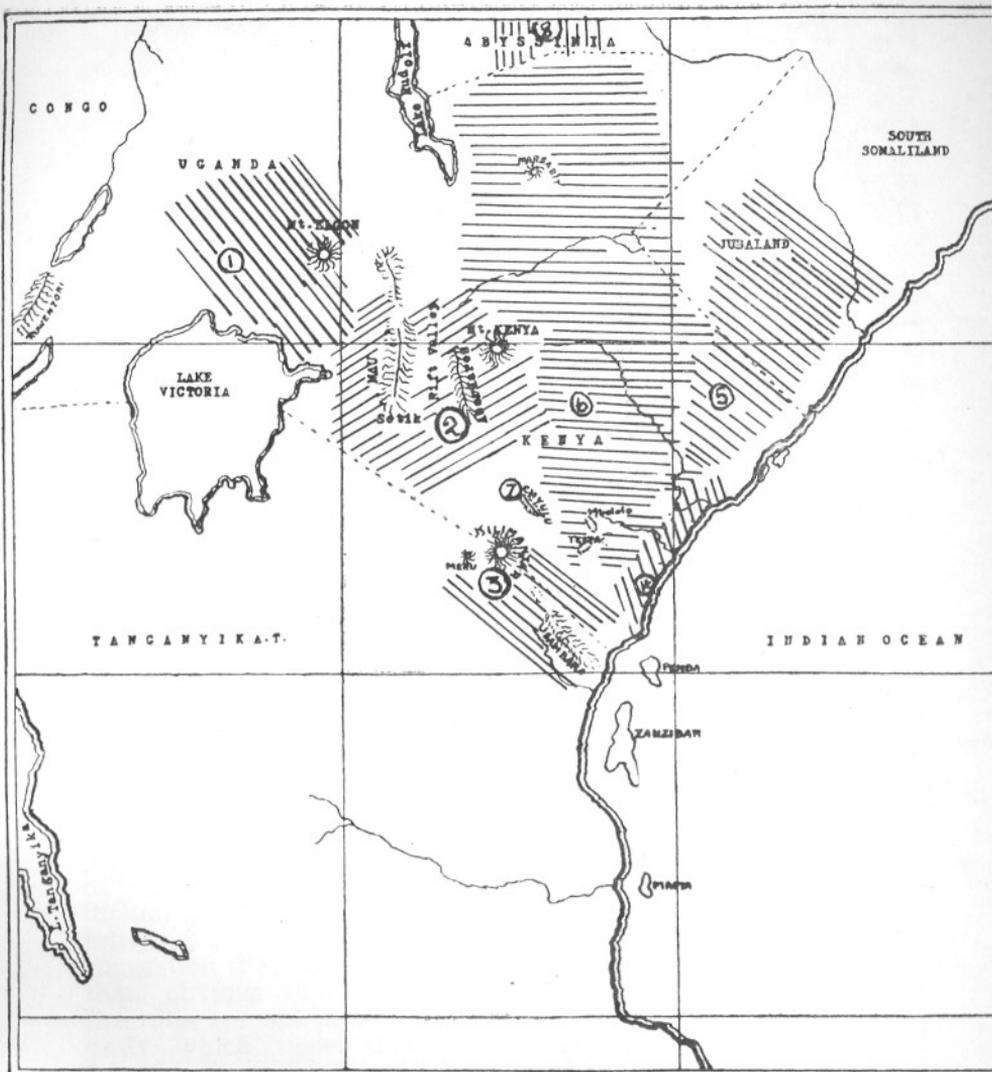
Type: Male, Chyulu Hills, 6,560 feet, 27/4/38. Coryndon Museum Expedition, 1938.

Thirteen specimens; wings, males, 83-87 mm.; females, 78-82 mm.

I should like to take this opportunity of drawing attention to a misprint in my paper *Nov. Zool.*, XXXVII, 1932, p. 347, where the wing measurements of the various series are dealt with. After *P. tricolor dodsoni*, the word *dodsoni* should be in brackets indicating that the birds are of this type but not that particular race. Thus *P. t. (dodsoni)* from Teita and Tsavo areas are the race *teitensis* referred to above; further, *P. t. (dodsoni)*, Mombasa and coast line, is *littoralis*, also mentioned before. For the present known distribution of the races, refer to the adjoining map.

Friedmann and Loveridge, in dealing with this group of Bulbuls in *Bulletin, Museum of Comp. Zool.*, Vol. 81, No. 1, p. 229, have placed the Kenya coastal birds, or as they put it, "the coastal plain of Southern Kenya Colony," as *micrus*, Mearns. Birds from this area are my *littoralis* and not *micrus*. When dealing with the next race, they state "that altitude is the important factor in the distribution of sub-species in Eastern Africa," and they suggest that the Kenya highland race *fayi* (type loc. Njabini, western Aberdares) is the bird found on Usambara. My first comment is, that the birds of the Chyulu Hills up to 7,000 feet are not *fayi* but are of the speckled-breasted group, nearest to *teitensis* (*Peasei*, Mearns) inclining to *dodsoni*, and are not of the plain-backed-plain-breasted group to which *fayi* belongs. So much for the factor of altitude. My next comment is in connection with the recent treatment of these bulbuls by Friedmann in *Bulletin* 153, United States National Museum. In this review he maintains *dodsoni* and *tricolor* as separate species, and when dealing with the races of the former, unites my *teitensis* with *peasei*, and reverses the opinion of Dr. Oberholser, who dealt with the same comparative material of *peasei* which Friedmann has, and declared that my *teitensis* was distinct from it (*peasei*). Friedmann then, without, as he admits, any material of *littoralis*, makes it a synonym of *peasei*, thus following Sclater in *Systema Avium Aethiopicarum*. I can only quote a passage from a letter from Sclater, after he had examined a series of these bulbuls I had sent him, after publication of his "Systema":

"Your *littoralis* and *teitensis* between them seem to bridge the gulf between *dodsoni* and the *tricolor* group. *Teitensis* must, I think, be the same as Mearn's *peasei*, and does perhaps average a little larger than *dodsoni* proper, but there is a good deal of variation among examples from the



Sketch map showing distribution of races of *P. tricolor* within Kenya and Uganda.

- | | | |
|----|----------------------------|---------------------------|
| 1. | <i>Pycnonotus tricolor</i> | <i>minor.</i> |
| 2. | " | <i>fayi.</i> |
| 3. | " | <i>micrus.</i> |
| 4. | " | <i>littoralis.</i> |
| 5. | " | <i>dodsoni.</i> |
| 6. | " | <i>peasei (teitensis)</i> |
| 7. | " | <i>chyulu.</i> |
| 8. | " | <i>spurius.</i> |

same neighbourhood and I should not be inclined to recognise a race with so slight a character as a variation of 2 or 3 mm. in wing. Your *littoralis* from Sokoke and Changamwe appears to be distinctly intermediate with *dodsoni* and *micrus* (of which a series was sent from toponotypical locs.) on the whole nearer *micrus* as they show hardly any sign of the character of *dodsoni*. I should call them *P. t. micrus dodsoni*, but if you like to give them a separate name, I see no reason why you should not do so."

I quote this extract *in extenso* because the views of Friedmann and Sclater are *not* in agreement. The view now is that they all belong to one species, the intermediates being *peasei* and *littoralis*. We find that Friedmann states that *peasei*, absorbing *littoralis* within that race, extends to the Kenya coast; on the other hand the same author states in *Bulletin*, Museum Comp. Zool. op. cit., p. 229, that *micrus* extends to the Kenya coast. This may be reconcilable if *micrus* is one species and *peasei* another, but if my *littoralis* is the aggregate of interbreeding between *P. dodsoni peasei* and *P. tricolor micrus*, as is suggested by Sclater, then the species *dodsoni* and *tricolor* must be united. In any case, if we assume that the distributions as shown on the map accompanying Friedmann's paper are correct, my very extensive material (250 specimens) show that the race *peasei* (including in this *teitensis*) extends right up to Marsabit, and Lake Koroli, thus cutting right through his distribution of *dodsoni dodsoni*, almost linking with the Abyssinian race *spurius* which he upholds, and Sclater does not. Furthermore, in *Bulletin* 153 cit. in further reference to *littoralis*, he says: "It appears that the birds forming this aggregate are merely intermediates between *peasei* and *dodsoni*, which suggestion is supported both by geography and ecology." I incline to the opinion of Sclater, that they are the aggregate between *dodsoni dodsoni*, including *dodsoni peasei* (which is admissable, and absorbing *teitensis*) and *micrus*, a race of *tricolor*. We thus revert to the suggestion that *dodsoni* and *tricolor* are one species. It is more than obvious that the Kenya coastal birds I have named *littoralis* are not *peasei*, nor are they *micrus*, and they are the birds which upset Friedmann's allocation. Both his and Sclater's remarks suggest a close relationship of *littoralis* to *dodsoni*, and as these birds show characters of both the *dodsoni* and *tricolor* groups, one can only assume them to be of one species. I have already shown that Friedmann's map is not correct so far as the distribution of *peasei* and *dodsoni* are concerned, and I would further suggest that it is inaccurate on the coastal strip also.

ARIZELOCICHLA MILANJENSIS CHYULU, Subsp. Nov.

Chyulu Streaky-cheeked Green Bulbul.

Throughout the entire forested areas of the Chyulu range this bird was plentiful and without exception the commonest of the forest species. It occurred in the lower forests at 4,000 and extended up to the highest point at 7,200 feet. The only types of forest in which I failed to locate it were the remnants of the cedar forests on the lower lava flows. Its distribution within the forests was limited to the canopy and the upper mid-growth thus occupying a different strata to that of *Phyllastrephus*, which was almost entirely confined to the lower-mid and lower zones. The only occasions when the species was noted at lower elevations were in those lesser forest patches where most of the berry-bearing trees grew at the fringe of the forested craters. Reference has been made in the introductory narrative to the formation of the forests in the craters, indicating that at the upper lip, exposed to the strong winds, trees which grew to a great height in the body of the craters were stunted and distorted. Amongst these were the *Rapania*, on the berries of which these Bulbuls feed very largely. The fruits of these fringing trees matured prior to those of the interior and the birds resorted to them to feed. Among the other fruits and berries eaten one noted a small *Ficus*, a *Sapium*, a small smooth yellow fruit (species indet.), and also fruits of *Lantana* and *Jasmin*.

In contradistinction to *Phyllastrephus*, these birds are comparatively silent except when they are feeding; at such times they call to one another, employing three notes like "u-ki-ri" with an occasional trilling note. The "song" (sic) which I have heard them utter, mostly in the early morning and late afternoon is recorded in my notes as "churru-hichu-hichu-hichu-hick," the last note short and high. Like many other bulbuls they also have a "company call" answered by different birds in turn.

When we arrived on the hills, mid-April, the nesting season was over. A few old nests were located and these were, as noted by me previously, as being a somewhat frail structure composed of rootlets and twigs, fern roots for lining, and so thinly constructed that one can look through them. The situation of the nest varies somewhat; often a horizontal fork is selected, at other times an upright fork in a sapling tree, but the construction is always the same. A description of the eggs is taken from my notes on "Bulbuls of Kenya and Uganda," *Nov. Zool.*, 1932: buffy in ground colour, lined and spotted with brown and with submarks of lilac-grey; nestling at Marangu in January and February; in May at Taveta forest."

Several young birds in nestling plumage were observed and a few secured; some were just from the nest for their tails were

only half grown. In general scheme of colour they resemble the adults but are duller and greyer below. Many of the adults obtained during the first two weeks were in heavy moult, particularly about the head, wings, and tails. A long series of the species was collected throughout the four months up to the end of July.

Sclater, in Jackson's Birds, 1938, suggests that as this species occurs in north-east Tanganyika it might possibly be found in Kenya. Already in 1932 I recorded it from Taveta.

The Museum Expedition secured a very long series from the Chyulu Range much further to the north and well within Kenya boundaries.

The only race of *milanjensis* recorded from Eastern Africa is *striifacies*, Reich. and Neum., described from Marangu on Kilimanjaro (not Chiradzulu, Nyasaland, as stated by Belcher, "Birds of Nyasaland," p. 190). I have a series from this type locality (Marangu) and was surprised to note that the first few specimens collected on the Chyulu Range did not conform to these Kilimanjaro birds; as a result a long series was taken during the three months of our residence on the hills.

DESCRIPTION: The Chyulu birds differ in being clearer olive-green from the forehead to the tip of the tail, not brownish or golden olive green, and the whole of the lower surface is much lighter; the chin being greyish and the throat yellowish. The difference between the two races can be seen at a glance, when the series from the two localities, Marangu and Chyulu, are laid out side by side. The axillaries and under-wing coverts are clearer yellow, as are also the inner webs of the primaries and secondaries.

Type: Male, Chyulu Mts., Camp 3, 7,000 feet, 6/7/38. Coryndon Museum Expedition, 1938.

Comparative wing measurements:

A. m. striifacies.—Marangu, 14 specimens, 94-100 mm.; Pare and Usambara, 5 specimens, 94-99 mm.

A. m. chyulu.—Chyulu Mts., 98-105 in males, 90-98 mm. in females.

Over 100 specimens taken. Average wing length: Males, 101 mm.; females, 95 mm.

The distribution of this new race is from the Chyulu Range, 5,000-7,000 feet. Specimens from Mt. Mbololo, and the other Teita hills are nearer to the Chyulu birds than to *striifacies*. The specimens recorded by Loveridge from Mbololo, and those taken by Moreau on Teita are of this type. The Coryndon Museum now has a series of twenty specimens from Mt. Mbololo.

The females are slightly duller than males and have a greyish wash on the breast. Immature and nestlings are not so streaked on the ear-coverts and have a strong wash of greyish on the breast and upper abdomen.

ANDROPADUS INSULARIS. Lesser Yellow-bellied Bulbul.

This species was noted as plentiful along the lower forests up to 4,000 feet, but none were observed above this altitude. The incessant call note was one of the features of the forest patches of the lower lava ridges and flows. As no specimens were collected I refrain from indicating its exact race.

PHYLLASTREPHUS FISCHERI CHYULUENSIS. Subsp. Nov.
Chyulu White-throated Bulbul.

This species of Bulbul is an inhabitant of the forests keeping almost entirely to the undergrowth and mid strata. By reason of this fact it was most conspicuous and obtruded itself on one's notice by its chatter and scolding call as one put them up during traverses through the forest. Opportunities for close observation of the bird were afforded by a combination of two factors: the undergrowth in most of the forests consisted of *Piper* growing straight and clean-stemmed so that one could obtain a clear view along the forest floor below their tops, if one squatted, and secondly the inherent curiosity exhibited by the birds. It was an easy thing to attract all the white-throated bulbuls within a radius of a hundred yards by making a squeaking or squealing noise like an animal in pain; within a few moments the birds would appear and hopping about the *Piper* stems in full view, they commenced scolding and flapping their wings and expanding their tails in great excitement. Not only under such circumstances were these birds noisy, but for about an hour before sunset they would chatter and call as they sought the particular spot in the undergrowth where they usually settled down for the night. From the foregoing one must not obtain the idea that the birds went about in flocks, on the contrary, they were usually in pairs, or during the end of the nesting period, in family parties of three to four.

Under ordinary conditions semi-companies might be observed as part of a "hunting party," not in association with the species which were working systematically through the canopy of the forest, but at a lower strata, for even in this zone many insects disturbed from the top would attempt to find shelter in the mid-growth, only to be taken by birds hunting in it. Apart from participating in these "organised drives" as it were, these birds are very methodical in their search for insects which appear to be their staple diet. One can observe them moving

in one direction working the undergrowth, and if a creeper-clad tree is in their path of progress they will ascend the lianas to almost their limit then drop again into the undergrowth. As they hunt they utter a sharp double note like "pru-it, pru-it." If disturbed or excited the call note becomes "pru-it, pru-it, prit. pritprit," or again, a sharp "prip-prip" changing to "prup, prup, prup" varied with a guttural "chirr." The note seems to be forced or explosive, and the call is accompanied by tail flirting and flapping of wings.

Amongst the series collected are all stages from nestlings to adults, but no nests were located. It would appear that here also the nesting season was over by mid-April. A partial moult after nesting seems to take place, for many adults were moulting on the head and body and tail; some few were changing the flight feathers.

TAXONOMIC NOTE.

The species *Phyllastrephus fischeri* has recently been reviewed by Moreau (*B.B.O.C.*, Vol. lvii, pp. 125-127). The author is inclined to associate all birds of this species within Kenya, with the exception of *sucosus* west of the Rift, and the nominate coastal *fischeri*, with *placidus*, type locality Kilimanjaro. He gives as the distribution of *placidus*: Kenya east of the Rift, from Marsabit to Mt. Kenya, the Kenya highlands forests, Kilimanjaro, and south to Nyasaland. He thus includes the race *marsabit* described by me from a series of 10 birds, in 1930. He admits that his comparative material from Marsabit was two birds only. Mr. Moreau has since had the opportunity of examining my series, and while individually no great difference between a single Marsabit specimen and a series of *placidus* from Kilimanjaro can be detected, in series there is a distinct difference in tone, both above and below. Mr. Moreau still thinks it "very close." However, I maintain its validity, the more so, in view of the fact that he associates all birds from Kilimanjaro, Pare, and Usambara with the Kenya highland ones. Grote disagrees with this, and so do I. Vide post. To ascertain whether there was any difference between the Chyulu birds and those from Kilimanjaro and the Kenya highlands forests, I have arranged the birds in three columns (50 skins Chyulu—50 skins Kilimanjaro-Kenya highlands); on two sides Chyulu birds, and in between Kilimanjaro-Kenya material, in four rows. The commencement and the end of the Kilimanjaro-Kenya birds in each row has been indicated immediately by an independent viewer with no knowledge except colour values; furthermore, the Marsabit birds were subsequently indicated in the same way. It is obvious, then, that in a series there are

these colour differences. In seeking to find a name which might be applicable to the Chyulu birds, we have to consider *cognatus*, Grote, founded on birds from Usambara. We have been assured by Moreau that birds from that locality are not separable from Kilimanjaro specimens. Grote's stated difference was that Usambara birds were darker on the sides of the body, more dusty-olive-green as compared with the greyish-olive of Kilimanjaro material. I have had the opportunity of comparing Usambara material, through the kindness of Mr. Moreau. Herr Grote (in. lit.) still maintains his race, and I do so also. The Chyulu race is described as follows: Compared with *placidus*, the upper surface darker, more pure olivaceous, less brownish-olive, the crown is considerably darker olive; the wings and tail are darker, less rusty. The undersurface is paler below than Kilimanjaro-Kenya *placidus* with more white on the lower chest to vent; flanks paler.

Compared with *cognatus*, Grote, the Chyulu birds are darker above, and very much paler below.

Type: Male, Chyulu Mts., Camp 2, 5,800 feet, 28/5/38. Coryndon Museum Expedition, 1938.

A series of 78 specimens were taken during April to July.

Altitude range 5,000-7,200 feet. Wing measurements: Males, 94-86 mm.; 15 over 90, 6 of 89. Females, 75-87 mm.; av. 83 mm.

CHLOROCICHLA FLAVIVENTRIS CHYULUENSIS.

Subsp. Nov.

Chyulu yellow-bellied Bulbul.

Only a few examples of this Bulbul were noted between Camps 2 and 3 at altitudes of 5,000 feet in the undergrowth of the forests. Because the species is common all along the coastal belt and only less so in the highland regions up to 7,000 feet in Kenya, we unfortunately paid insufficient attention to obtaining a long series. Nevertheless such birds as were obtained indicate that on the Chyulu hills these birds are considerably darker than any race within eastern Africa. The Chyulu birds have the same general habits as the other races, that is, they frequent the undergrowth of the forests and are usually seen in pairs or small family parties. Indication of their presence is usually given by the scolding call which they make when disturbed, consisting of three long and three short notes with the sound of "pauw-pauw-pau-pau-pau-pau."

TAXONOMIC NOTE.

Differs from *centralis* of eastern Tanganyika, Loeru, *mombasae*, Shelley of Kenya coast line, and *meruensis*, Mearns, Mt. Kenya, in its considerably darker colour on the upper side, which is a dark olive with little brownish tinge, rather more greyish;

the crown of the head much darker than the mantle, being blackish-olive; the tail is purer-greenish, less brownish. On the underside the yellow is paler, but the breast and flanks are more washed with greyish.

Type: Male, Chyulu Range, 5,000 feet, 23/5/38. Coryndon Museum Expedition, 1938. Wings 103-110 mm. Paratypes, one male and one female. Noted at Camps 2 and 3 at elevations of 5,000-6,800 in the forest undergrowth.

MUSICICAPIDAE.

DIOPTRORNIS FISCHERI, Reichenw. Fischer's Ring-eyed Fly-Catcher.

This was by far the commonest Fly-catcher throughout the range and was found from 3,500 to 7,000 feet in, and on the forest margins. Though many times noted within the larger forests, taking part in one of those concerted "drives" in which several species of birds take part, this bird was more often noted along the forest margins, not so much in the fringe of woody herbs as along the edge of the forest trees. In this area they were found in the canopy of the trees where they were noted as feeding largely on berries. When seen on the edges of the forest they were usually "hawking" species of flying ants. None of the birds obtained were sexually active; the nesting season was well over and the young birds in first speckled plumage were unattended by their parents.

Very often, and usually toward the late afternoon, one observed them hunting over the streamers of beardmoss and lichen which festooned the trees along the forest edges; from such places they captured spiders and a few beetles, numbers of small cockroaches, and earwigs. In all cases where stomach contents were examined, there was invariably a good admixture of berries, very often *Erythrococca* and *Rapania*. On two occasions I noted a bird flying out after a Pierine butterfly, *Belenois mesentina*. On the first occasion the butterfly was eaten after the wings had been dislodged, but on the second, the insect was dropped; the rejected one was a female with yellow hind wings, and bears a superficial resemblance to a species of *Mylothris* which was abundant along the forest edges.

BRADORNIS PALLIDUS CHYULUENSIS. Subsp. Nov.

Chyulu White-throated Ashy Fly-catcher.

The Ashy Fly-catcher was fairly common on the range and extended from the 4,500 feet contour up to 6,800 feet. It was associated with the edges of the forest and in the lesser commencing forests. It was not found in the interior of the forests.

One usually saw it perched on some exposed twig at the forest edge or on the top of the *Erythrina* trees which were surrounded by secondary growth and forming compact patches of vegetation. The method of securing its prey is either by hawking when ants are not on the wing, or by dropping down on some insect it has detected on the ground. When it alights on the ground it put its tail up and moves it up and down, as it strikes the insect, firmly held in the bill against the ground. In this it resembles to a certain degree *Dioptrornis fischeri*. This bird has been observed flying out after small *Fulgorids* which have been disturbed from the grass.

The species is resident on the range, but the breeding season was over by mid-April (first nesting season). One or two birds show signs of incomplete moult in that the 1st primaries are still in sheath at the base.

TAXONOMIC NOTE.

These birds from the Chyulu Range cannot be united with *B. p. suahelicus*, van Som., of the highlands of Kenya, nor with the smaller *subalaris* of the coastal zone. In size they are nearer to the former, but the darker, more grey of the upper side distinguishes them. The series is uniform in colour and for this reason we cannot unite them with *suahelicus*. They do not belong to the *microrhyncha* group, but are a dark race of the *pallida* association. The white of the throat is clearly defined from the darker colouration of the chest. These birds are not to be confused with *B. taruensis*, van Som., which is a distinct species.

Type: Male, Chyulu Range, 5,000-6,800 feet, 7/6/38. Coryndon Museum Expedition. Paratypes seven.

Remarks: Wing measurements are 99-101 mm. in males, 90-79 mm. in females, thus smaller than in the race *suahelicus*, which give 102-106 mm. and 95-98 mm.

This is yet a further case where the bird fauna of the range of mist differs from that of the surrounding plains and in the same direction, viz., darker yet clearer colouration.

MELAEORNIS PAMMELAINA TROPICALIS, Cab.

Blue-black Flycatcher.

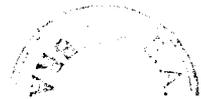
A few examples of this species were noted toward the foot of the range, thus one saw them in deserted plantations at the 3,500 foot level and again at 4,500 feet, but the highest point reached was 6,000 feet at the central portion of the hills. They frequented the solitary *Erythrina* trees or these in association with *Cussonia* and various woody herbs. It was thus a bird of the lower lava flows and the commencing valley forests which

are spreading in the deep scored eastern face of the central portion of the range. The association of this bird with the Drongo of the plantations was of interest.

Two males obtained are in fresh full plumage, while the female in like condition is generally duller, less strongly violet-blue-black. Young birds were noted at 3,500 feet.

ALSEONAX MINIMUS CHYULU. Subsp. Nov. Chyulu Little
Brown Flycatcher.

Wherever we wandered about the range, this little bird was in evidence. At the topmost heights of 7,200 feet to just below 5,000 feet all along the forest edges one met them. They were usually in pairs and each pair seemed to have its particular stretch of the forest edge. It was only when parents were still with young in attendance that more than a pair were noted, in one spot. From early morning to just at dusk these birds flitted about after the minute Diptera and small moths which during the first month of our stay were very numerous on the sheltered side of the forest patches. There were certain large moss laden trees behind our first camp which, after a shower of rain, attracted many species of birds just after five o'clock as the sun's rays beat straight on to them. Most of the birds worked the canopy and the streamers of beard-moss and in doing so disturbed many insects and as these fell or flew downwards, a pair of Brown Flycatchers snapped them up with avidity; the click of their beaks was audible for some distance. These birds are almost without fear of man and one could sit quietly near a bush from which they darted out after passing insects and in so doing many times they came within a foot of one. On one occasion I was sitting in the scrub at the edge of the forest near where a pair of birds hunted; my gun was held upright between my knees and several times either one or other of the birds would alight on the point of the barrels. Because of this sociable trait I forbade any of the species to be shot near our camps. Notwithstanding this order several birds found their way to the skinning table. Another instance of temerity was shown when a pair followed the trail of one of the insect collectors who was beating the bush for beetles, etc. Many small moths were disturbed and as these flew off the Flycatchers with unerring judgment snapped them up. Two nests of this species were found. Both were built in similar surroundings; between the upright fork of a medium-sized tree where a small collection of debris hung down one side. On the top of this and close to the trunk, the nest was built with bark fibres, bits of lichen and moss and lined with a few odd Francolin and Guineafowl feathers. Only young birds were present, probably a late or second brood (May), for



on these hills the nesting season is much earlier than in the Kenya highland areas.

TAXONOMIC NOTE.

When a series of these Chyulu birds are compared with typical material from Kilimanjaro, *murinus*, it is at once evident that the former are much darker on the upperside; a dark-ashy-grey lacking entirely any brownish tinge which is noticeable in *murinus*. In this respect they approach nearer to the race *roehli* of the Usambara, specimens of which I have before me. They are, however, darker than that race and can be distinguished further from it by having a brownish wash over the upper abdomen and flanks. A further point of difference between the Chyulu birds and *murinus* is that the former have pale buffy to pure white throats which contrast strongly with the darker ashy breast band. Out of twenty odd specimens only two show any approach on the underside to *murinus*. I am compelled, therefore, to describe the Chyulu birds as distinct.

Type: Male, Chyulu Range, 5,500-7,200 feet, 14/6/38. Coryndon Museum Expedition, 1938. Paratypes twenty-three.

Remarks: The variation in wing length is as follows: Adults only—males, 62-64 mm.; females, 58-63 mm.

Kilimanjaro *murinus* run to 66 mm. as do also specimens from the Kenya highlands. Moreau, P.Z.S., Jan., 1936, has some remarks to make about these little flycatchers, and states that birds of this group were submitted to Friedmann. Friedmann (in. lit.) is of the opinion that the birds I described as *marsabit* and those of the Kenya highlands, *interpositus*, are "variable intergrades between *murinus* on the south, and *djamjamentis* on the north, Abyssinia, and *pumilus* on the west." Birds from Marsabit cannot be confused with *murinus*, for the reasons stated in the original description, nor can they be considered as anything like the Chyulu birds; the one is very brown, the other almost blackish. *Interpositus* is the intermediate, not so very variable, between *murinus* of Kilimanjaro, and *marsabit* of that mountain. I have already indicated the approach of *chyulu* toward *roehli* and in this connection would remark that birds from Mt. Mbololo are near *roehli*.

BATIS MOLITOR PUELLA.

Chin-spot Puff-backed
Flycatcher.

This was the only species of Puff-backed Flycatcher met with on the Chyulu range. It occurred in the small, less mature forest patches; in the dongas where *Erythrina* had established itself; and along the margins of the larger forests, but was not met with in the Great Chyulu forest of the south end. The

altitude range was 4,500-7,000 on the range proper, but it also occurred on the plains. I never heard these birds utter more than a double note, that is, the two notes which precede the third, so characteristic of the birds of Naivasha and the Nairobi area.

The curious "clipping" of the wings, which makes a sound like "pirip pirip pirup," was often heard when the birds were otherwise silent. I have recorded elsewhere the fact that parent birds with eggs or young will, in an attempt to frighten off an intruder if too close to the nest, snap their bills rapidly and with considerable noise, at the same time "clipping" the wings.

BATIS MOLITOR group, and allied species.

Recent writers (Friedmann and Sclater) have cast doubt on the validity of a small race of *molitor* which I named *taruensis*, which is limited in its distribution to the coastal belt and immediate hinterland. Within its distribution is found *perkeo*. Sclater definitely states that *molitor puella* does not extend to the coastal strip of Kenya. What race then does? The reason for this limitation is obscure, unless it is admitted that my *taruensis* which he suggests is a synonym of *puella* is in reality a valid race, as I maintain.

Sclater further suggests that *soror*, with which he unites *littoralis* of Zanzibar, and *pallidigula* of Lumbo, is a race of *molitor* and that *soror* ranges along the African coast to Zanzibar only, but I have it from the Pangani and Shimba Hills, Kenya.

When I published my paper in *Nov. Zool.*, 1932, I attempted to show that *perkeo*, treated as a species by Neumann, and subsequently as such by Friedmann, *Bull.* 153, U.S. Nat. Mus., p. 240, and placed as a race of *orientalis* by Sclater in his "Systema," had certain definite affinities to *soror*, *littoralis*, and *pallidigula* (assuming for the moment that they are separable), and there is further evidence, in that Neumann has stated that *orientalis* and *perkeo* occur together (ref. Friedmann) so the latter should not be considered a race of the former.

If we examine *perkeo* and *soror* we find that they have the same grey crown; very similar breast band, and whereas in the latter the chin spot is large, in the latter it is "represented by a slight yellowish wash." (cf. Friedmann, op. cit.). Furthermore, we find that the small white line from the base of the bill above the black lores is tinged with yellowish or orange in *soror*, *pallidigula*, and *perkeo*. I have referred to this at length, for I do not wish Friedmann's suggestion on page 241, op. cit., "if van Someren's series of *perkeo* have brown throat spots, they are wrongly identified," to be taken seriously. My series have the throat white or slightly yellowish washed. I do not know where

Friedmann obtained the idea that my birds had brown throat spots.

My views are thus not entirely in agreement with the opinion expressed by Vincent in *Ibis*, 1934.

The race of *molitor* of the Chyulu hills is *puella*.

TROCHOCERCUS BIVITTATUS BIVITTATUS.

Blue-headed White-bellied Crested Flycatcher.

Most numerous in the Chyulu Great Forest this bird was also found in the lesser forests but not those which we have designated as commencing valley forests and *Erythrina* associations.

The altitude range is approximately 5,000-7,000 feet. They were often seen as members of a "drive" in the forest canopy, but when not so engaged were usually observed in the mid- and *Piper strata*. Their presence was at all times made known by their high-pitched call consisting of five or three notes. They are quite one of the most excitable of birds, even more so than *Phyllastrephus*, that we met with. On one occasion at Camp 3 I heard a great commotion in the forest and went to investigate; several species of birds were fluttering excitedly round a clump of *Piper* in which I discovered an African Barn Owl. Most vociferous of all the birds was a pair of *Trochocercus* which darted in and out scolding loudly and between the ferocious attacks they hopped about the branches overhead with quivering wings, outspread tails, and crests raised; the picture of fury. I noted soon after that these birds had a pair of fledglings not far off.

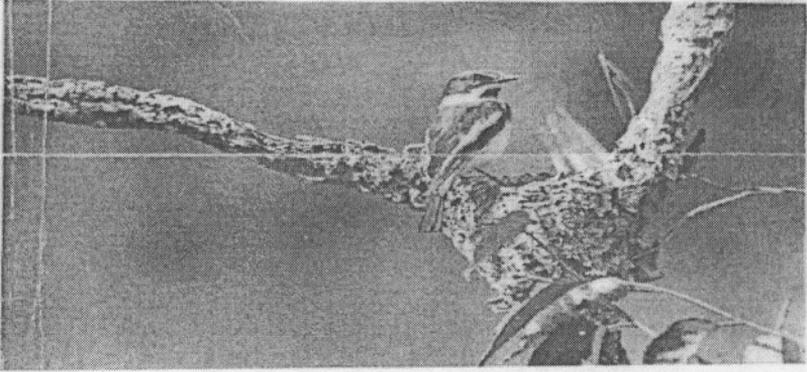
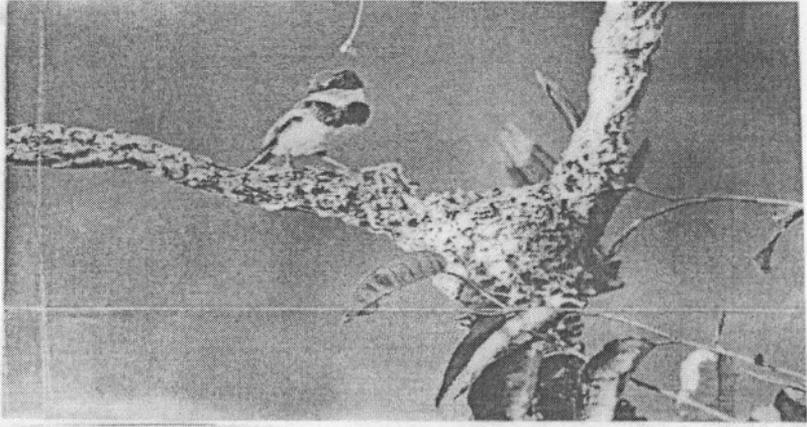
TAXONOMIC NOTE.

These Chyulu birds are more closely associated with the coastal nominate race than the highland race *kikuyuensis*. In both sexes the colour of the backs and wings are a shade darker than a series from the coast, but in size they agree. Males have wings of 67-70 mm.; females, 65-68 mm. It is thus of interest to note that at 5,000-7,000 feet approximately the altitude of the race *kikuyuensis*, the Chyulu birds retain the characters of the coast race. This is also Moreau's experience as recorded in *Ibis*, 1938, when dealing with Mbulu birds.

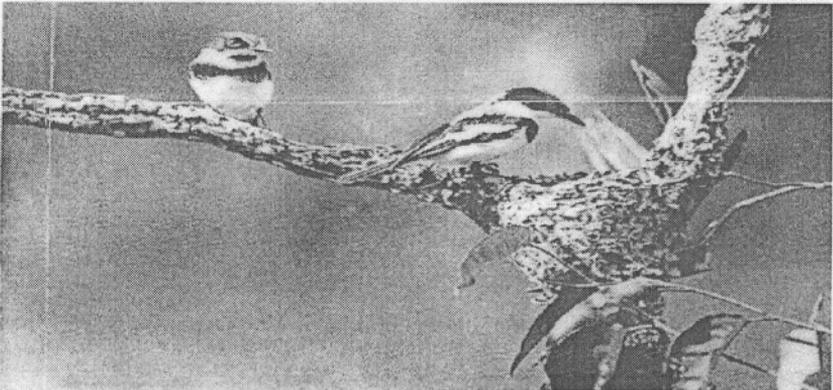
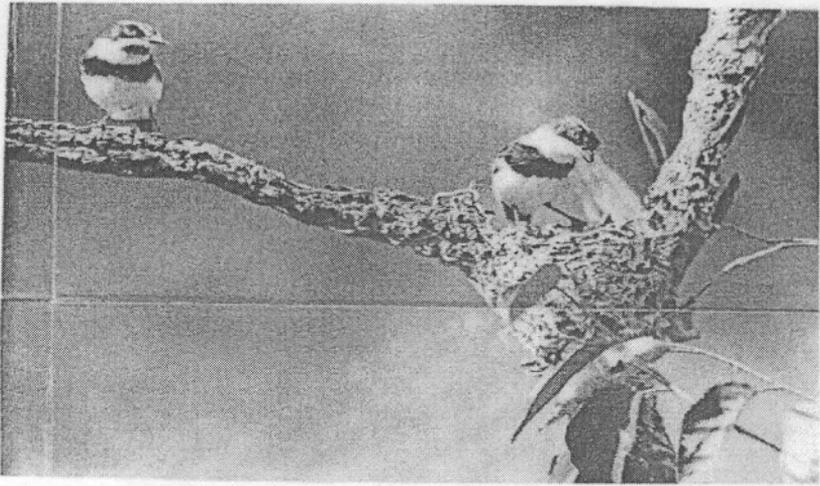
CHLOROPETA MASSAICA.

Chyulu Black-headed
Yellow Flycatcher.

Only one species of *Chloropeta* was found on the range. It was noted at 4,500 feet up to nearly 7,000 feet, always along the edge of the forests. Five specimens were obtained. Three are adults in fresh plumage and two in intermediate dress between the nestling and sub-adult dress. These adult birds do not



PTT-BLACK HAN-CHIBERS AT SHOT (800-0010-1000)



agree with material from Nairobi area and Fort Hall and Kericho, for they have the top of the head olive-black, not olive-brown, and the colour of the mantle and wings more green, less washed with golden.

Various views have been expressed as to the relationship of these dark-headed birds to the plain-headed *similis*. Moreau has noted that both are to be found at the 6,100 foot level (*Ibis*, Jan., 1938, p. 13), and the Chyulu birds as already noted were obtainable at 7,000 feet. I have always considered them to be distinct species and the fact that one does not seem to meet with any intermediates so far as colouration is concerned rather supports this view. I am not satisfied that there is any great ecological difference in their habitats which would bar either the one or the other from overlapping and, if they are really one species, from producing intergrades; such have not been found.

TURDIDAE.

TURDUS OLIVACEUS CHYULUENSIS. Subsp. Nov.

Chyulu Orange-billed Thrush.

The orange-billed Thrush was plentiful throughout the forested areas of the Chyulu hills, but was decidedly more abundant in the Great Chyulu forest of the southern end. The birds were frequently put up from the forest floor or were noted feeding in various fruit-bearing trees. This race differs not at all from the Elgon form of the Kenya highlands in general habits but its alarm and call note is of a higher pitch and rather more rapid in expression reminiscent of the English Blackbird though not so full-throated: "cheep cheep chip chip chip," the last three rapid.

They were usually seen singly or in pairs and if in association with Starlings and Barbets on fruiting fig trees they acted the part of bullies and kept other birds from the branch on which they were feeding. They were particularly antagonistic toward Bulbuls. Stomach examination showed the presence of various small fruits, small mollusca, larvae of various orders, and mature Coleoptera.

One not infrequently found them in attendance on a trail of *Dorylus* (Siafu or Safari ants) in association with other birds, engaged in raiding the column for insects and larvae which the ants were carrying along. The method of attack was to hop toward the moving line, seize the desired prey, and with rapid lateral stroke on the nearest twig or leaf dislodge the attendant ant. Very often the ant would not release its hold, in which case it was swallowed along with the bit of desired food. The birds were always quick to get out of the way of the disturbed

and broken column, and even so, some few were nipped in the legs by the infuriated ants.

TAXONOMIC NOTE.

Nineteen adults and eight immature birds were collected. The first few specimens obtained indicated that we here had a race which differed from the Kenya highland *elgonensis* by its generally darker colouration, and efforts were made to secure an adequate series to ascertain if this feature was constant.

A comparison with a very long series of *elgonensis* shows that the chief differences lie in the much darker colouration of the upper side from forehead to tail. The whole aspect, including the wings, is darker olive-ashy-black; the loreal spot is black, and the earcoverts slightly less so. They thus differ from the race *elgonensis* which has the upper side olive-ashy with a decided brownish tinge (twenty-two specimens). On the underside the Chyulu birds have the throat and breast darker, more olivaceous, the tawny orange of the flanks and abdomen is on the whole darker, with less white toward the vent; the throat is more distinctly streaked with black. Geographically, this race is nearest to *T. o. deckeni*, Cab., of Kilimanjaro, from which it can be distinguished at once, *deckeni* having a much darker underside, though less dark uppersurface. From *T. o. oldeani*, Scl. and Moreau, by its strong olive dark upper side, as against a dark ash-black without any trace of greenish tinge, and the presence of chestnut or orange tawny on the underside.

Type: Male, Chyulu Camp 3, altitude 5,600, 22/6/38. Coryndon Museum Expedition. Altitudinal range 5,000-7,200 feet, Chyulu Range. Comparative material of this race, 19 adult males and females, eight immature.

Wing measurements: Males, 110-119 mm.; females, 107-113 mm.

Within Kenya and adjacent T.T. I recognise the following races:

- T. o. polius*, Mearns.—Type loc. Lololokwi. Known distribution, from its type locality northwards to Marsabit, Mt. Kulal, and Mt. Nyiro at high elevations, and not apparently in the intervening plains. There is a tendency in this race toward the race *abyssinicus* as it goes north. Intermediates between *polius* and *elgonensis* are to be found on the Jombeni Range.
- T. o. elgonensis*, Sharpe.—Elgon, to the Cherangani, and Mau, crossing the Rift to Mt. Kenya, and the Aberdares and Kikuyu, and apparently to Longido and Kitumbeine (these last on authority of Moreau, B.M. identifications).

- T. o. chyuluensis*, van Someren.—Limited to the Chyulu Range.
T. o. deckeni, Cab.—Mt. Kilimanjaro and Mts. West, 4,000-10,000 feet.
T. o. roehli, Reichw.—Usambara and Pare.
T. o. oldeani, Scl. and Moreau.—Mbulu district, T.T.

It will be seen therefore that the race *elgonensis* has by far the widest distribution, but this is in keeping with the continuity of high forest in the Kenya highlands. I am not satisfied that the *Turdus olivaceus elgonensis* recorded from Nguruman are really typical of that race.

I have not included the bird described as *Turdus helleri* from Mbololo in the above grouping. The topotypical series I have is suggestive that it is a species. It has a longer, more slender bill than *olivaceus* and its general facies is different to the group as a whole. Doubtless it bears some similarity to *roehli* in the matter of distribution of white below, but I think it should be kept as a species. Jackson (Sclater) does not mention it in his recent publication, yet it comes from Kenya, and was described many years ago—1913.

GEOKICHLA GURNEYI CHYULU, Subsp. Nov.

Chyulu Orange-breasted Forest Thrush.

A series of 22 skins. Altitude variation 5,600-7,200. This bird inhabits the damp undergrowth of the great Chyulu Forest and its adjacent forested craters. It was not recorded from the north or central forested patches which have a very much drier forest floor and undergrowth. It was a noticeable fact that the species was most abundant in areas of the forest where *Connophyringia* was plentiful. The association with this forest tree was at first obscure until close observation revealed the facts. One had noted that many of the specimens obtained had the fore-part of the head smeared with a sticky brown substance and in some cases the facial and throat feathers were matted together. The conclusion was that the birds had become soiled in the process of eating some fruit. Most birds are extremely cleanly in partaking of fruit and it appeared obvious that the fruit eaten must be of fairly large dimensions and probably with a tough skin. Such is the fruit of the *Connophyringia*, and on several occasions I waited concealed under some bushes keeping in view the floor of the forest where masses of these fruits lay below the trees. It was not long before one noted that *Goekichla* visited the spot and were active in picking out objects from amongst the pulp of the fruit, obviously not taking mouthfuls of the fruit substance. When the fruits were examined it was

found they contained quantities of Dipterous larvae and a subsequent examination of the stomach of birds shot revealed masses of these larvae. Larvae of four species of flies were identified, and flies were subsequently bred out of the fruits for identification purposes. In addition to the larvae of flies, most of the stomachs examined contained small mollusca, worms, odd berries and larvae of other insects. The diet is, from observations made, 80% non fruit.

The habits of the bird are typically thrush-like; they are almost entirely terrestrial, only moving up into the bush and sub-strata of the forest when disturbed. Most of the birds had finished breeding (June-July) and the young in first speckled plumage were either in company with their parents or fending for themselves.

One nest was located in a thick tangle of creepers and *Piper*. The nest had a foundation of leaves and mosses, whilst the inner lining was composed of fine fern rootlets. Two greenish-blue eggs with very sparse spotting of dark brown formed the clutch.

The birds were usually met with in pairs as one worked through the forest undergrowth and to note them one had to take a few steps then peer along under the vegetation of the forest floor; walking casually through the forest one could very easily overlook the birds, as they are, for the most part, silent even when disturbed. A note in my diary records the brief call of the bird toward late evening before sunset as "ti-tue-tue-too-wee-to," and a chuckle if suddenly flushed from the ground. On one small rise in the great forest we obtained six birds which were turning over the forest debris in search of small snails which abounded in the spot. The turning of the dead and rotting vegetation was done by a quick lateral flick of the bill. The white ends to the wing coverts are a conspicuous feature as the bird hops along the ground with wings depressed and tail slightly raised, or when in flight.

TAXONOMIC NOTE.

This species was plentiful at the southern end of the main Chyulu Range. Twenty-two specimens were collected. It was desirable that a series should be obtained in order to note any possible variation, first because two undoubted species have until recently been confused, and secondly to test out the validity of described races, more particularly *G. gurneyi raineyi*, Mearns, described from Mt. Mbololo, and placed as a synonym of *G. piaggiae kilimensis* by Sclater in the "Systema." No comparative description was given with Mearn's diagnosis of *raineyi*, but he stated it was nearer to *G. g. otomitra* of Kondeland, than to *kilimensis* of Kilimanjaro. In the original description, the

under tail-coverts are given as "white throughout" and on this feature, Loveridge (*B. Mus. Comp. Zool.*, April, 1937, p. 243) states that *raineyi* should not be considered a synonym of *kilimensis* as suggested by Sclater (op. cit.) for *kilimensis* has "the under tail-coverts washed with cinnamon brown, and is smaller." The two, however, belong to different species.

In seeking to place the Chyulu birds I have obtained material from Usambara kindly loaned by Mr. Moreau, and the Coryndon Museum has a long series of topotypical *raineyi* from Mt. Mbololo. It is as well to clear the identity of *raineyi* in its relationship to *usambarae*. Loveridge (op. cit.) has suggested that *usambarae*, Neuman, is possibly a synonym of *raineyi*, Mearns. Usambara birds have wings of 107-112 mm.; the under tail-coverts are buffy. In *raineyi* the wings are 110-115 mm. and the under tail-coverts are white. In all cases these feathers are not uniform, for all have their basal $\frac{2}{3}$ bordered with olive. Furthermore, the bills of *usambarae* are deeper, more robust, and less gradually tapering toward the tip. The average depth is 7 mm. in a length of bill from the front of the nostril to tip of 14 mm. There is thus a difference between *raineyi* and *usambarae*. When we compare the Chyulu birds with *raineyi* to the south we find that all have the under tail-coverts buffy, with the exception of two in slightly worn plumage; the ear-coverts are darker grey; and the brown mark before the eye toward the nostril is restricted, and is sharply demarcated by the blackish line of the lores. In *raineyi* the brown colour is shaded off toward the gape and there is no sharply defined black loreal line; the under tail-coverts are white. The dorsal olive of the Chyulu birds is greener less brownish tinged.

Comparing the Chyulu birds with *usambarae*, we note again that although both have the under tail-coverts buffy, the bills of the latter are more robust, deeper, more curved on the culmen, and more angled in the lower mandible, thus coming to a point more rapidly, not so slender and tapering. The dorsum of the Chyulu bird is greener. The wing measurements of the Chyulu birds are as follows: Males average 109 mm., the smallest female is 104, the largest male 112; tails 75 mm.

Moreau, *P.Z.S.*, 1936, p. 879, mentions that his birds *G. p.* of Kilimanjaro were compared by me with *keniensis*, Mearns, at his request, and that Sclater notes that "the Kilimanjaro bird is very close to *keniensis*. I note that Sclater in Jackson's Birds unites the two races. I am not satisfied that this is correct and maintain the two as distinct races.

In order to stress the fact that there are two species of *Geokichla* (excluding *G. guttata fischeri*) as pointed out by me in 1932, and to emphasise the point previously made by Mearns,

I give a list of the species and races from within the area dealt with in this paper. I recognise the following:

- Geokichla gurneyi chuka*, van Someren. Mt. Kenya.
- Geokichla gurneyi raineyi*, Mearns. Mt. Mbololo and Teita range.
- Geokichla gurneyi chyulu*, van Someren. Chyulu range.
- Geokichla gurneyi usambarae*, Neum. Usambara and Uluguru Mts. (Mts. Meru and Oldeani, authority, Grant and Praed).
- Geokichla piaggiae piaggiae*, Bouv., Ruwenzori-Elgon.
- Geokichla piaggiae keniensis*, Mearns, Mt. Kenya and Aberdares.
- Geokichla piaggiae* ? Subsp. Mt. Urageess.
- Geokichla piaggiae kilimensis*, Neum. Mt. Kilimanjaro.
- Geokichla piaggiae rowei*, Grant and Praed. Loliondo and Arusha.

COSSYPHA SEMIRUFA INTERCEDENS, Cab.

Black-tailed Cossypha.

This species was plentiful throughout the forests of the Chyulu range and was met with from the low-lying forest patches of the foot hills at 4,000 feet to the highest point at 7,200 feet. It was the only species of this group, for there were no examples of *heuglini* throughout the range. It occurred in practically all the forest patches, from those of limited size of about an acre, where the substrata of the forest was much tangled, to the Great forest; but in the latter, and in the larger forests, it was noted to frequent to the greatest degree the thick tangled marginal growth rather than the interior of the forest, except in those craters where tree growth was absent in the floor of the crater, this being replaced by thick herbage, providing suitable environment. Thus if one desired to observe these birds, one worked the margin of the forest from within. In a day's collecting one could reckon on seeing more examples of this bird than most species, and its presence was invariably made known by its call. It is one of those species which on being disturbed will at once commence calling. My experience of this bird is now fairly extensive, and without hesitation I should place it as a forest bird in contradistinction to *heuglini* which is more often met with in bush country and cultivations than on the outskirts of forest land, if the forests are of the open type, and along bush-grown dongas.

The call note of this bird is quite different from *heuglini*, but like that bird, *semirufa* is an adept at mimicry, copying not only musical notes but calls of certain animals, such as Squirrels.

I more than once tried to locate the Chyulu Green Squirrel and found only this bird.

Soon after dawn, whether fine or raining, these birds will start calling, and indeed will, on moonlight nights, sing far into the night. It is difficult to separate the true song of the bird from the mixture of notes copied from the songs of other birds, but the call consists of three whistled notes like "hoo hoo hi-u," with a drop to the last, thus different to *heuglini* whose last note is higher and shorter, and ends in "whit." A low warbling song is also uttered from the depths of a thick cover: "tweu-tweu-chew-twee-to-twee-ger-ge." Mention has been made elsewhere of the raids made by certain birds on the columns of the "safari" ant, *Dorylus*. The *Cossypha* is equally proficient as is the *Tarsiger* in this daylight robbery. It is at such times that one sees the birds out of their retirement of thick undergrowth, but if disturbed they at once seek cover, but remain in the vicinity and call. Though retiring in habits, they are not wild, in fact if one penetrates into thick undergrowth where they are, one can approach quite close to them and it is with difficulty that one can get them to move sufficiently far away so as to avoid damaging the bird if one desires to shoot it.

At the time of our visit to the Chyulu range, April-July, the nesting season was just over and nestlings were on the wing though still attended, in many cases, by their parents.

TAXONOMIC NOTES.

I am satisfied from the extensive material available that *heuglini* and *semirufa* are two distinct species, each with their geographical races. This is contrary to the possibility cited by Friedmann and Loveridge (*Bull. Comp. Zool.*, Vol. 81, No. 1, p. 250, 1937) as follows: "The forms of . . . *semirufa* are very closely allied to *heuglini*, and it may well be they are all one species."

There is a considerable overlap in the distribution of the races of both species, thus on Kilimanjaro both are found, as they are in the forests round Nairobi, but each has its own environment and thus ecologically separated, but not to such a degree as to suggest that they are one species. Friedmann, op. cit., draws attention to *semirufa* of Kilimanjaro and suggests that these birds may not be the race *intercedens*, but Cf. Moreau, *P.Z.S.*, part 4, 1936. I have five Kilimanjaro birds before me, the long series from Chyulu, specimens from Mt. Kenya to Nairobi and Kitui (type loc.) and I cannot see any characters on which to separate the Kilimanjaro birds. The colouration of the mantle is not constant; in nine out of 14 males from Chyulu this area is dark slatey-grey, in the rest this area is washed with

olive to a greater or less degree. Of the females only two are grey, the remainder, eight, are strongly olive washed. There is just such variation in the Kilimanjaro and other birds. In twenty of the Chyulu birds there is a strong tendency for the orange tawny of the sides of the neck to extend back and encircle the neck below the black of the occiput; this is found in Kilimanjaro birds, so also in Fort Hall birds.

Wing measurements give the following:

Chyulu: Males, 90-95 mm.; av. 91 mm. Females, 82-98 mm.;
85 mm.

Kilimanjaro: Males, 92-95 mm. Females, 65 mm.

Kiambu, Fort Hall, Nairobi: Males, 90-93 mm. Females,
82-93 mm.

Kitui: Males, 90 mm. Females, 82 mm.

COSSYPHA CAFFRA IOLAEMA, Reichw. Red-breasted
Cossypha.

The Red-breasted *Cossypha* or Robin was found to be rather scarce as during our stay only a dozen birds were seen. Two were obtained for record purposes. All the birds noted were found on the northern end of the range, 5,500 feet, and none seemed to exist in the Great Forest. Insects only were recovered from the stomachs. The concensus of opinion seems to be that *C. i. mawensis*, Neum., is not a valid race. I have no decided opinion on this point and await more Kilimanjaro material.

Friedmann and Loveridge state (*Bull. Comp. Zool.*, 81, No. 1, 1937, p. 252, that "in the east it does not occur north of Kilimanjaro." This is incorrect, as Chyulu birds are from N.E. of that mountain. Friedmann knows of no record from Mt. Kenya, but birds from that mountain are in my collection.

SAXICOLA TORQUATA AXILLARIS, Shelley. Kilimanjaro
Stone Chat.

The Kenya Stone Chat was plentiful throughout the range, frequenting the open moorland and grass slopes from 6,800 feet to 4,000 feet. It was particularly in evidence on areas which had recently been burnt off leaving the sprouting grass exposed and the scorched stems of the woody herbs standing bare. From the latter vantage points these little birds darted down to snap up any insect which made itself visible. In such locations they fed largely on larval or nymphal forms of the smaller grasshoppers as examination of stomachs of shot specimens showed. They were also very active when the flying forms of white ants appeared. No highland scene is complete without these birds, and the Chyulu Hills had their fair quota of the species. Where

the grass was long and rank, one found the Chats at the edges of the forest patches perched on the top of the dead stems of *Leonotis*, a plant which grew in profusion along the forest margins. The Chyulu birds were confiding and tame and took hardly any notice of one in passing them. The nesting season was well over in April (third week) and all the young were fending for themselves.

The race *axillaris* was described from Mt. Kilimanjaro and the specimens on Chyulu agree with that form. Granvik (*Jrl. fur. Ornith.*, Feb., 1923) wrote at length on the variability of this Stone Chat within Eastern Africa and suggested that *axillaris* was not sufficiently separable from *salax* of Gaboon. Recent authors have maintained the validity of the Kilimanjaro bird, and with this I agree.

The material I have from the Mau, particularly the females, run very much larger than Uganda or Chyulu birds and are much browner above and more uniform brown below. The series is very uniform, as are the Chyulu birds, and suggestive of a good local race. More material from the Mau is required.

POGONOCICHLA STELLATA MACARTHURI. Subsp. Nov.

Chyulu White-starred Tarsiger.

This bird was one of the commonest species of the forest undergrowth and was found in practically all the smaller forest patches as well as the bigger blocks and was exceedingly plentiful in the Great Chyulu forest of the southern end of the range. The altitudinal range varied from 4,500 feet to over 7,000 feet.

Not only was it conspicuous on account of its brilliant plumage, but its very confiding and withal inquisitive habits, brought it to one's notice at all times. Furthermore, its presence was made known by its low song and chatter. When one was engaged in cutting traverses through the forests several of these birds would appear along the track already cut, or would flit about the under-bush as the workers progressed. Very often they would perch within a couple of feet of one, and as the insects were disturbed by the cutting of the bush, they would dart hither and thither. The insects were taken both on the wing and on the ground.

Although for the most part terrestrial they are adepts at catching flying insects. Unaided, quite a proportion of their insect food is taken by rummaging amongst the decaying vegetation and leaves of the forest floor. Most stomachs examined contained insects, either mature or in the larval stages, as well as spiders and small mollusca, and occasionally a few small berries.

Two notes or songs were noted. The song is an oft-repeated "tu-we tu-we ti-ti," whilst the note uttered when disturbed is

like the noise made in a wooden ratchet turning the arm slowly over the teeth or cogs, "pirut pirut" repeated frequently.

This was one of the late nesting species on the range, for whereas practically all the young birds of other species had left their nests and were fending for themselves, young of this species were found as nestlings or accompanied and still fed by their parents. The nests found were in a cleft or hollow of a moss-grown tree trunk or tree stump; composed of mosses and lined with fern and orchid roots. No eggs were found, but nestlings a week old were located on two occasions. The nests certainly blended with the rest of the moss-covered tree, but the actual situation of the tree was often quite exposed with little or no herbage nearby. One nest was located at the base of a clump of fern growing on the base of a partially fallen tree.

I more than once heard these birds warbling late in the night, especially when there was a moon, and they were certainly one of the first species to give voice in the early mornings at sunrise. One pair frequented the outskirts of our camp kitchen and took odd fragments of food thrown to them, such as bits of meat and rice. At Camp 3 a pair exhibited their fearlessness of man by perching close beside me while I broke up a rotten log infested with white ants. As bits of the wood were broken off and tossed aside, the birds would hop down and pick off the ants one after the other with extreme rapidity. This species is one of those who raid the columns of the "safari" ants. It was a common occurrence to note three or four of these birds in the vicinity of the trail. With daring and considerable accuracy they would dart or hop to the side of the trail, seize the insect or larva being carried along by the ants, jerk the morsel against the ground to rid it of its attendant ant and swallow it, or if young were in the underbush nearby, fly and push it down the youngster's throat with scant ceremony, and return to the fray. Needless to say, a column of ants much worried by attendant birds (and several species take part in these robberies) very soon becomes infuriated and the soldiers will move out of the column to protect the workers; but the birds are usually too quick in their actions to suffer from attack. The strong bristles at the corner of the bird's mouth protect them when picking up prey.

In spite of the brilliant yellow of the underparts as seen when the bird is near the ground, when they are disturbed from the forest floor and ascend to the mid-growth or perch among the tangle of lianas, they are difficult to detect; the yellow breast harmonises with the vegetation and the dark head breaks the contour. It may be noted in passing that the characteristic silvery-white spot on the lower throat is not visible when the

bird is at rest, but is a conspicuous feature when the bird is warbling, for the throat is then extended. In general carriage and demeanour, the Tarsiger reminds one forcibly of the English Robin; the wings are generally carried depressed below the slightly upraised tail, which is frequently "flirted" or expanded, and the body held rather upright. It is an altogether charming species.

TAXONOMIC NOTE.

Confusion has revolved round this species, due partly to the fact that the species has three distinct phases of plumage; adult, sub-adult, and nestling, each being distinctive. Moreover the species is subject to geographical variation into races but in most cases the differences are not striking.

The birds from the Chyulu Range are geographically intermediate between the Kenya race *keniensis*, Mearns, a race which is not recognised by Sclater, and *guttifer*, Reichw. and Neum., of Kilimanjaro.

First of all, a critical examination of the very large series of this species, 200 specimens, leads me to support *keniensis*. To the south-east of Chyulu is the Mbololo Hill from whence came the type *helleri* Mearns. I am assured by Moreau (in lit.) on the authority of Kinnear of the B.M. that the Teita birds do not differ from *orientalis*, Fischer and Reichw., of the Usambara Range.

The Coryndon Museum now has a series from Mt. Mbololo, topotypical *helleri* (12 skins).

DESCRIPTION: A careful examination of the Chyulu birds shows them to be paler, clearer yellow below than *orientalis* (including *helleri*); paler yellow on the rump and upper and under tail-coverts. The yellow on the tail is purer; the green of the mantle is a purer green; the colour of the head is darker. They are thus different to the race *guttifer* of Kilimanjaro, which has a darker yellow under side and the green of the back is washed with golden, and quite distinct from *keniensis*.

Type: Male, Chyulu Range, 7,000 feet, 1/5/38, in forest undergrowth, Coryndon Museum Expedition, 1938.

Remarks: Forty adult paratypes were taken and also a long series of sub-adults and birds in nestling plumage.

Wing measurements: Males 82-86, average 84 mm.; females 75-82, average 77 mm.

Taking the Tarsigers of Eastern Africa as a whole we find that we can divide them into two main groups, those with golden-olive backs and those with olive-green mantles. Into the former fall:

ruwenzori, Grant. Mt. Ruwenzori, Kivu, Kigezi. A small bird with dark breast, a very small white throat-patch, and hardly any, a mere trace of the white supra-orbital mark.

elgonensis, Grant. Mt. Elgon. Birds with, in the adult, uniform black tails.

keniensis, Mearns. The golden olive of the back is lighter than in *guttifer*, Kenya, Aberdares, Mau, Kikuyu. The plumage of the nestlings also differs, so also the sub-adult.

guttifer, Reichw. and Neum., Mt. Kilimanjaro. Darker on the mantle and head than *keniensis*. Young differ from *keniensis*.

In the second category come:

orientalis (helleri), Fischer and Reichw., Usambara, interior of T.T. (Morogoro). The olive-green of the back without strong golden wash; and underside darker yellow than *macarthurii*.

macarthurii, van Someren, Chyulu Range. Paler yellow below, greener on the mantle; head darker, the young in nestling plumage, and still more in sub-adult, which is strongly olive below with narrow yellow streaking.

It is not out of place here to draw attention to the three distinct phases of plumage which is exhibited in each of the races of this species. This is the more desirable since it is possible to differentiate the races on the plumage of the nestling and sub-adult, when the adults show only very slight, though constant differences.

The first or nestling plumage is a spotted one in all the races within eastern Africa, such spotting extending from the crown to the upper tail-coverts on the upper side, and from the chin to the vent and under tail-coverts below. The greater and lesser wing coverts are also spotted at their tips. In this stage there is a decided difference in the general tone both of the ground colour and the spots in the various races I have mentioned.

The spotted plumage gives way by moult to a stage in which the whole of the upper surface becomes a uniform olive-green, with or without any golden tinge, according to race; the upper tail-coverts are only slightly less green than the mantle; the underside becomes more mottled than spotted, and this change is due to a moult. The future white throat spot is indicated by an area of whitish or yellow, occupying a larger area than the ultimate characteristic silvery white triangular spot; and if a specimen is viewed from the side, this pale area shows

as a pale gorget or fore-neck band. I mention this because of the controversy over the true interpretation of Levaillant's figure of *stellata*.

The sequence of moult from nestling to sub-adult is clearly shown in the very long series of fifty-odd in these stages.

From the spotted to sub-adult, the first area to change is that of the upper mantle and nape; this is followed by a replacement of the head and rump feathers and of the upper breast; the change gradually extends to the whole head and underparts and then the wings. For quite a long period the spotted feathers are retained on the scapular and lower mantle. It is as well to mention here that in the case of *elgonensis*, which in the adult has a uniform black tail, in the young and sub-adult the bases of the rectrices are yellow to a varying degree.

The subsequent moult from sub-adult to adult is more difficult to follow owing to a remarkable lack of these intermediates, for out of the long series of well over 100 specimens, only two show traces of the sub-adult plumage as evidenced by the retention of olive-green feathering on the crown, the mottling on the throat and remains of mottled feathers on the chest. The sub-adult wing-coverts and also tail feathers are still retained. It would appear that the wing and rectrices are not changed until after the body plumage has been renewed by moult, the replacement of the tail following that of the wings.

I have dealt with the sequence of plumages at length because Friedmann and Loveridge have suggested (*Bull. M. Comp. Zool.*, Vol. 81, p. 257) that the plumage of *orientalis* "is more uniform green above, not as spotted as in *guttifer*, which form can hardly be told from the present (*orientalis*) in adult birds." I can only suggest that Loveridge only collected sub-adult or immature and not nestling plumaged birds and has mistaken them for the latter.

It is true, however, as I have indicated previously, that the visible differences between the, at present, recognised races of *Pogonocichla* are corroborated by equal or greater differences in the plumages of the nestlings and sub-adult, if young of similar and comparable age are examined.

SYLVIIDAE.

PHYLLOSCOPUS TROCHILUS TROCHILUS	European
and	Willow Warbler.
PHYLLOSCOPUS COLLYBITA ABIETINA.	Scandinavian Chiffchaff.

During the first two weeks of our stay on the range, April 19th to 30th these two species were frequently noted in the

smaller forest patches. It was of course impossible to estimate the relative numbers of each. One noted them as associating with *Zosterops* and *Seicercus*, and the similarity of behaviour between the last and *Phylloscopus* was marked. The only species of migrant which remained in evidence after the end of April was the European Swallow.

SYLVIA COMMUNIS COMMUNIS European Whitethroat.
and

SYLVIA BORIN. European Garden Warbler.

In the early morning of April 20th about twenty of these birds were noted in a small *Erythrina* association, together with a few Garden Warblers. They remained throughout that day but had moved on by the following morning.

SYLVIA ATRICAPILLA. European Blackcap.

This species was recorded on April 23rd when two birds were seen near the only water drip of the entire range at about 5 p.m.

EREMOMELA GRISEOFLAVA nr. ABDOMINALIS.
Chyulu Yellow-bellied Scrub Warbler.

In the *Erythrina* association and the scattered bush country of the upper lava flows, this species was met with in pairs or small groups of half a dozen. They were always engaged in hunting insects amongst the *Erythrina* flowers or those of the wild *Clematis* and *Acacia* blooms. They were always on the move and kept up a low "see see" call. In action they remind one of the Penduline Tits but are perhaps not so restless, more deliberate in their movements.

TAXONOMIC NOTES.

Amongst a long series of the race *abdominalis* I find none so pure grey from crown to rump as these Chyulu birds nor with throats so pure white, thus contrasting more with the greyish breast band; it is possible that they represent a distinct montane race.

The distribution map by Friedmann in *Bull.* 153, U.S. Nat. Mus. is incorrect in such respects as those I gave on page 370, *Nov. Zool.*, 1932. Thus he shows the race *abdominalis* as occupying Ukambani-Masai area only, but the type locality is Tabora district over which he depicts the race *crawfurdi*, in other words the distribution of race 6 is too far extended south and race 5 should extend to the west and south of 6 to include Tabora district, Morogoro, and Dodoma. As regards Friedmann's race 4, embracing two, *flavicrissalis* and *erlangeri*, the distribution of the latter (which has far more yellow on the abdomen than the

former) would cut across that of the former or be included within it. I can only presume that Friedmann does not trust my identifications. Friedmann's remark that *crawfurdi* is a paler form is apt to be misleading, for it is a much darker bird above than *abdominalis* though the yellow of the abdomen is paler, further it is not the only race with a whitish superciliary stripe; two birds from Morogoro have this character and they are not *crawfurdi* but near *abdominalis* if not identical with it.

SYLVIETTA WHYTII LORINGI. Chyulu Stump-tail Warbler.

Very few of this species were seen on the hills, and these were limited to the *Erythrina* clumps and *Acacias* of the lower lava flows, 4,000-5,500 feet. They are silent little birds for the most part; intent on their search for insects they will often allow one to come within a few feet of them; or, if one is taking shelter under a tree, the birds will work the branches just over one's head with unconcern.

TAXONOMIC NOTE.

Looking up the latest literature containing reference to the group of *Sylvietta* of the *whytii* aggregate I find that Friedmann, op. cit., 1937, has to a certain extent agreed with my findings as recorded in 1932, except that he hesitates to recognise the validity of *fischeri* of the coastal belt of Kenya. He, however, supports *loringi*, Mearns, for the aggregate which represents the species between *fischeri* of the coast and *jacksoni* of the Kenya highlands. One notes, however, that Sclater and Moreau refer birds from Ngare-Nairobi, Kilimanjaro to *jacksoni* as also birds from Marang and Nou, Mbulu district.

The identifications of these Mbulu birds are correct so far as my limited material from about that area goes (Oldowai) and it is to be presumed that the Ngare-Nairobi birds are part of the intermediate aggregate between *jacksoni* and *fischeri*. I presume this because specimens from Moshi and the Chyulu Hills, Taveta, east to Voi, are of this intermediate class. Sclater, however, in the "Systema," makes *loringi* a synonym of *jacksoni*, which in my opinion is a mistake.

SEICERCUS UMBROVIRENS CHYULU. Subsp. Nov.

Chyulu Green-winged Brown Flycatcher-Warbler.

In all the forests of the Chyulu range this Willow-Warbler-like bird was plentiful; its charming behaviour and not unpleasant call were features of the forest life of the hills. It was most plentiful in the larger forests at altitudes varying from 5,000 feet to 7,200 feet, and though often noted in the canopy, especially those larger trees with masses of tangled lianas, it

was equally at home in the thick creepers which bound the trees at the edge of the forest. It makes a variety of calls: a simple "pee-piri," or a series of clear notes like "chui chui chee chee chee" or "tui-tui twee twee twee," either simple or with little trills. It takes the greater part of its food by hunting amongst the leaves, branches, and creepers on the trees, but it will on occasion flash out after some insect which has escaped it, and seize it in mid air in the manner of a fly-catcher. This is one of the birds which appears to have no fear of man, for times without number a pair which would be hunting the trailing creepers of trees near which I was sitting would come within a foot or so of my head and pass by as though I had not existed.

Old nests were found but no eggs; all the young were on the wing, and some of those noted and obtained could not have been long from the nest. But for the browner backs these young could easily, and in fact were mistaken for the migratory Willow Warbler during the short time these migrants were still on the range. The underside of the young *Seicercus* is strongly washed with yellow.

Fifty odd of these little birds were collected, many of them by accident, for in the depths of the forest it was almost impossible to differentiate between the small birds moving about at the tops of the trees.

TAXONOMIC NOTE.

In seeking to place the birds from the Chyulu Range, some fifty odd examples, I have laid out the entire series of the species in its distribution from Elgon, through Kenya, to Kilimanjaro and the Pare range. Each of the races is represented by long series, and Mr. Moreau has supplied me with material from the Pare.

First of all I should like to record my views on the two described races *mackenziana* and *dorcadichrous*, the former represented by birds from Elgon, Mau, Kikuyu, the latter by Kilimanjaro birds. My ample series shows that these are separable, and I maintain the races.

DESCRIPTION: The Chyulu birds are described as follows: Very much darker on the head and dorsum than *mackenziana*, lacking the rufous tinge of that race; much less rufescent on the sides of the head and sides of the body. From *dorcadichrous* they differ in being much darker particularly on the head, more buffy-grey on the sides of the head and flanks; and purer white on the abdomen; the undertail coverts are strongly lemon yellow while the edging to the coverts, secondaries, and primaries, and tail feathers are purer green less yellow-green. The dorsum feathers are narrowly edged with greenish.

Type: Male, Chyulu Range, 6,000-7,200 feet, 21/6/38. Coryndon Museum Expedition, 1938. Paratypes fifty-four.

Remarks: For the time being I associate with these birds a dark race from the Pare, sent to me by Mr. Moreau. They are still darker on the head, and some may desire to recognise them as a further race. I think it would be a mistake to select one of the Pare birds as the type of the Chyulu race, the more so that in dealing with this Chyulu material as a whole, I find it to represent in many cases races which are apparently limited to that range.

SEICERCUS RUFICAPILLA MBOLOLO. Subsp. Nov.

Closely allied to *minulla*, Reichw., of Usambara, but differing from that race by its lighter olive-brown crown; slightly paler mantle; more yellow ear-coverts; wider extension of the yellow on the throat, this colour extending on to the breast and abdomen but in a paler shade of yellow. The grey of the underside, on the side of the breast and flanks, being just a wash, thus one would not describe the underside as grey. Type: Male, Mt. Mbololo, Oct., 1938, 5,000 feet.

Distribution: Mt. Mbololo, Eastern Teita Range. Paratypes, six adults. Compared with typical *minulla* kindly supplied by R. E. Moreau.

MELOCICHLA MENTALIS CHYULU.

Chyulu Great
Moustached Warbler.

Here and there along the forest edges where the tall grass merged into the fringing woody herbage, and in the ravines of the moorland where the grass was often shoulder high, this species was noted. It was difficult to procure except in the early mornings or late afternoon; at these times one might see the birds sitting on the grass stems enjoying the sunrise or the dwindling rays of the setting sun. During the day they were hidden, or if seen it was just for a moment and they disappeared into the grass.

The only note I have as to the call of this bird is that it is like a throaty gurgle ending with a higher note and interpreted as "kluk kluk kluk cheir."

TAXONOMIC NOTE.

Comparing the specimens from Chyulu with a long series of *orientalis* and the Uganda race *amaurora*, I find them to differ. Before detailing these differences I should make it clear that I associate the Kenya coastal birds with *orientalis* described from the Pangani River. They are more rufous above and more rufous below than *amaurora*. The intermediates occur over a considerable area of junction of the two forms.

In seeking to find a name applicable to the Chyulu birds, I find *kilimensis*, Madaraz, founded on birds from Moshi. I have a series from this locality, and they agree with the coastal race *orientalis*.

The Chyulu birds are nearest geographically to *orientalis* but differ from that race in being considerably darker above, more olivaceous, but less rufous on the breast and flanks, even paler than the race *amaurora*. The ear-covers are a darker brown than in *orientalis*, and the rectrices are black, but greyish tipped on the underside. Rump and upper tail-coverts only slightly more rufous than the mantle.

The Chyulu birds represent a dark montane form with an altitude range of 5,500-7,000 feet.

Type: Male, Chyulu Range, 26/6/38. Coryndon Museum Expedition, 1938. Paratypes, five males, three females. Size smaller, 70-73 mm.

BRADYPTERUS CINNAMOMEUS CHYULUENSIS.

Subsp. Nov.

Chyulu Cinnamon Warbler.

The Cinnamon forest warbler was often seen on the high ridge of the Chyulu hills at elevations of 6,000-7,200, but not in such numbers as the Brown Warbler. It was unfortunate that a long series was not collected, due entirely to the fact that of the various races already described many writers have asserted that there is no distinctive size or colour variation limited to any particular area and have treated all as one race.

TAXONOMIC NOTE.

I have laid out all my material of this species, some fifty odd specimens, and I cannot find any which agree with the Chyulu birds. Knowing the various views published, to the effect that many of the described races are untenable, I have gone very carefully into the matter. So far as the Kenya representatives of the species are concerned there is some variation and according to Sclater they cannot be disassociated from the Abyssinian nominate race.

I am satisfied that one can admit as distinct (a) the birds found in the Kivu-Kigezi area, (b) the birds of Kilimanjaro, (c) the birds of the Chyulu range.

Description: Allied to *rufiflavus* of Kilimanjaro, the Chyulu birds are very much darker on the back from crown to rump, almost as dark as *B. mariae*; certainly as dark as *B. brachypterus* of Kenya; crown slightly darker than the mantle; wings and rectrices darker than in any other race; the cinnamon colour of the breast band and flanks is, however, duller; throat and centre of abdomen white. Type: Male, Chyulu Range,

7,000 feet, 5/5/38. Coryndon Museum Expedition, 1938. Paratypes 4.

Remarks: In view of the controversy over the distinctness of several named racial forms, it might appear unwise to describe yet another race, but I cannot match these dark Chyulu birds with any of the long series of more than fifty birds from Elgon southwards.

BRADYPTERUS MARIAE, Mad. Chyulu Forest Warbler.

In the great Chyulu forest of the southern end of the range, and in its extension along the western aspect of the hills, this bird was very plentiful in the sodden and constantly wet undergrowth. Indeed it might with truth be said that it was the common bird of the undergrowth. On all occasions it was noted and its distinctive note was heard on all sides. Its elevation range was 5,500 to 7,200 feet and although plentiful in the southern part of the range it was entirely absent in the forests of the north and central portions which are drier with less dense undergrowth. On many occasions I noted that these birds had a trait common to *Bradypterus brachyterus centralis*, that of calling in duet. This has been noted also by Moreau in the case of *B. usambarae*.

My notes record the calls as "tiku tiku tiku tik" or "Cheetu cheetu" and "cheu-cheet cheet." Moreau likens the call to "chichew" or "pi-pew" for *usambarae*, thus somewhat alike.

The general behaviour of this bird is similar to that of the Kenya highland race named by me *altumi* (Cf. note hereafter). They creep—one can use no other word to express their movements—about the undergrowth and pick off insects from the stems and leaves of the plants and where soaking wet lianas and beard moss descend some way down a tree trunk one may note them searching through the tangle. Stomach contents showed that not only did they eat insects but also small spiral mollusca which were plentiful on the undersides of leaves of the *Piper* which formed the bulk of the forest undergrowth. These birds were concentrated in many places where the forest trees did not extend so as to cover the floor of the crater. In such localities the undergrowth was almost pure *Piper* growing to 8 and 10 feet high, and here several birds might be noted.

TAXONOMIC NOTE.

There has been considerable confusion over these forest *Bradypterus*, and for this reason a long series of over 60 examples was taken on the Chyulu Range. The series represents three phases in the plumage of the bird: adult, sub-adult, and juvenile. In the first or nestling plumage, the underside is strongly

suffused with olive from the throat and cheeks to the mid-breast and abdomen, with the flanks olive-brown. The dorsum is very similar to the adults but duller, and of course, the texture of the feathers is different.

In the sub-adult, most of the olive is lost on the underside except for a slight trace along the mid-line; the throat is whitish, with olive flecks; the remainder of the underside is more uniform ashy-brown than in adults; on the mantle, there is a distinct greyish tinge. The rich dark brown of the adult is assumed by a body moult and at the same time the wing and tail feathers are replaced, the latter being shed first. The tail feathers, ten in number, are narrow and "decomposed," and graduated.

In attempting to assign these Chyulu birds to a given species, I have consulted all available literature and examined all allied birds as we find them within Kenya and the adjacent parts of Tanganyika Territory.

First of all there seems no doubt that the bird I described as *mitoni* from the Moshi River forest is identical with *mariae* of Madaraz described from Kiboscho, Kilimanjaro, as stated by Moreau. *Mitoni* is retained as a species in "Jackson's Birds," but this was due to lack of comparative material.

Sclater, in the "Systema," makes *mariae* a race of *barratti*, Sharpe. A closely allied bird is *altumi* described by me from Molo, with a distribution from Mau to Mt. Kenya. I associate with this race, specimens recently obtained by Meinertzhagen and referred by him to *mariae* (*Ibis*, 1937), thus indicating a close relationship between Kilimanjaro and Mt. Kenya birds. Thus far, the association appears straightforward, but on consulting Friedmann in *Bull.* 153, U.S. Nat. Mus., p. 166, we find he associates my *altumi* as closely allied with *fraterculus*, Mearns, from Kikuyu Escarpment. Furthermore, he places *fraterculus* as a race of *alfredi* which came from west of Lake Albert. We find on pages 166-167 a statement to the effect that the type of *fraterculus* is a bird with 10 rectrices (although he admits that the type has had all but one feather shot out), associating with it a female from Mt. Kenya with this number. Friedmann is at pains to show this characteristic of *fraterculus*, but on page 170 he associates it with a species which has 12 tail feathers! This seems to me very strange and contradictory. The bird identified by Og. Grant as *alfredi*, *Trans. Zool. Soc.*, Vol. XIX, and there figured, has 12 rectrices. This bird was subsequently made a race and described as *albicrissalis* by Neumann. My *altumi* is a bird with 10 narrow tail feathers. On page 171, Friedmann places *fraterculus* and *usambarae* as races of the same species.

SCHOENICOLA BREVIROSTRIS CHYULU. Subsp. Nov.
Chyulu Fan-tailed Grass Warbler.

This very remarkable Warbler, remarkable for its excessive tail, was not uncommon in the tall grass moorlands of the range. One would imagine that a tail of this length and breadth would hamper the bird in its movements among the grass especially when the vegetation was wet and the tail, as one knows, becomes bedraggled.

As one walked through the grass these birds would be flushed one here, one there, to drop after a very short flight. If one noted the spot where they landed and walked them up, it was a one in ten chance that they would be flushed again. It would seem that on landing they creep through the grass rapidly and then lie quiet.

It is probable that the length and width of the tail is then of assistance, for it would bear them up somewhat as they moved through the grass stalks. This we know to be so in the case of the long-tailed lined Skink which abounded in the grass-lands.

These birds make two calls, a sharp "prit prit" varied with a "seese" and a rattling note which rises and falls.

TAXONOMIC NOTE.

Several students of East African ornithology have discussed the validity of the several races described for this bird throughout its distribution, and on the whole have come to the conclusion that the Uganda birds represent a darker race of the nominate South African form. These Uganda-Kenya birds may be known by the name *alexinae*, Heulg., type loc. Gazelle River, which antedates *brunneiceps*, Reichenow, type locality Acholi. I thus support Bannerman in *B.B.O.C.*, lvii, p. 70.

If one compares these twelve Chyulu birds with a similar series from Uganda and Kenya Highlands, it is noticeable that the Chyulu birds are darker than the darkest Uganda bird, the brown of the mantle having an olive tinge whilst the crown is decidedly grey olive tinged. The tone of the crown is considerably darker than that of the mantle. The wings and tails are even blacker. The sides of the breast and flanks are washed with olive, not so pale ochreous; the ear-coverts are darker. Type Female, Chyulu Hills, 5,600, 10/6/38. Coryndon Museum Expedition, 1938. Cotypes 11 specimens. Alt. range 5,500-7,000 feet.

C. Grant (in lit.) supports the race *alexinae*, and suggests that the Chyulu birds are of this race, but I consider them to be distinctly darker. He suggests that the Chyulu birds are dark-

ened by burnt grass; but even when they are cleaned up the darkness remains, and I am satisfied that it is not due to staining.

I have submitted these Chyulu birds to Moreau, who writes as follows: "I laid out your skins (six Chyulu, six Kenya-Uganda birds) and after trying one or two other things—all of course 'blind' so far as the labels were concerned—I made a division with no hesitation, on head colour. I then found I had five Chyulu skins and no others in the 'grey headed group,' only one was an approach to the 'ginger headed' group."

CAMAROPTERA BREVICAUDATA GRISEIGULA \lessgtr
ERLANGERI. Chyulu Green-winged Bush Warbler.

These birds were plentiful in the undergrowth of the lesser forests on the Chyulu hills but did not occur in the Great Chyulu Forest. They were more numerous at lower altitudes, round about the 4,000-5,500 level. Their characteristic "mewing" note was often heard.

It is difficult to determine these birds as referable to a given race inasmuch as they have the characters of the coastal race *erlangeri*, of which *albiventris*, Granvik, is a synonym, and some of the characters of that unfortunate intermediate aggregate named by Sharpe, *griseigula*, type loc. Voi River. I have written at length on these birds in *Nov. Zool.*, 1932, and this additional material only strengthens my views already expressed.

PRINIA MYSTACEA. Long-tailed Wren Warbler.

This species was plentiful all along the forest edges in pairs or small lots of parents and young. Their characteristic behaviour and call was a feature of the forest margins. Being an abundant species insufficient attention was paid to them. This is unfortunate for these Chyulu birds exhibit a darker, more olive tinged plumage on the head and mantle than any in a long series from the Kenya highlands; furthermore, the white superciliary stripe is very well marked. I hesitate to place them as the race *immutabilis* and they are distinct from the coast birds *tenella*. Five birds were collected, all uniform, except for one young in sub-adult plumage

APALIS FLAVOCINTA. Long-tailed Yellow-banded Warbler.

A few examples of this species were noted in the more open forest patches and along the forest edges. Tails 61 mm.; wings 50 mm. Range 5,000-7,000 feet.

APALIS Sp.

A single specimen of an interesting *Apalis*, probably near *moschi*, van Someren, was the only one seen. It is sexed as a male and is probably not mature. It remains one of the indeterminate species of the range.

APALIS GRISEICEPS CHYULU. Subsp. Nov.

Chyulu Bar-throated Forest Warbler.

These little birds were actually plentiful in the larger forests but owing to their habits were easily overlooked unless one was deliberately in search of them. Thus after the first few were obtained and the exact type of place to look for them was noted, we had no difficulty in obtaining a good series. As there has been some considerable discussion as to the species and races of these little birds, I paid particular attention to them. There are now forty odd examples from the Chyulu hills.

These birds are for the most part to be found in the canopy of the forest, but not in every sort of tree. I found them to be partial to those which were heavily encircled with lianas so much so that one could not actually see daylight through them. It was here that one noted the birds; merely a slight movement as the bird crossed some small opening in the foliage. One had then to wait for perhaps quarter to half an hour before they appeared on the margin of the creepers or having worked through them to the lower side of the canopy. Incessantly on the move, one has little time to aim; it was a case of directing the shot as quickly as possible toward the spot where movement had taken place. Occasionally, and particularly after an early shower of rain in the afternoon, one might find these birds hunting over the lichen and beard-moss-covered branches of tall trees toward the edge of the forest, or in the creepers around their trunks. It was then that one could observe them. Minute insects and spiders were all that one found in their stomachs.

TAXONOMIC NOTE.

Differs from *griseiceps* from Kilimanjaro, by their purer green, more leaf-green, less yellowish tinged, mantles; the crown and cheeks ashy-grey, not brownish-ashy; the margins of the wing-coverts and wing feathers purer green; the colour of the abdomen is a clear lemon-yellow, separated from the black collar by a pure-white area; loreal spot black.

Type: Male, Chyulu Hills, 26/6/38, 5,800 feet. Coryndon Museum Expedition, 1938. Paratypes forty-three specimens.

Remarks: This series has been compared with typical *griseiceps* from Kilimanjaro. There is some slight variation in the colour of the heads and out of this series only three show an

approach to the Kilimanjaro race, but they exhibit the other characters which differentiate them.

I am in agreement with the recent division advocated by Grant, *Ibis*, 1938, that there are two species of these *Apalis* exhibiting similar general characters, the one species having green mantles, the other grey, *murina*, Reichenow. It has been remarked by Friedmann and Loveridge, *Bull. Comp. Zool.*, 1937, that altitude does not appear to be the dividing factor between the species, for both are found at similar altitudes.

The altitude range of the Chyulu race is 5,000-7,200 feet on the Chyulu Range.

CISTICOLA NATALENSIS. Subsp.?

Large Striped
Grass Warbler.

Two species of *Cisticola* were plentiful throughout the grass moorlands of the Chyulu Hills; of the two, a race of *natalensis* was less in evidence. Only one other species was noted. Usually the first indication one had of the presence of the bird was its distinctive call which, on account of its periodicity came to be known as the Clock Bird. One first of all heard the repeated call "Click clock" and scanning the grass land with a pair of binoculars, looking particularly at any projecting herb, one would pick out a cock bird sitting on the topmost twig of a hidden bush. They were timid, and seldom allowed one to approach very near. If flushed they flew some distance and again took up their position on the top of a bush; they seldom went to the tops of the *Erythrina* trees though in some places they could have done so. The song (sic) was a combination of the call with three other notes as "q-q-eh."

TAXONOMIC NOTE.

This bird belongs to the *natalensis* group, and naturally one compares it with three possible races: *valida* which according to Lynes extends from Uganda, through Tanganyika and along the Kenya coastal strip (I personally do not accept this last area within its distribution); *kapitensis* of the Athi Plains south to Ukamba, and north to Mt. Kenya, *not* recorded from the Masai country to the south, but at Simba. We may dismiss the coastal birds, as they bear no resemblance to the Chyulu birds. The race *kapitensis* is said by Lynes to have a perennial dress, and occasionally a non-breeding plumage. We find that the series collected contains 14 adults breeding or just finished; 11 adults in non-breeding dress; eight young in the juvenile sulphured yellow-breast stage. It is interesting to note, then, that on the

Chyulu range, *natalensis* has a seasonal dress, which can be differentiated from the breeding dress; and in this way: that whereas in the breeding dress the margins to the mantle feathers are greyish; in the non-breeding they are sandy or buffy, and so the striping on the back is bolder; the tails in the non-breeding dress are longer. This plumage is not to be confused with the juvenile which has the sulphured underside.

Taken as a whole the Chyulu adults exhibit a stronger, wider, and more black streaking of the head and mantle; the head is boldly streaked and redder, and thus different from *kapitensis*. Nevertheless one old male and two females who have just finished breeding and very much worn are hardly to be distinguished from typical *kapitensis*.

Now as regards the breeding season on the Chyulu Hills. It can be stated that but for parents with young still being fed, the egg-laying period was over by the end of March, thus much earlier than for this race (if we unite it with *kapitensis*) in the northern parts of its range.

Reverting to the presence of a non-breeding dress as found on this range of mountains, it is of interest to note that on Elgon, seven out of 14 birds taken by Granvik had this reversion to a winter or non-breeding dress. One is led to speculate as to whether altitude and thus greater variation in temperature has an effect on the modes of dress. The Chyulu birds have an altitude variation of 5,000-7,200, whereas Lynes says of *kapitensis* "nowhere appreciably off the general level—3,000-5,000 feet."

CISTICOLA BRACHYPTERA KATONAE. Mottled-back
Grass Warbler.

All through the moorland of the Chyulu range this species was plentiful. Its altitudinal range was 4,000-7,200 feet, but it was invariably associated with grass in proximity to trees; thus we found it frequently in the smaller commencing forest patches, largely composed of a few *Erythrina* surrounded by woody herbs such as *Leonotis*, *Vernonias* and other composites; along the forest edges and so on, but not in the entirely open grass lands.

The nesting season was about at an end, for no nest with eggs were found, but two with week-old chicks; the bulk of the young were either disassociated from their parents or still being attended by them. Not infrequently one noted a party consisting of parents and three young hunting about the herbage at the base of an *Erythrina* clump; if disturbed they invariably flew into the trees from which they protested loudly. I have never found the species so plentiful in any part of its range.

It was noticeable that these birds were partial to one patch of burnt-off bush along the forest edge; the herbs had begun to

shoot again and had reached a growth of perhaps eighteen inches. Searching this new growth I found it to be heavily infested with *Aphids* and a small spiral mollusc and to determine which the birds were feeding on, two were shot. The stomachs contained both *Aphids* and snails.

TAXONOMIC NOTE.

This series of 37 birds indicates that the dress is more or less perennial, that is, there is no marked and strong difference between the breeding and non-breeding plumage; but there is a definite tone variation which is best expressed this way: that the edging to the crown and mantle feathers is darker or lighter but not in any way comparable to the change seen in the *Chyulu natalensis*, for example.

When the Chyulu birds are laid out together with a series from Nairobi area, Nakuru, Naivasha, to Fort Hall and Mt. Kenya, it is at once noticeable that the Chyulu birds are darker, less rufous tinged throughout the upper surface; in fact, in the darker phase (12 skins) I cannot match them with any Kenya highlands bird; on the other hand the lighter phase of the Chyulu birds is very, though not entirely, comparable to the darkest birds from up country. Lynes has noted "a gradual diminution of size and depth of colouration from west to east" and at the same time says: "Birds in the Kenya highlands run quite noticeably larger, *more deeply coloured and more boldly marked above* than those on the plateau eastward." It is of interest to note, therefore, that the Chyulu birds are even darker still.

The wing measurements of Chyulu birds are as follows: Males, 50-54 mm.; females, 46-50 mm.

CISTICOLA ARIDULA TANGANYIKAE. Small Streaky backed Grass Warbler.

Very few of this species were noted on the range. Actually, I was surprised to find even a few, as the range taken as a whole was unsuitable environment for these birds. They were generally noted on the lower lava flows where the grass and herbage was stunted. They were more often seen on the great lava flow between the south end of the range and the southern Chyulus.

GENERAL REMARKS ON CISTICOLA.

It was a surprise to me to find that there were no examples of *Cisticola*, *prinioides*, *galactotes*, *cheniana*, or *cinereola*. The forest edges with their luxuriant fringe of herbs at altitudes of 6-7,000 feet appeared eminently suitable for *prinioides*, whilst the lower slopes at 4-5,500 seemed suitable to *cheniana*.

DICRURIDAE.

DICRURUS ADSIMILIS DIVARICATUS. Drongo Shrike.

These birds were only located in the low country at the foot of the range, 4,000-5,000 feet; in this they were associated with the Black Flycatcher already recorded, and the similarity is very marked. They were particularly plentiful in the old abandoned banana "shambas." On two occasions these birds were noted to take *Belenois severina* (determined by dropped wings) as they flew past the birds' out-look post. They also captured small *Lycaenids* and one *Charaxes saturnus*. A number of *Fulgorids* disturbed in our attempt to capture them were snapped up by Drongos. A small green-headed Lizard, plentiful amongst the Fig trees was also taken from the tree trunks, the birds flying straight to the tree and swerving swiftly just at the point of contact; and, on most occasions, securing the prey. This is in amusing contrast to an occasion on which I watched a Giant Shrike (*Malaconotus*) making an unsuccessful attempt at flying at a lizard who immediately slipped round the tree trunk; the Shrike clambered (one could not call it anything else) round the trunk; by that time the lizard had gone further up, then round. A regular hide and seek followed, the lizard eventually disappeared into a hole in the rotten trunk and there remained. It was really amusing to observe the Shrike looking this way and that, and probably thinking "Where the h—— has it got to?"

PRIONOPIDAE.

SIGMONUS RETZII GRAUCALINUS. Orange-billed Helmet-Shrike.

Three adults and one sub-adult were taken out of a flock of a dozen birds which appeared in the *Erythrina* trees on the western slope of the range at Camp 2 and the lower lava flow below Camp 3. It was apparently the same flock for when encountered on the eastern side at a later date, it was reduced by the number previously shot. The variation in the call note of these birds is remarkable, and when one starts calling, many others join in, so that there is a confusion of notes. They are extremely noisy. Their flight appears weak and rather fluttering, interspersed with gliding, and is never long sustained. At the moment of writing these notes, there is a large flock in the Museum grounds. Friedmann, op. cit., states: "It is a denizen of dense forests . . . This is hardly correct: I have usually noted them in fringing forest, savannah forest, in open acacia park-country in Nairobi township very often, and the Chyulu birds were "taken in scattered *Erythrina* trees," 4,000-5,000 feet.

It is common in the forests around Nairobi. It is one of these curious gregarious species which, even during the nesting season, hang together, and more than a pair will assist in feeding the young at, and after they have left, the nest.

NILAUS MINOR MASSAICUS. Pale-flanked Brubru Shrike.

Absent from the higher zones of the range, this species occurred on the lower zones amongst the *Erythrina* association. An old nest of this species was located in an *Erythrina* tree; it agreed entirely with a previous nest situated in an *Acacia*, found last year, in May, on the Ngong Escarpment.

PRIONOPS POLIOCEPHALA. White-lined Helmet Shrike.

This species was taken on the lower zones of the range during the three weeks May 21st to June 9th. It was not present prior to the first date mentioned and no further examples were noted in the central and southern lower portions of the range.

The birds collected were from two flocks, for my collectors working on different sides of the range both reported the bird on the same day. The series consists of four adults and two sub-adults.

EUROCEPHALUS RUPPELLI RUPPELLI \geq **DECKENI.**

White-headed Shrike.

A few of this species were noted on the sparsely clad lower slopes and the lava flows. They were very conspicuous as they flew from tree to tree, the white head and upper tail-coverts being noticeable features.

In the Chyulu hills, nesting was over by April, young birds in barred plumage being well on the wing. In the Voi area I obtained nestlings in January.

LANIIDAE.

LANIUS COLLARIS HUMERALIS. Long-tailed Pied Shrike.

This common species was met with throughout our safari from Kibwezi to the hills; on the range itself, it was more plentiful on the lower slopes and lava flows where scattered bush and clumps of trees predominated. It was not actually taken in any of the forests, though at 6,500 feet a pair frequented the forest edge by our camp.

LANIUS CABANISI. Long-tailed Fiscal Shrike.

This is a bird of the bush and acacia country and naturally would not be expected to range on to the higher altitudes of the Chyulu Hills. Thus of the five specimens taken, all were

collected on a lava flow on the western side of the range where scattered *Acacias* and species of *Celastracea* and *Erythrina* were the only trees.

MALACONOTUS POLIOCEPHALUS APPROXIMANS.

Giant Yellow-breasted Shrike.

This Giant Shrike was quite numerous in the small valley or donga patches of forest, and in the lesser true forest, and in the *Erythrina* associations. Its clear note was often heard at the lower elevations. It was not observed above 6,000 feet; at this level only once, the majority were between 4,000-4,500 feet. Several of the stomachs dissected contained lizards, grasshoppers, Fulgorids, and other Hemiptera.

TAXONOMIC NOTE.

MALACONOTUS POLIOCEPHALUS and allied races.

In attempting to fix the racial form of the Giant Shrike of the Chyulu Range, I have once again gone into the question of the type locality of the race described by Cabanis, in Von der Decken's "Reisen in Ost Afrika, 1869 (a copy of which is before me). In this work it is given as Dalaoni River (not Dalaon, as quoted by Sclater and Friedmann). I cannot find the exact place in any map I have consulted.

It has been suggested to me by Moreau (in lit.) that this place probably "refers to Daluni, a camping place at the extreme north end of the Usambara (east) on the caravan route to Kilimanjaro, along the north side of the block." If this is accepted as correct, it clarifies the position. For in this region we find the race maintaining a distinct type of plumage, whereas, at the southern end and on the western side we find transitional examples toward *hypopyrrhus* or *blanchoti*, whichever name is acceptable for the southern race (Austin Roberts uses the former). The Chyulu birds may be placed as the race *approximans*, Cab. Friedmann states (*Bull.* 153 U.S. Nat. Mus., p. 308) that the race which extends to Kikuyu (Nairobi, Kiambu) is *approximans*. My material from these localities are not of this race, but similar to Morogoro birds which are *hypopyrrhus*.

With additional material, I am able to suggest that the south-eastern race passes north through Tanganyika Territory and enters the southern Masai country reaching Ngong, Nairobi, Kiambu, and Kikuyu.

The coastal race *approximans* extends from the coastal belt north to Ukamba, and toward Mt. Kenya, and up to the east of Kilimanjaro passing eastward to Lamu and Southern Somaliland.

The wing measurements of the series representing this distribution are as follows:

Coast: Vanga-Mombasa-Lamu, 105-112 mm.; Vanga-Taveta-Chyulu, 105-117 mm.; Tana-Kitui-Meru, 105-116 mm.; Juba River, 108-116 mm. (mostly 113 mm.).

Friedmann, op. cit., gives 95-112 for this race, but many are over his maximum. According to this author, the Marsabit birds should be the race *schoanus*, with wings of 117-122, but his smallest bird is 110 (Ndoto); thus there is a discrepancy in this and his minimum. My Marsabit material measure 110-120; they may be placed as *schoanus*. Turkana-Turkwell birds run larger, 118-122 mm., and are in many cases the intergrades between *schoanus* to the north-east and *catharoxanthus* of the Nile Valley and Uganda. I was unable to distinguish these from the type and series of *interpositus*, Hartert, with which I compared them at Tring in 1922. This name appears to apply to intergrades between *poliocephalus* and *hypophyrrus*?

It is unfortunate that Friedmann should not have brought his notes and comments, in his valuable work, up to date, when making reference to publications of other authors. This is markedly the case when he refers to *Chlorophoneus nigrifrons* and *abbotti* groups, and in others, as has been pointed out by Moreau, *Ibis*, 1938, pp. 593-597.

TSCHAGRA SENEGALA ARMENA.

Black-crowned Red-winged Bush Shrike.

The Greater Red-winged Bush Shrike was plentiful in suitable localities along the range. It was not found in the forest and wherever noted was limited to the lesser clumps of bushes and *Erythrina* associations, in the more open small starting forests. The altitude range was thus 4,000-5,500 feet. Favourite localities were the small craters or "blow-holes" which were overgrown with *Euphorbia* and bush with stunted and small trees of *Catha edulis*. One very often found them in the grass lands away from bush, usually along some buffalo path; they were here because along these trails were numbers of beetles and other insects making use of the paths for easy travel; again along these paths various animals dropped their dung, serval cats for instance, and as one knows, these droppings soon attract various *Scarabeids*, and these are relished by the Shrikes.

TAXONOMIC NOTE.

I do not wish to enter into a discussion of the validity of the various races I admit to the Kenya-Uganda list, but would draw

attention to Friedmann's suggestion that the East African birds hitherto accepted as *armenus*, type locality Taveta, are identical with South African birds, named by me *confusus*. It is true that Oberholser linked the Taveta bird with those of South Africa and proposed a name which included both, but the type cited is a Taveta bird, and he appears to have had only one S.A. specimen, P.U.S. Mus., Vol. 130, p. 810.

To test the statement that South African birds are not distinct from Kenya specimens, I have had the loan of 41 specimens of *T. senegala* from the Transvaal Museum, through the kindness of Dr. Austin Roberts. In all, I have before me 132 birds. Whilst it is true that individual Kenya birds can be matched with S.A. material and vice versa, in the series it is noticeable that the southern birds are darker, more generally suffused with grey on the underside than are the Kenya specimens. Furthermore, omitting the accepted coastal race *orientalis*, type locality Mombasa, we find on measuring the wing and tail lengths that the southern birds run larger. Thirty-six birds give the following: Wings, 86-92 mm.; tails, 103-112 mm. in the following ratios: Wings, 3 of 86, 4 of 87, 2 of 88, 13 of 89, 12 of 90, 3 of 91, 2 of 92; tails: 1 of 103, 8 of 104, 5 of 105, 18 of 106, 4 of 108, 2 of 110, 1 of 112.

Twenty-four Kenya highland birds measured as follows: Wings, 80-89 mm.; tails, 90-100 mm. in the following ratio: 1 of 80, 1 of 81, 1 of 82, 2 of 83, 1 of 84, 3 of 85, 6 of 86, 3 of 88, 1 of 89; tails: 1 of 90, 1 of 91, 2 of 92, 2 of 93, 5 of 95, 3 of 96, 2 of 97, 1 of 98, 2 of 99, 1 of 100.

Apart from general colour differences as noted, we have the additional support of size. Although the type of *armena* is one of the intermediates toward the coastal race *orientalis* I support the use of this name for the Kenya highland race.

I have now to refer to the remarks on this species in Jackson's Birds of Uganda (Sclater, 1938), for they are an extreme view, viz., that only one race is recognisable from Senegal across Africa, excepting N.E. and south to the Cape. So far as the southern birds are concerned, I would refer readers to the foregoing table and remarks. To test out the statement that only one race is recognisable in Eastern Africa, I have again laid out my very large series of nearly 200 skins. There is not the slightest doubt that all along the coastal belt from Lumbo, P.E.A., to the Juba River the birds are very white below, and the inland birds are darker and greyer. The coastal birds are certainly divisible into three races; South Somaliland and Jubaland *catholeuca*, Neum., meeting with *orientalis*, Cab., in the Lamu area, this race extending southward to beyond Dar es Salaam; along the coast of P.E.A. the race *mozambica*, van Som. occurs.

I therefore see no reason to depart from my previously published opinion.

TSCHAGRA AUSTRALIS. Subsp. Chyulu Lesser Red-winged Bush Shrike.

The Lesser Red-winged bush Shrike was plentiful toward the northern portion of the range along the forest margins. It was very retiring in habits, keeping to the thick tangle of bush and creepers which surrounded most of the forest patches.

TAXONOMIC NOTE.

I have compared these Chyulu birds with a long series from the coastal strip, paratypes of my race *littoralis*, and find them to differ in the following respects: Mantle generally darker, red-brown; crown also darker; but the underside very strikingly white on the throat, mid breast and abdomen contrasting with the flanks which are ochreous-grey with a wash of olive.

The race *littoralis* is described as a smaller, much paler race compared to the inland *minor* and *emini*; the Chyulu bird is darker above and whiter below.

DRYOSCOPIUS CUBLA. Puff-backed Shrike.

This species was exceedingly plentiful in all parts of the range and was found throughout the forests, even to the depths of the Great Chyulu Forest. Friedmann writes (*Bull.* 153, U.S. Nat. Mus.) that the birds live in open woods and not in dense forest. This is not strictly correct; it occurs in both, in Kenya. It was noted in the canopy and mid-zones of the forest, and was often seen associated with other species as part of a "bird party" in an organized "drive" through the tree tops. Chyulu birds had finished breeding on April 24th.

TAXONOMIC NOTE.

I have dealt at length with the variation in this species as it occurs throughout Kenya (*Nov. Zool.*, 1938) indicating that along the coast the race *hamatus* tends to become smaller. I gave comparative figures of the material then available showing males to have wings of 78-89 mm. Friedmann refers to this paper in another connection but does not give these figures, but others, based on lesser material in 1922. Since 1932 additional material has come to hand and corroborates my previously expressed views: Mara River-Sotik-Mau birds run up to 89 mm. (six examples) and now further material from the coast gives males not exceeding 83, most below 80. Of the Chyulu birds (adults) 16 males run from 79-82, eleven are 80 mm.; only three are above the 80 mark.

It would be interesting to know more of the topotypical Umyamwesi bird, for this locality is after all a long way from the Kenya Highlands. Such topotypical material would have to be examined in long series before one could state definitely that the coast birds were consistently smaller.

LANIARIUS FERRUGINEUS CHYULU. Subsp. Nov.

Chyulu Pied Shrike.

On the Chyulu Range, wherever there was thick cover in the form of dense marginal forest growth, or in spots in the forest where lianas had massed the vegetation together into an almost impenetrable growth, this Pied Shrike was sure to be found.

If not seen at once, its loud call, often a duet between the two birds, was heard on every side. Quite often as one was searching the mass of lianas at the top of some tree in the hope of obtaining a glimpse of a Bar-throated Warbler, one would see a movement; one shot at the spot, and in a moment down would come one of these birds; its presence hitherto undetected, for they are not always noisy. I have watched a pair working about on the top of a creeper-clad tree for moments on end without a sound.

Usually, however, if the birds have been disturbed, they will scold and from excitement commence calling as soon as they have gone into cover. This bird is equally at home in all strata of the forest, even on the ground, for when they are working thick tangled marginal growth they frequently come to ground, but I have not observed them doing any actual searching on the ground for any length of time. The usual note heard is a loud far-reaching "pi-you-hoo" not actually three distinct notes, but three run together so as to give a cadence and intonation as described. Sometimes the note is a quavering "p-o-o-o-o." Examination of stomach contents showed these birds to take a variety of insects, spiders, young mice, and land mollusca, of quite fair size but always broken up.

The Uganda and Kenya highland race have been seen by me to take eggs and young birds of other species, but the Chyulu bird was not detected in the robbery: the nesting season was over by April.

Apart from actually taking mice from nests, as I have witnessed, I caught a pair of these Shrikes in the act of destroying a small mouse which had been caught in a trap set for it in a tree. Although the Chyulu bird was extremely retiring, that is, it kept to the thick portions of vegetation, I not infrequently saw them at the forest margin taking grasshoppers. They would work along the vegetation until a grasshopper was seen; a bird

flew out, seized the insect and retired immediately. All young seen were strong on the wing and no nestlings were noted.

TAXONOMIC NOTE.

For purposes of comparing the Chyulu birds I have set out all available material of this species throughout its range in Kenya, some 180, not including birds from Chyulu. I have considered this material in the light of the remarks on the group, by Friedmann, *Bull.* 153, U.S. Nat. Mus., and the arrangement given by Sclater in his "Systema."

Omitting Uganda material, which is accepted as *L. f. major*, characterised by having the middle upper wing coverts, the inner greater coverts and inner secondaries with white, we find that birds from Elgon, Maraquet, Cherangani, Kaimosi, Mau to Sotik and Rongai, Nakuru to Naivasha are of this type, with in the last named two localities intergrades towards *ambiguus*. Two Aberdare birds show the same extensive white areas and cannot be distinguished from *major*.

According to Friedmann these Aberdare birds should be *aethiopicus*. The wing measurement of the above-recorded birds are as follows: Males, 99-102 mm. (Naivasha-Nakuru), 100-105 in birds from Mau; Kericho, Sotik, 103-107 mm.; Elgon-Kaimosi, 98-100 mm.

Examining the Nairobi-Kyambu material, we find evidence of the influence of *major*. Three birds are indistinguishable from that race in respect of the amount of white on the wing; one has less white on the coverts, but still retains it on the inner secondaries; seven birds are similar to *ambiguus* of Kilimanjaro. Males 96-99 mm., females 90-96.

MARSABIT BIRDS.—Nine specimens from this locality give the following measurements: Males, 96-99 mm.; females, 90-96 mm. They are *aethiopicus*. Friedmann suggests that the Meru (Kenya) birds are *major*, but as these have the white limited to the middle wing-coverts they cannot be *major*. Actually, they are intergrades between *aethiopicus* and *ambiguus*. Topotypical *ambiguus* in my collection have wing lengths of 99 in males and 93 in females; but Friedmann gives 85-96 for this race. Birds from Lumbo measure 88-96 mm., but Friedmann gives 90 mm.

The only other described race within Kenya is *sublacteus*, which is a coastal form, with no white on the wing. This race extends inland through Tsavo and Teita to the base of Kilimanjaro.

Having defined the races as above, we find that the only race comparable to the Chyulu birds is *ambiguus*.

DESCRIPTION: Like *ambiguus* in that the white of the wing is limited to the middle coverts, they differ in having the whole of the upper side decidedly green-black, not blue-black; the throat is pure white and contrasts strongly with the very rich pink-buff of the breast and sides, more so than in any East African race. In size they agree with *ambiguus*. Type: male, Chyulu Range, 18/6/38, alt. range 5,000-7,200 feet in forest. Coryndon Museum Expedition, 1938. Twenty-two specimens were collected. Limited range, the Chyulu Hills.

LANIARIUS FUNEBRIS DEGERER \leq ROTHSCHILDI.

Sooty Bush Shrike.

Though very numerous in the lower plains round the mountains very few of these birds appeared to ascend to higher than 5,200 feet. Three adults and two immature in different dress were obtained. The young were still with their respective parents.

They have a very loud piercing staccato call which they utter when at all excited, a variation of four notes, first one, then followed by three in rapid succession. On the range they only occurred in the bush and *Erythrina* associations, or in the old cultivations at the foot of the hills.

TELOPHORUS QUADRICOLOR NIGRICAUDA.

Crimson-throated Green Shrike.

Two specimens of this very decorative bird were obtained at the 4,000 foot level; it cannot, however, be called an inhabitant of the range proper but rather of the adjoining plains.

CHLOROPHONEUS SULFUREOPECTUS SUAHELICUS.

Orange-breasted Scrub Shrike.

Here again we have a bird of the plains, i.e. the lowland bush and savannah forests extending partly up the range. A few were obtained in the *Erythrina*-bush-association of the lower lava flows, up to 4,500 feet.

PARIDAE.

PARUS ALBIVENTRIS \leq CURTUS.

Chyulu White-bellied Tit.

The White-bellied Tit occurred in the lower *Erythrina* scrub zones and only reached an altitude of 5,000 feet. A pair used to go to roost every evening in the broken end of a branch of *Cussonia* just near Camp 1. There was always a lot of chatter before they finally settled down. They were noted to seek for

food almost entirely amongst the lichen-clad branches of the before-mentioned trees and were seldom seen at the forest edge. On occasions one saw them forcing open the pods of the *Erythrina*, and on investigation I found the seeds to be badly infested with larvae of a beetle; doubtless the birds were after these.

TAXONOMIC NOTE.

I have designated these birds as intermediates between the smaller coastal race and that of the highlands. I find on measuring up the wing length of the Chyulu birds that they do approach the smaller race, since that form was based on size alone, in that they vary from 76-83 mm., only one bird out of six reaching 83; the others are 76-78 mm. females, 79-80 mm. males. It is unfortunate that the type of *curtus* was from Taveta for the actual coast bird are the smallest members of the race.

PARISOMA BOHMI.

Black-collared Tit-Warbler.

These little Tit-Warblers were quite plentiful on the lower zones amongst the *Acacia-Erythrina* trees and scattered bush of the lower lava flows. As this type of country was rather intermittent, being broken up by intruding lava cones and craters, it was difficult to ascertain its relative abundance at any one level. In its behaviour it is somewhat tit-like yet at the same time one is inclined to associate it more with the Warblers. I have not noted this bird to creep and twist about the branches as do the Tits, nor have I seen them cling to a trunk to pick at a hole in the bark. Their general field characters associate them with the Warblers rather than with the Flycatchers as tentatively arranged in the "Systema."

I would draw attention to the fact that the two Chyulu specimens differ from a series of 12 from the Samburu-Simba bush country (along the railway) by being markedly clearer grey above. The specimens were taken in the *Erythrina* association at 5,000 feet.

ORIOLIDAE.

ORIOLUS MONACHA KIKUYUENSIS \supseteq REICHENOWI.

Chyulu Black-headed Oriole.

The Black-headed Oriole was surprisingly restricted in its distribution along the Chyulu Range, for we only met with it at the north and central portions and it was not even heard in the Great Chyulu Forest. Even where it did occur, it was not as a forest bird, but was always located in the more scanty forest patches . . . commencing forest . . . and among the *Erythrina*-

Cussonia associations, as well as the stands of *Catha edulis* growing near the now deserted banana "shambas" along the lower zones and at 4,000 to 5,000 feet.

There was nothing distinctive in the behaviour of the birds which had not already been noted.

The systematic position of these birds is interesting, for they constitute part of the aggregate of intermediates between the large highland race *kikuyuensis* and the small coastal-Jubaland birds, *reichenowi*. In type of plumage they are less washed with yellow on the mantle, more greenish, than the majority of coastal birds, nor do they exactly resemble the highland form. In size of wing they are intermediate between the two: 122-134 mm.

ORIOLOUS AURATUS NOTATUS, Peters. Southern Golden Oriole.

Two birds were noted and one obtained at Camp 2, 5,200 feet. The specimen is a sub-adult male and shows the replacement of the striped breast feathering for the uniform yellow of the fully-fledged adult. They were noted in "commencing forest."

CORVIDAE.

CORVUS ALBICOLLIS. White-neck Raven.

At different portions of the range one could count on seeing a pair of these wily birds; at each of our standing camps a pair was noted as frequenting particular patches of forest as roosting places. Each had its dead tree standing out from the rest of the forest growth. During the day time, the birds used these vantage points to scour the surrounding country for possible food. They became aware almost at once when any dead animal was being gutted or skinned. One could hear their raucous call from a far distance as a pair, flying over different parts of the hill sides, called to each other. One old nest was located in a cliff face where the lava had faulted and slipped down some fifty or more feet. Though largely carrion feeders, they will also take beetles and the larger Grasshoppers and locusts. A pair at Camp 1 were the means of recovering a wounded Guinea fowl which had got away the previous evening just at dusk. It became too dark to search for the bird the evening it was shot and search was made early next morning in the direction it had gone off. The Ravens had already spotted the bird and were chivvying it in the long grass, swooping down and striking with their powerful bills and causing feathers to fly. The bird was rescued and put out of its misery, while the Ravens kept their distance, well out of gun shot. They allow one to approach comparatively near if one is unarmed, but if a gun is carried they know what is a safe distance.

Like others of the Crow family, these birds will search over ground which has been recently burnt, in the hope of finding some half-scorched rodent, frog, or lizard.

STURNIDAE. Pholia.

PHOLIA FEMORALIS, Richmond.

Buff-bellied Purple
Starling.

On two occasions this small starling was noted in large flocks 100 strong within the Great Chyulu Forest but it did not seem to occur at the northern end of the range. This may be accounted for to a large extent by the fact that the particular species of tree on the fruits of which these birds were feeding was not found at that end. The fruits are those of *Cornus volkensii* and the trees, at the time of our visit were heavily laden. In the narrative introductory to the systematic records, I have mentioned the fact that this tree grew in abundance on the high ridge of Chyulu at 7,200 feet in the form of a natural avenue on either side of the ridge, and it was here on the two occasions I visited the peak that *femoralis* was abundant. On the first occasion my attention was drawn to the birds by their continuous whistling notes, many birds taking part in the chorus. The call of six notes was, three in ascending scale then down the same three to one below the first. After listening to the birds and watching their behaviour for about half an hour I shot a pair, whereupon the whole flock swept out of the trees and away to the south end of the great forest. We waited for an hour for their return but they did not put in an appearance. On the second occasion the birds were in the same trees, but an unfortunate premature shot by one of my native boys drove the flock off before any more specimens could be obtained. I was particularly anxious to obtain further material, for the species has only once been previously recorded from within the Kenya boundaries, at Kikuyu Escarpment in 1903 by the late W. Doherty, though the bird is plentiful on Kilimanjaro. It is of interest to note that the particular species of tree on which the birds were feeding is recorded from the Kikuyu Escarpment and eastern Aberdares, and is associated with the damp rain forests at high elevations (according to Battiscombe, 8,000-9,000 feet). The bird occurs on Kilimanjaro from 6,000-10,000 feet; on Chyulu, at 7,200 feet. Like many of these Starling, *femoralis* is wasteful in method of feeding; just as many berries are dropped as are eaten. Not all the birds noted on the first occasion were feeding, many were sitting in the sun-lit branches preening themselves, or whistling lustily. A point of interest is that this species is said to replace *P. sharpii* of Elgon and the Mau and Aberdares, on Kilimanjaro (Moreau,

P.Z.S., Jan., 1936), but we record *sharpii* from the Chyulu. It is quite possible that the species will eventually be found on Kilimanjaro. One must keep in mind that these birds are great local migrants, moving for purposes of food.

We were anxious to secure further material of *femoralis* and carefully examined all trees where starlings were feeding and more than once we were mistaken in naked-eye identification of birds which, on the tree tops, looked like it. The most confusing was *B. l. kilimense* which has a general scheme of black with white belly as in the starling, and quite a few were shot in error. With glasses it was of course possible to note the white head streak and the thick bill of the Barbet.

PHOLIA SHARPII, Jackson. Buff-bellied Blue Starling.

On the southern end of the Chyulu range, we noted one large flock of these birds which came to feed on certain trees then heavy in fruit, and from it we obtained a small series. They are indistinguishable from Elgon-Mau birds, except in point of size: 95-100 mm. as against 100-106 mm.; shorter tails which are less forked. The Chyulu material is insufficient to say more.

The occurrence of this bird along with *femoralis* is of particular interest. The tree on which they always fed, usually toward the late afternoon, was a species of *Sapium*. It was also frequented by Barbets, Bulbuls, and Thrushes.

The fruits were for the most part toward the ends of the pendent branches and these starlings were adepts at sidling down a twig to the tip and stripping the fruits off; their skill was in strong contrast to the heavy and clumsy antics of the Pied Barbets, *B. l. kilimense*.

These birds were less vociferous than either *femoralis* or *C. leucogaster*, which latter was also seen feeding on *Sapium*.

CINNYRICINCLUS LEUCOGASTER. White-breasted Violet Starling.

Pairs and small flocks of these birds were noted throughout the range from 4,000 to 6,500 feet. With the exception of the flock which fed on *Sapium* berries, most of the birds were noted to feed on species of *Ficus*. They are very noisy, not so much that the call is loud, for it is not, but incessant. On some of the wide-spreading figs the whole canopy would be a moving mass of these birds, most of them either busy feeding or whistling in a most jumbled manner; a clap of the hands, not sufficient to drive them away would bring the singing to a sudden stop, to be renewed in a few moments.

The only specimens obtained are immature or female and I have therefore not treated them racially. I have commented on

the value of Bowens' *lauragrayae* in *Nov. Zool.*, XXXVII, 1932, and cannot support it; additional material endorses this view. It is of interest to note that in 1936 Loveridge and Peters definitely sink this race, yet in 1937, Loveridge in conjunction with Friedmann, *Bull. Mus. Comp. Zool.*, admits it. In 1933, Bangs and Loveridge in the same Journal, admit it. Friedmann in *Bull.* 153 U.S. Nat. Mus., p. 331, admits it but refers to my measurements of an exceedingly long series but does not seek to interpret them as indicating instability of the supposed characters on which the race is founded. Why? Sclater and Moreau doubt its validity, and I have no hesitation in making it a synonym.

ZOSTEROPIDAE.

ZOSTEROPS CHYULUENSIS. Sp. Nov. Chyulu White-eye.

A very long series of these birds was taken in order to ascertain the stability of characters which appeared to indicate these birds as a hitherto unknown race or even species. Seventy specimens were obtained. Taxonomic notes will be appended.

This species of *Zosterops* frequented the forests at altitudes varying from 7,000 to 4,500; below this there occurred the smaller *Zosterops senegalensis flavilateralis*, Reichw., which is an inhabitant of the thorn bush and savanna forests. The two thus have entirely different ecological habitats.

The Chyulu *Zosterops* is a bird of the forest canopy for the most part, more particularly in the larger forests where there were no more or less open glades or clearings. This was particularly noticeable in the mornings up to the early afternoon; after this hour, as the sun was at a slant, one noted the birds among the trees along the forest edge, more particularly those which were heavy with beard lichen and with the evening sun directed on to them. Another favourite feeding resort was among the giant *Lobelias* which grew at the forest edge just within the border of bush which was composed largely of *Vernonia*, *Leonotis* and *Pentas*. A pair of birds would work systematically from the bottom to the top of a flower spike (many of them 10 feet and more long) ascending the stem in spiral fashion. I was particularly interested in the probable food obtained from these flowers and ascertained that both nectar and insects were taken. At the same time, stomach examination showed that the birds fed also on small berries as well as larvae of various sorts and spiders.

The diet is thus a mixed one. In captivity I have found that *Zosterops* are partial to *Aphids* and scale insects and will readily eat banana and other soft fruits. As with most of the species, these birds are gregarious to a certain degree, and from my observations it would appear that flocking does not occur through-

out the whole day. In one small forest patch one noted perhaps two or three pairs hunting in couples but toward the late afternoon these pairs would be joined by twenty or so additional birds and all, in association with other species would hunt over a large lichen and moss-covered tree just at the back of our camp; this was particularly the case if there had been a shower of rain in the morning or early afternoon. One nest of the species was located in a small tree (*Catha edulis*) growing at the edge of a forest patch. It was composed entirely of beard-moss lightly woven and very flimsy and slung between a horizontal fork. A broken egg shell, pale blue in colour, found not far from the nest indicated that the nest had been robbed, probably by a rat or Shrike. As there was only the one species of *Zosterops* in the hills, the nest could only belong to this bird. It was noted that all the birds obtained during mid-April to mid-May were in moult, on tail and primaries and about the head, less so on the body. As young birds were on the wing I concluded that the nesting season had ended in March. In contrast, all birds shot toward the end of May and throughout June and July were in beautiful fresh plumage. Only one male shot on 21st April had slightly enlarged gonads.

TAXONOMIC NOTE.

The Chyulu *Zosterops* is very distinctive when compared with its possible near allies. Geographically, it is nearest to *eurycricotus* of Mt. Meru and Kilimanjaro, but it needs no comparison with this race which is very dull coloured. *Usambarae* to the south is small and does not possess a large white eye-ring. To the westward, however, in the Mbulu district of Tanganyika Territory we find the recently described *mbuluensis* of Sclater and Moreau. Through the kindness of Mr. Moreau, I am able to compare the Chyulu birds with that race. In the comparative notes on the races of *Z. virens* published by Sclater and Moreau in *B.B.O.C.*, Vol. lvi., pp. 14-15, we are informed that the race *mbuluensis* ranges east as far as the Pare range, S.S.E. of Kilimanjaro, Moreau (in lit.) informs me that *mbuluensis* and *eurycricotus* occur together in part of their distribution and are now considered to belong to two distinct species.

This supports my view that there has been too much lumping into one species, *virens*, as was done by Sclater in the "Systema," and again in the *B.B.O.C.*, Vol. lvi, cited above.

DESCRIPTION: Nearest to the race *mbuluensis*, Sclater and Moreau, the brightest male of which is about equal in colour to the female of the Chyulu bird, on the underside; but the upper side is not so washed with yellow, nor is the yellow so rich or

extensive. In *mbuluensis* the yellow of the forehead is restricted to just at the base of the bill and a wash over the fore-part of the crown; in *chyuluensis* the yellow is richer and extends to the fore-part of the eye and is carried back as a superciliary stripe to almost the posterior side of the white eye-ring. The whole upper side is more strongly washed with yellow, while the underside is a rich canary yellow, with a slight wash of green on the sides of the breast and flanks. The very bright underside is a characteristic feature, as well as the extension of the yellow supercillium.

Sclater compares the Mbulu bird with *kikuyuensis* and so far as this compares with the Chyulu bird, one need only remark that the latter is far richer yellow on the underside and the yellow of the fore part of the head is richer, but not so defined. The Chyulu bird requires no comparison with *jacksoni* except to indicate that *jacksoni* has only a narrow white eye-ring and is a generally duller bird. The only point of slight similarity is in the distribution of the yellow on the forehead, but the colour is different.

Type: Male, Chyulu Range, Camp 3, 26/6/38, altitude 6,800 feet, Chyulu Great forest. Coryndon Museum Expedition, 1938.

REMARKS: Forty-two males and 29 females were taken. Wing measurements of this very large series are as follows: Males average $64\frac{1}{2}$ mm., variation 62-65 mm.; females average 61 mm., variation 58-63 mm. Seven males, 63 mm.; 10 males, 64 mm.

As I have dealt with the wing measurements of this bird in some detail it is as well to refer to a remark by Sclater and Moreau (*B.B.O.C.*, lvi., p. 15) to the effect that *jacksoni* and *usambarae* are small birds. This is true of the latter, but topotypical *jacksoni* give the following wing measurements: Males, 62-66 mm., as follows: 3 of 66, 2 of 65, 2 of 64, 3 of 63, 1 of 62 mm. Females: 58-63.

They are thus just as large as *chyuluensis* or *mbuluensis*.

In passing I should like to place on record that a specimen of *Zosterops* from "Merikitabu"—Pargitabak, Southern Masai area, N.W. of the Nguruman range, is identical in colour with *usambarae* but has wings of 59 mm. It also bears a resemblance to *garguensis*, Mearns, but is readily distinguishable from it.

The general grouping of East African *Zosterops* which I adopt in my systematic series is as follows:

GROUP 1.—Characterised by their general large size, large white eye-ring. Entirely forest birds.

Kikuyuensis.—Distribution, Mt. Kenya, Aberdares, Kikuyu and Ngong forests.

Chyuluensis.—Distribution, Chyulu Mountains.

Mbuluensis.—Distribution, Mbulu district (highlands of the Great Craters), Kitumbeni, and Longido, and probably Pare (these seem very close).

Eurycricotus.—Distribution, Mts. Meru and Kilimanjaro.

GROUP 2.—Characterised by a small eye-ring, variation in size from the smaller savannah races to the alpine forms.

Jacksoni.—Distribution, Mau to the Cherangani range.

Elgonensis.—Distribution, Mt. Elgon.

Yalensis.—Distribution, the open savannah and park country of the Yala and Nzoia valley.

Stuhlmanni.—Distribution, the orchard forest and savannah country and more open forests of Uganda to Mt. Moroto, Turkana.

Garguensis.—Distribution, the scattered forests on the tops of hills in the Northern Frontier, Urugues and Marsabit.

? ? Distribution, open steppe forest of the southern Masai Reserve. Parigitabak.

Usambarae.—Distribution, Usambara Range, and probably further south (Moreau, in lit.).

GROUP 3.—Characterised by their general small size; hardly any white ring round eye; bright yellow, though paler underside.

Jubaensis.—Distribution, Juba River Valley.

Flavilateralis.—Distribution, the thorn-bush and steppe forests through southern Ukambani to the plains country round Kilimanjaro.

Fricki.—Distribution, the park and acacia country of the Kenya highlands, not in forest.

Superciliosus.—Distribution, northern Uganda to Lake Albert.

GROUP 4.—Characterised by grey undersides.

Winifredae, Sclater and Moreau. Distribution, South Pare, bush; white eye-ring small; paler abdomen; frons and throat yellow.

Silvanus, Peters and Loveridge. Distribution, Mt. Mbololo. More uniform grey underside; large white eye-ring; yellowish-green throat. Forest.

I have purposely refrained from designating the above as races of so many species, for I feel that we have even now insufficient data on which to group them into species, with the exception perhaps of those usually associated with *senegalensis*.

NECTARINIIDAE.

NECTARINIA FORMOSA AENEIGULARIS.

Long-tailed Emerald Sunbird.

This species was very common throughout the whole of the moorlands of the range. I refer to the moorland, as it was not an inmate of the forest but of the forest edge and the scattered bush among the grass lands. It was ever present, even when the hills were covered in dense mist one could dimly see these birds flitting from one clump of *Gladiolus* to another, or hear their sharp piping call. Two species of plants were much sought after, the beautiful orange and salmon *Gladiolus* so plentiful in the grasslands or the soft leaved *Leonotis* which grew in abundance along the forest edges and around the *Erythrina* clumps; they definitely preferred the former. They were undoubtedly more plentiful at the higher altitudes of 7,000-6,000 but one also found them at 4,500 feet.

Quite a number of nests were found, usually low in a clump of *Leonotis*, or amongst the leaves of the Chyulu Blue Lupin. A considerable quantity of vegetable wool is used in the construction of the nest, both as a lining and in the body-work. The outer frame was almost entirely grass and bark fibres. Most of the "wool" was from *Asclepiads*, *Marsdenia*, and *Clematis* with a mixture of composite heads. No eggs were found, but one nest had a nestling.

NECTARINIA KILIMENSIS.

Long-tailed green-bronze Sunbird.

This species was found throughout the range and was everywhere plentiful along the edges of the forest and even more so in the lesser forest clumps and the lower levels where bush and *Erythrina* were plentiful. It kept at a lower level than most of the Sunbirds, and roughly speaking its main strata appeared to be 4,000-5,800 feet.

NECTARINIA (DREPANORHYNCHUS) REICHENOWI.

Golden Long-tailed Sunbird.

Another very common bird, but inclined to range rather higher than *kilimensis*, thus it was plentiful at 6,000-7,000 feet.

I have already mentioned that the Emerald Sunbird was very partial to *Gladiolus*, but this species was seldom noted at these plants; it kept almost entirely to *Leonotis* and various *Acanthaceae*.

CHALCOMITRA SENEGALENSIS LAMPERTI.

Red-breasted Black Sunbird.

A bird of the open country for preference, where the *Acacias* and *Erythrina* flowers give ample support. They feed largely on insects and flower juices, from these trees, but one may often observe them in the forests; thus they were noted to frequent the large white flowers of *Connophyringia*.

CHALCOMITRA AMETHYSTINA KALCKREUTHI.

Violet-throated Black Sunbird.

Many were observed along the edge and in the more open forests. It also occurred on the lower lava flows of 4,000 feet.

CINNYRIS MEDIOCRIS.

Chyulu Olive-bellied Sunbird.

All along the edges of the forest and in the ravine forests this species was plentiful and conspicuous; it occurred, however, in the mid-forest also as members of the organised "drives" which one so often noticed. This species had finished breeding by April.

These birds do not exactly agree with Kilimanjaro specimens, but I have insufficient material of *mediocris* (only four males) from the mountain, and in cases where the differences in the races can be best seen in series, the females are also of great value, and they often exhibit better characters than the males. Thus 12 females from the Chyulu hills cannot possibly be united with 14 specimens from Kenya and the Aberdares; they are quite distinct.

While on the subject of *C. mediocris* I should like to draw attention to the races *moreaui* and *loveridgei* (as arranged by Sclater, *Ibis*, 1933, p. 215). I have no *moreaui* and cannot comment on this supposed link. I have, however, a cotype of *loveridgei* and it would appear at first sight to be most closely allied to if not definitely a race of *C. regius*, of which I have a series, except that the bill in *regius* is very small; very large in the latter, 14 mm. and 25 mm. *Loveridgei* and *regius* have the following in common: Above, they both have olive rumps; they both have strongly violet upper tail-coverts (not blue as in all

racess of *mediocris*); they have the edges of the greater coverts and wing feathers edged with the same olive-green (slightly redder tinged in *regius*); the distribution of the two colours of the lower surface are the same except that *loveridgei* is duller red and more olive-tinged on the sides.

Again *loveridgei* has an enormous bill, 25 mm. compared with *mediocris*, 17-18 mm.; *moreaui*, 20 mm. (measured in straight line). It seems best to retain them as species, *loveridgei* at least.

CINNYRIS VENUSTUS FALKENSTEINI. Purple Yellow-bellied Sunbird.

This little Sunbird was occasionally seen on the range but in numbers not nearly approaching *mediocris*. It was invariably noted at lower levels amongst the *Erythrina-Cussonia-Vernonia* association and among the *Acacias*.

This race of *venustus* must meet *albiventris* somewhere on the line of the Tsavo. I have the latter from this locality (thus Friedmann's map, *Bull.* 153, U.S. Nat. Mus., p. 358, is incomplete), and although I previously had *falkensteini* from Kilimanjaro I hesitated in suggesting a possible line of contact. In the series of birds taken on Chyulu are three from the great lava flow between the two Chyulu ranges. They exhibit characters which are suggestive of *albiventris* influence. The lava flow is on the 4,000 foot level and merges on the bush country in which *albiventris* is found within 10 miles. They are very pale below and the yellow is streaky—not uniform.

CYANOMITRA OLIVACEA CHYULU. Subsp. Nov.

Chyulu Olive Sunbird.

Where this species occurred, it was in very considerable numbers. It is of interest to note that at the northern part of the range, where the mist-forests were restricted in size and less drenched with heavy banks of mist and dew, and thus considerably drier, the species did not occur, so far as we could ascertain during the month spent in this area. Had it been there we were bound to have noted it. Another factor which doubtless has some bearing on its distribution on the hills is that at this northern end, the two principal plants on which it fed, namely a species of *Leonotis*, was only very rarely represented, and the giant *lobelia*, which did not occur at all. It was not until we began to work the larger middle, and the Great Chyulu forest that it was met with, and at this latter place it was very common. When I first saw the birds a curious impression was conveyed to me: either the birds had salmon-red heads or white ones. Having shot one, the explanation was forthcoming: the colour of the head was due to the pollen of the two flowers on

which the birds fed, *Leonotis* giving the red, and *Lobelia* the white or yellowish.

At all times of the day, but particularly in the early mornings or toward late afternoon, dozens of these birds could be seen feeding on the two plants along the forest edges at 5,500 to 7,200 feet. Like many of the larger Sunbirds they are quarrelsome and drive each other off when intentionally or not two birds came too close to one another. The *Leonotis* and *Lobelias* in this place grow to an immense height, often 15-25 feet and more, and they were in bloom throughout the two months we were resident at the middle and south end. There was thus ample opportunity for observing these birds. They were by no means restricted to feeding on the two plants mentioned, for one often saw them as members of a "drive" through the forest canopy; under such circumstances, they were feeding entirely on insects and spiders. Examination of many stomachs showed the food to consist of the two just mentioned, and nectar. A few nests were located, and all were within the forest but usually high up on an exposed twig at the end of a branch overhanging an edge of a clear patch in the forest. One nest was suspended from the end of a giant fern frond. No eggs were seen, only nestlings, and these were probably of a second brood, for most of the young birds were on the wing (May). The nest conformed to those of the race *changamwensis* which I had previously taken at the coast.

It was my custom to take a stroll along one of the numerous cuttings I had made through the forest just about sunset, in order to observe various birds about to seek their roosting places. This species seemed to exhibit a preference for well-leaved saplings where complete protection could be obtained from the bitterly cold wind and dense mist which usually came over just after sunset. One favourite spot occupied nightly by a pair was in the top of a dense clump of tall *Piper*, the large leaves of which gave ample shelter. I might mention in passing that several species of birds which hunted in the canopy resorted to the mid and undergrowth for sleeping purposes, conspicuous amongst such were the *Zosterops*. There was always much commotion before they went to roost. The roosting place would be visited, flown away from, and revisited several times before they finally settled down.

TAXONOMIC NOTE.

In order to appreciate the position of these birds in relation to the other races present in Eastern Europe, I have arranged my series, some 200 specimens, in groups representing their distribution. I have also had before me the recently published

views of J. Vincent (*Ibis*, 1934, pp. 85-92). On reading his remarks regarding the hitherto unquestioned race *changamwensis*, Mearns, I am left with the doubt as to whether he had a series representative of this race; for whereas he mentions his comparative material in the case of other races, he here refers to the original description only and not to material. Under the circumstances I am not satisfied with the conclusions he has come to regarding the "sinking" of *changamwensis* under the race *olivacina* of Peters from Inhambane. When we turn to his remarks regarding Neumann's race *neglecta* of Kibwezi, we find he has adopted a rather dangerous procedure in assuming that birds from Usambara, his only comparative material, are identical with Kibwezi specimens. Those who know the type of country round Kibwezi and thus have an idea of the ecological factors of the region, are not a little surprised that Usambara birds, which, as Vincent tells us on the authority of Moreau, "are never seen out of the rain-forest," but see Moreau, *Ibis*, 1937, p. 333, should be accepted as typical of birds inhabiting *not* rain-forest, but forests composed largely of *Acacias*, *Figs*, *Commifera*, *Euphorbia*, and a few other species only along the water courses or lava flows, and at the most can only be termed closed forest of a specialised type. We can assume then that he had no topotypical material of *neglecta* for this critical analysis.

Through the kindness of Mr. Kinnear of the British Museum, I have now had the opportunity of examining material collected by Vincent, and identified by him as *olivacina*, Peters, from Mozambique Prov., P.E.A.

I am entirely satisfied that *olivacina* is more washed with greenish below, less greyish, than *changamwensis*, Mearns; furthermore, the head-mantle colour of *olivacina* is purer green, less tinged with olive.

I therefore support *changamwensis* as a good race, and thus disagree with Vincent, who sinks this into *olivacina*. Moreover, through the great kindness of Mr. Moreau, I have been able to examine a series of Olive Sunbirds from the Pugu Forest, west of Dar-es-Salaam (thus from a locality cutting in between *olivacina* and *changamwensis*) and from Mafia Island.*

Although these agree with *changamwensis* in the greyish, less green-wash of the underside, they differ in being darker green on head and mantle and the bills are shorter, more robust and straighter for the basal half, then turn down, whereas *changamwensis* has the curve starting at the forking of the lower mandible; thus more curved, and it is more slender.

* This race is being described by me in the *B.B.O.C.*

The Chyulu birds are not *neglecta* of which I have topotypical material as well as material from nearby similar areas. They are darker purer greyish-olive-green, not olive-green with a yellow tinge; the head is darker than the mantle; the blackish areas on the primaries and secondaries are blacker, less brown-tinged; the margins of these and the coverts are purer green; the tails differ in the same respects as the wings; the cheeks are darker green with very little flecking; the under-surface is clearer grey on the belly, with a yellowish wash centrally, and greenish on the flanks; chin and throat washed yellowish-green.

Type: Male, Chyulu Mts., 14/7/38, 7,000 feet. Coryndon Museum Expedition, 1938. Forty skins, 6,000-7,200 feet. A montane race, inhabiting the mist-evergreen forests of the Chyulu Mountains. Wing measurements: Males, 62-67 mm.; av. 65 mm. Females, 56-60 mm.; av. 57 mm.

ANTHREPTES COLLARIS nr. **TEITENSIS**. Yellow-breasted Green Sunbird.

This species was very scarce on the range. Why, it is difficult even to suggest. Two specimens only were obtained from the canopy of a large forest tree.

While dealing with Sunbirds, I should like to take this opportunity of directing attention to the probability that *Anthreptes yokanae*, Hartert, described from a very long series taken at Rabai, Kenya Coastal Forest, is allied to *GUNNINGIA REICHENOWI*, Gunning, described from Beira, *Jrl. S.A. Orn. Union*, 1909.

It will be remembered that Roberts proposed the new generic name for the bird originally described as *Anthreptes*.

PLOCEIDAE.

DINEMELLIA DINEMELLI. White-headed Buffalo-Weaver.

Only found in the drier parts of the range such as on the low lava flows at 4,000-5,000 feet. A few flocks were seen and a couple of specimens procured. They are very much darker, blacker on the back than any of a long series of 40 skins from elsewhere. We know, of course, that these birds are very liable to staining by soil, especially laterite earth which browns them readily, but these birds are very dark on the mantle and pure white below.

PLOCEUS REICHENOWI REICHENOWI.

Reichenow's Masked Black and Yellow Weaver.

This was a very common species all along the forest patches throughout the range. A large number of birds were in the sub-

adult plumage. Two young in nestling plumage were secured, 18/5/38; the remainder of the series are adult males and females.

These birds are almost as active as Warblers and other mainly insectivorous birds, in their search for insects, and one found on examination of stomachs, that fully sixty per cent. of the food taken consisted of insects and spiders, and numerous moth larvae. One noted the birds scanning the beard-moss and lianas for insects. The species was recorded from 4,000-7,000 feet.

PLOCEUS NIGRICOLLIS MELANOXANTHUS.

Black-mantled Weaver.

Very few of this species were noted, most of them at the forest edges. The stomachs contained mainly insects. The male has rather more chestnut wash over the breast than usual.

PLOCEUS OCULARIUS SUAHELICUS.

East African
Spectacled Weaver.

A common species found to be plentiful in the open bush and lesser forest patches from 4,000-6,000 feet. Here again, insects were very largely consumed as well as green shoots and small berries.

ANAPLECTES MELANOTIS. Masked Red-headed Weaver.

A few of these birds were noted amongst the *Erythrina* trees on the range at 4,500 feet, but they were numerous on the plains below at 3,000 feet, not in flocks, but in pairs or singly. I have noted them as nesting in the Kilimanjaro area in January-February.

AMBLYOSPIZA ALBIFRONS UNICOLOR. Coast Grosbeak
Swamp Weaver.

This species was seldom noted on the higher portions of the range but was plentiful in the old cultivations at the foot of the hills and nested in the valleys where "bamboo" grass up to 10 feet high covered the depressions. One found them at the water-drip in the afternoon about 4 o'clock in association with other weavers and finches.

EUPLECTES CAPENSIS XANTHOMELAS. Yellow-rumped
Bishop Weaver.

Was noted in small companies on the lower slopes and lava flows and each evening at the water-drip. The highest level where these birds were seen was at 6,500 feet in a shallow valley where tall bamboo grass was plentiful. Several immature of the season just over were present in the flocks. All the males were in full plumage with the exception of one sub-adult which was moulting in the yellow rump feathers. Two females are in heavy moult.

QUELEA QUELEA INTERMEDIA. Masked Weaver Finch.

Very few were seen, and these had come up to drink at evening. Many were noted in the valley below and around the old plantations.

CRYPTOSPIZA SALVADORII CHYULUENSIS. Subsp. Nov.
Chyulu Crimson-wing Forest Finch.

This forest Finch is one of the most difficult birds to collect, yet it is comparatively common. When the first two specimens were taken, I at once observed that they were very much darker than any race I had hitherto examined, and a very close look-out was kept for further material. My previous experience has been that where one has obtained this species in a given spot, one can count on obtaining others. Two weeks elapsed before we located them again, and by noting carefully what these birds were feeding on (grass seeds obtainable only in forest or forest edges, mainly species of *Setaria*) we subsequently procured a very long series from places where we had noted these grasses growing in abundance, in more or less open places in the dense forest. One had to approach these spots slowly and carefully for these birds take fright easily and slip up into the mid-growth and one would never guess that they were in the vicinity. They were very much more numerous in the Great Chyulu forest than in any other part of the range. The only note one heard them utter was a low "chip-chip" as they flew off when disturbed. On no occasion did one see these birds fully exposed except when one had noted them slipping up into the mid-growth; they fed on the lower sprays of grass seed which had bent over amongst the leaves. I had noticed a similar behaviour with the Kenya highlands race wherever I have met with it. The species occasionally appear in the museum grounds where remnants of the old forest still survive. As soon as the birds are disturbed, they go up into the thick foliated mid-growth. Moreau (*Ibis*, 1933, p. 411) states that the species *Reichenowi sanguineolenta=ocularis* disappears "into the thickest ground-cover," and presumably stay there, for he adds "they do not appear to rise more than a dozen feet above the ground except when visiting their nests." No nests of the Chyulu birds were found, but that of *S. ruwenzori* is built of grass and tendrils, and formed into a ball slightly longer than broad with an opening towards the top and side, and situated hardly more than 6-12 feet up in saplings or sometimes in lianas. The nesting season must have been over by the first week of May, for we only observed young in first nestling plumage during May to July. They are paler, more buffy below and have much less crimson on the back and wings than adults; they are very like the race *borealis* of Mt. Uruggess.

TAXONOMIC NOTE.

I have already alluded to the fact that the Chyulu birds are very much darker below than the race of the Kenya highlands and Uganda, all said to be *ruwenzori*. In addition they are very much darker on the head, more greenish; and the crimson areas are richer. The colour of the abdomen, crissum, and under tail-coverts is darker. They are thus nearest to the recently described *kilimensis*, Sclater and Moreau (*B.B.O.C.*, Vol. iv, p. 13), but they are even darker than that race, six examples of which have been examined by me. Type: Male, Chyulu, Camp 3, 6,800 feet, 30/6/38. Coryndon Museum Expedition, 1938. Paratypes 26 specimens.

LAGONOSTICTA RUBRICATA HILDEBRANDTI.

Black-vented Fire Finch.

These Fire Finches were noted in the lesser forests and on the forest edges where particular grasses were in seed. A female obtained on 8/5/38 was heavy in egg and was about to lay. This was one of the few birds which, at the beginning of our visit, was still nesting. A male obtained on 17/7/38 had enlarged but softening testes. Noted from 4,500 to 6,500 feet.

TAXONOMIC NOTE.

A very careful survey of these little finches will have to be carried out in order to arrive at a correct idea of their relationship. Not the least important point in working out distribution and species will be environment. There are at least four names devised for the larger Fire Finches of Kenya, including Kilimanjaro. A point which must be kept in mind is that there are two groups, one associated with forest land, the other with dry thornbush, thus it will be necessary to ascertain the exact type locality and have a knowledge of the ecological factors of that place. For example, we have the name *hildebrandti* applied to a bird taken in Ukamba, a district of several hundred square miles with varying altitude, climate, and vegetation. I have provisionally placed the Chyulu birds as this race: Moreau does the same for the Usambara birds. The two species, of which there are many within Kenya and Uganda, are *rubricata* and *jamesoni*.

COCCOPYGIA MELANOTIS KILIMENSIS.

Grey-headed
Grass Finch.

Several small companies, parents with young, were noted on the edges of the forest at 4,500 to 6,500 feet, feeding on grass seeds. One sometimes found them in the middle of a forest where there was an open space and grass. They were also noted in deserted "shambas."

ESTRILDA ASTRILD MINOR \gtrsim MASSAICA.

Red-eyebrowed Grass Finch.

Several small flocks were noted at several portions of the range, but they were most numerous in the old cultivations on the eastern side. 4,000-6,500 feet.

ESTRILDA RHODOPYGA CENTRALIS.

Buff-breasted
Grass Finch.

This species was invariably found at lower levels than the previous one, that is, it did not range so high, and no birds were noted above the 4,500 line. It was, however, very numerous at 3,000 feet. My experience has been that this species is to be found most frequently in the open grass country where scattered clumps of bush occur around which certain grasses are associated. I have noted them to be very partial to the "sticky grass" which frequently overgrows deserted cultivations.

ESTRILDA CHARMOSYNA KIWANUKAE.

Black-faced
Grass Finch.

In the *Erythrina* associations where grasses had grown to a considerable height, owing to the shelter and protection afforded, several pairs of this finch were flushed on different occasions. They do not associate in flocks, and at the most one may see half a dozen birds together; parents with young. The nest of this bird is very similar to that of other *Estrilda*, but I have not noted the super-structure so frequently found in *E. estrild*. Placed very low in a bush surrounded by grass, these nests are much more hidden than those of other species. The eggs are pure white; usually four in number. The hen bird sits very close.

FRINGILLIDAE.

POLIOSPIZA ANGOLENSIS REICHENOWI.

Yellow-rumped Grey Serin.

This species was plentiful in the lower and intermediate zones of the hill where they were noted feeding on the seeds of certain composites, including *Bidens*. They were also noted to feed on the half-formed seeds of the wild Blue Lupin. Altitude range 3,000-5,000 feet.

SPINUS CITRINELLOIDES CHYULU. Subsp. Nov.

Chyulu Grey-faced Serin.

Hitherto the nearest relative of the Chyulu bird was recorded from Kilimanjaro and Usambara south to Nyasaland under the name *hypostictus*, Reichenow, type locality Moshi. I

found the species to be numerous on the Chyulu Range at altitudes of 4,000-7,000 feet and a long series was collected. At the lower limits of its distribution it was scarce, but at 5,000 feet, pairs and small companies were numerous, feeding on the seeds of a wild sunflower and other composites; it was only slightly less abundant at 6,500 all along the edges of the forest where these composites grew in profusion. Two nests were found in small *Erythrina* trees growing at the edge of a valley forest; almost fully fledged young were present, so this bird may be considered one of the late breeders on the range.

TAXONOMIC NOTE.

These birds were plentiful on the Chyulu Range at altitudes varying from 4,000-7,000 feet, and were most numerous at the 5,000 level. I have compared them with topotypical *hypostictus* of Kilimanjaro, and the following is a comparative description.

Allied to the race *hypostictus*, these Chyulu birds differ in the much richer yellow underparts, with hardly any paling off of the yellow on the abdomen and crissum; that whilst the breast is not so heavily streaked, the yellow of the throat goes further toward the chin; the grey of the chin and the fore-part of the face is darker, and more restricted. The ear-coverts are darker green. The green of the crown and mantle is purer, and the dark streaking is, on the whole, narrower. The rump and upper tail-coverts are more yellow.

With the exception of one male which is a partial albino, the series is uniform.

Type: Male, Chyulu Range, 24/4/38, 6,560 feet. Coryndon Museum Expedition, 1938.

Remarks: Nine males, eight adult females, and two sub-adults were collected. The wing measurements are as follows: Males, 65-70 mm.; females, 63-67 mm., thus very similar in size to the Kilimanjaro race.

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ERRATA.

Page 3 line 5 for piptedenia read piptadenia.

- , , , 9 , sterculea , sterculia.
- , 5 , 2 , capensis , capense.
- , 9 , 8 , candalabra , candelabra.
- , 14 , 45 , months , weeks.
- , 18 , 17 , artemesia , artemisia.
- , , , , indigophora , indigofera.
- , 61 , 11 , erythrocooccus , erythrocoocca.

Pages 54,61,69, for rapania read rapanea.