

TANGANYIKA NOTES AND RECORDS

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Infra-red photo by W.H.R.

View up the Olduvai Gorge showing the Pleistocene beds on both sides
(see page 49, *Prehistory in Tanganyika*)

In Memoriam

C. F. M. SWYNNERTON

B. D. BURTT

“SWYNNERTON OF AFRICA” and his young friend and assistant, B. D. BURTT, are no longer among us. Fate, inexorable as always, cruel as so often, has let them crash to death in the thorn of Central Tanganyika while they were out, as so many times before, to add to their ever growing store of knowledge of the country's vegetation. To the very last moment, as proved by the films of their undamaged camera, they had been devoted to the noble task of observing nature's secrets with the ever present aim of contributing to the betterment of man's environment. There can be no doubt that neither of these keen workers was as yet ready to die. Too many problems, only partly solved, lay still ahead of them. But if the end had to come, there can equally be no doubt that the way in which they died—the sudden and quite unexpected change from the light of Africa's wide vistas, from the air to the darkness of the beyond—was just the one both would have wished. This and the reasonable certainty that death must have been instantaneous, are the only, though small, consolations for the many admiring friends they left behind.

Of Swynnerton's many fine characteristics it is impossible to give a concise appreciation. One must have had the privilege of his friendship and the opportunity of exchanging views with him, to realize what a rare combination he was of so much that is good and noble. Foremost stood his unselfishness and modesty which, coupled with a most versatile mind accustomed to use the intimate grasp of detail for the purpose of building up far-reaching visions, produced that atmosphere of charm which fascinated all who came into contact with him. His great heart and mind, encased in a body full of robust energy, drove him on along the self-chosen path of an enthusiastic fighter, not only against fly, but against the probably more difficult and innumerable obstacles that so many who would not, or could not, understand him, were wont to put in his way. And all this is the more remarkable as the robust energy did by no means emanate from a robust health. In fact, he was frequently the victim of all sorts of tropical diseases, and the story went round among his intimates that he only overcame all these illnesses because he had mastered the secret of getting himself simultaneously infected by at least two different armies of “bugs” which, fighting and annihilating one another, left his own body triumphant as the *tertius gaudens*!

Of his many visions of the future none seems to have been more far-reaching and more promising to the masses of African mankind than the one which foresaw the occupation of the vast, now tsetse-infested, wastelands by a population much less dense and therefore much less harmful to soil and water than that of a density necessary to create and maintain those cultivation steppes which are the curse of semi-arid Africa. The fulfilment of this great aim he was not allowed to see, and one cannot conceive of a better monument in his honour than to persevere on the basis of this, his greatest vision.

"B. D." one cannot sum up better than by saying that he was a most worthy disciple of his master. Imbued with the same love for nature, with the same boundless energy, of a quick-grasping mind, he was uniquely fitted for his main task, that of studying, coordinating, classifying East Africa's many vegetation forms. And welding all these qualities together into a charming personality was his exuberant youth which endeared him not only to his contemporaries but also to us old ones. Nothing was more invigorating to an elderly mind, liable to get rusty, than a long day with him in the field, and the less the young and the old saw eye to eye regarding many unsolved problems the greater the fun! One cannot enough deplore Burt's far too early departure. For with him went—for ever—what must have been a constantly germinating and growing store of knowledge which, during his short span, he had not had time to make available to mankind, so badly in need of it. His many mountain ascents, besides greatly enriching our knowledge of East and Central Africa's mountain flora, were wonderful feats of endurance; he was the first to scale, within the short spell of a week or two, all the eight and mostly forbidding peaks of the Virunga volcanoes to the north of Lake Kivu.

Although neither of the two irreplaceable dead had found time—how could they, in their over-full lives?—to contribute to *Tanganyika Notes and Records*, their interest in this venture was always keen, and there is at least some little satisfaction that the number saddened by this obituary notice contains the first long paper by Bryan Swynnerton, the master's second son; a work which reflects his father's great love for and vast knowledge of African birdlife. It was on the very last occasion when I saw my old friend and co-worker that he entrusted to my care this manuscript of which he was so justly proud; his sinewy frame bent over my desk, his sparkling eyes so full of life, his mind bubbling over with a thousand thoughts. How he would have loved to see it in print.—C.G.

A Key to the Recognition in the Field of two hundred and sixty of the Commoner Birds of Tanganyika

By Brian Swynnerton

I Introduction—II Classification—III How to use the Key—IV Key to the Genera—V Key to the Species—VI English migrants that visit Tanganyika—VII Nesting habits as an aid to identification

I.—INTRODUCTION

THIS paper is an attempt to introduce its readers to a few of the commoner East African birds. As in England we know our black-birds, thrushes and robins, so in Tanganyika we should know our bulbuls, drongos and rollers. It is not a paper for the ornithologist, but for those who would like to know the names, English or scientific, of a few common birds that they see every day.

There are many far better qualified than I am to deal with this subject, and what we need is a book by one of these, but until that appears this may be of use.

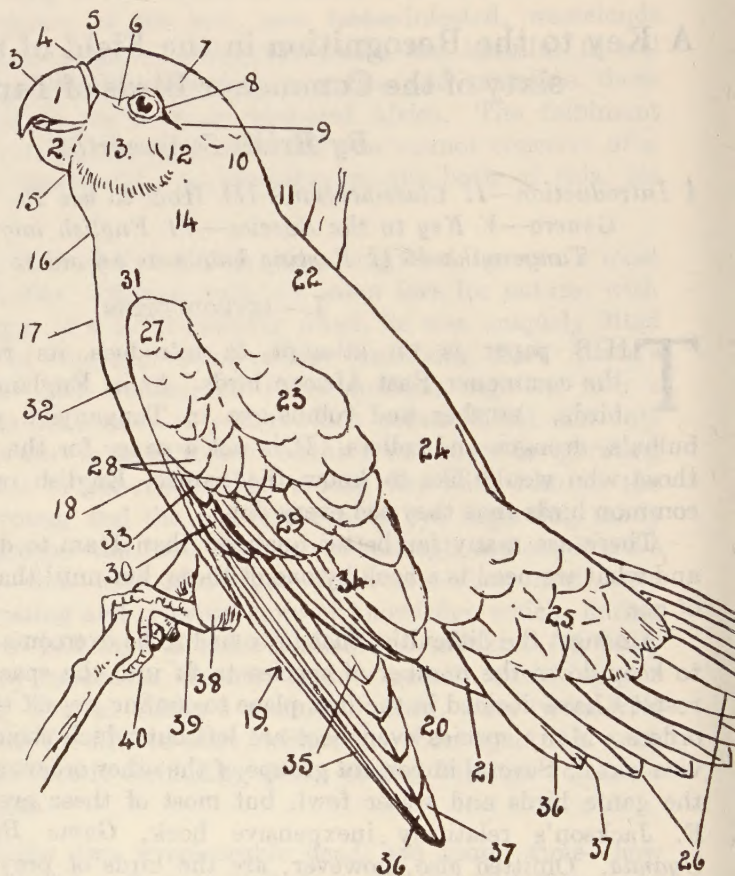
Amongst the difficulties that have had to be overcome the greatest has been to keep down the number of species to fit into the space of an article. As a result I have decided in the first place to confine myself to three of the natural orders. Many species even here are left out which should be in and perhaps vice versa. Several important groups of the other orders are omitted, including the game birds and water fowl, but most of these are to be found in Sir F. Jackson's relatively inexpensive book, *Game Birds of Kenya and Uganda*. Omitted also, however, are the birds of prey and most rainforest birds, as are groups of species that are not easy to distinguish from each other in the field, such as the numerous larks, pipits, grass-warblers and nightjars. I have been tempted on the other hand to include a very few striking birds which are less common.

It is very easy to note the difference between two similar species of birds when one has skins of each, but alive and approachable with difficulty, it is a quite different matter. I have therefore tried here to give mainly the most recognizable features of each species at a distance. Any technical terms used may be found in the diagram on page 6. And, for those who know their English birds well, a list of the English migrants that come here is added.

Before finishing I must thank warmly my father (C.F.M.S.) for the use of his collection and books and for other assistance, Dr V. G. L. van Someren for very kindly going through the paper with me and making final suggestions and corrections, Mr C. H. B. Grant for a very careful study and testing of the finished paper and Mr J. H. Vaughan, M.C., for the labour

PARTS OF THE BIRD

- 1 and 2. Upper and lower mandibles; their junction, or cutting edges, are called the "commissure"
3. Ridge of upper mandible, called the "culmen"
4. Cere
5. Forehead
6. Lore
7. Crown
8. Eye-ring, in some birds eye-wattle (on or just round the eye-lids)
9. The position of the eye-stripe, if any
10. Nape
11. Hind neck
12. Ear-covert
13. Cheek
14. Side of neck, and fore-neck
15. Chin
16. Throat
17. Upper breast
18. Lower breast: from here down is the abdomen
19. To abdomen
20. Vent
21. Under tail-coverts
22. Mantle; hence (inclusive) to 24="back"
23. Scapular
24. Rump



- | | |
|-------------------------------|--|
| 25. Upper tail-coverts | 33. False or bastard wing |
| 26. Tail-feathers or retrices | 34. Secondaries |
| 27. Lesser wing-coverts | 35. Primaries |
| 28. Median wing-coverts | 36. Outer web |
| 29. Greater wing-coverts | 37. Inner web |
| 30. Major coverts | 38. Thigh or tibial feathers |
| 31. Bend of wing | 39. Tarsus |
| 32. Edge of wing | 40. Scutes, or "shields," on toes and tarsus |

34 and 35, between them are the wing-quills. 15 to 21 are "the under-parts."

A casque is a horny excrescence, usually hollow, on the upper surface of the upper mandible.

equally generously undertaken of correcting the proofs; also Stephen Mzingi, native clerk of the Tsetse Research Department, for much work done on this paper in his own time.

W. L. Sclater's *Systema Avium Aethiopicarum* has been drawn on throughout for the names except for a very few of the English ones. Friedmann and Loveridge's *Notes on the Ornithology of Tropical East Africa* has been seen. At the moment before leaving I have been shown Mr E. L. Gill's recently-published *Guide to the Birds of South Africa*. The illustrations by his sister are excellent and despite the differences in the races I think that people in this country might employ it and this key together. The key can be used to give the clue and the identification be verified by looking up Miss Gill's illustration. Then the key for the names of some (by no means all) of our races and such species as are not South African.

As a matter of space, and time, the race differences have usually been indicated by locality rather than by description. Certain inconsistencies in arrangement—which should not inconvenience the reader—have been left through lack of time at the last.

II.—CLASSIFICATION

While this paper is written partly for those who merely wish to know the birds by English names, it is also written for those who wish to begin to take them up scientifically. For the former the English specific names—not the sub-specific, for they will use these more seldom—are given in conspicuous print and to beginners of either kind the following explanation may be useful.

The "Class" *Aves*, or Birds, is divided into "Orders" and these into "Families." Families are divided into genera and each genus is divided into species, or kinds, of birds. But the same species of bird tends to vary in different parts of its range—e.g. in size, or the colour of a particular part. Therefore the species are further divided into sub-species which are mostly geographical races.

Each species is known by two names in combination—that of its genus, placed first, and its own name, commonly adjectival or a genitive, qualifying the generic name, placed second. Example: *Turdus libonyanus* (No. 119 of this paper). In the northern equivalent the more general name comes second: Thus *T. libonyanus* is the "Kurrichane Thrush."

Each sub-species is known by three names, the sub-specific name coming third in the Latin and first in the English. Thus we get *Turdus libonyanus costae*, the "Coastal Kurrichane Thrush." And when the sub-species referred to is the identical sub-species from which the species was first described we get the repetition *Turdus libonyanus libonyanus*, referring here to the form found in Southern Rhodesia and the Transvaal.

Additionally, the name of the describer (usually abbreviated) is placed after the last scientific name used, to indicate that it is the bird described by that name by that person that is referred to, and not some other bird to which the name may since have been wrongly applied to by somebody else. And if

the bird is nowadays placed in a different genus from that in which its "author" placed it, his name is in parentheses. Thus we have "*Turdus libonyanus* (Smith)"—for he named it *Merula libonyana*.

III.—HOW TO USE THE KEYS

To identify a bird in these keys the birds are classified in the "Key to the Genera" (section IV), primarily into categories A, B and C by the shape and length of their tails—a feature easily recognized at some distance.

First decide which of these categories your bird falls into. For instance, if it has a forked tail it will obviously fall into B and into section 13 of that category.

Glance at (a), (b), (c) and (d) of 13. Your fork-tailed bird is larger than Sparrow size and wholly black, hence (d), *Dicrurus*, 148. So in the next section of this paper, No. V, the "Key to the Species", turn to *Dicrurus* 148 and, eliminating 149, you find it is the Savanna—or Fork-tailed Drongo. No. 149 in the "Key to the Genera" figures under C, "tails ordinary."

The choice might have been greater. Thus if your selection should be 4 (b), species numbers 56-60, turn to number 56 and look up at its main heading C, where some general characters are given. If still on the right track look at the next smaller categories, indicated by possessing the same print as each other, (a) and (b), and ask first has it a casque or no casque. If it has a casque you need examine further only Nos. 56, 57, 58. You will find the comparable point of difference between these three species marked by the *same* type of print. No. 56 has a *black* bill, with some white; 57 has a *yellow* bill with orange point; 58 has a *red* bill. Your bird, with a small casque and red bill, is probably the Crowned Hornbill. But confirm or refute this deduction by comparing the description of the plumage. Nos. 56 and 57 are grey, brown and white, 58 is black or nearly so. Choose finally.

In tail-category C there is often unavoidably more than one genus under one heading. An extreme example is (d) of 25. Here you might look first for the distribution of the chestnut. In 92, the little Sparrow-lark, it is confined to the crown and nape. In 125, the Stone-chat, it is a patch on the breast, in the two Robin-chats which are given the whole underside is chestnut-orange (if this is right distinguish next between the White-browed and Orange-capped Robin-chats and the Red-tailed Ant-thrush). In the Spotted Morning Warbler 130 and the Scrub Robins 131-133 it is the tail, rump or both. In 165, the Red-backed Shrike, it is the back and wing-coverts. In *Tchagra* (165, 166) it is merely the wings—proceed to distinguish otherwise between these two. In *Anticromus* both back and wings are chestnut. In *Ploceus* 208, the Chestnut Weaver, it is all deep chestnut except head, throat and part of wings. Cabanis' Bunting is bright chestnut above but its throat and upper abdomen are bright yellow. Rock-Bunting 258 is light reddish-brown below. And there are other distinguishing marks between all of them.

If the reader will follow out these three examples he will have learned to use the key.

* * * * *

To indicate size of body—very approximately—reference is made throughout to the commoner English birds. "Sparrow size," as here used, was possibly influenced by recent familiarity with the Swahili sparrow (No. 206), slightly larger than the English bird. Length including tail is indicated in inches in section V, the "Key to the Species." An "ordinary" tail in the following key is one that is about the same length as the body, not including the head, and has no feathers much more elongated than the rest. Shorter tails are included under this heading also.

Be it noted that none of the birds in these keys are waders, swimmers, long-legged ground-walkers, hawks, owls, night-jars, doves, guinea-fowls, or of the "partridge" class.

IV.—KEY TO THE GENERA

A. WHOLE TAIL MORE OR LESS ELONGATED BUT NOT FORKED

- | | |
|---|--|
| <p>1. <i>The Larger Cuckoos: Cuckoo form and movements, stooping attitudes, slinking habits, etc.</i>—Bill not large for the size of the bird, nor, on the other hand, stumpy. Nostrils raised in the form of a short tube—visible only in the bird in the hand—</p> <p>(a) English Cuckoo size, uncrested. Grey above, barred grey and white below.* One species entirely black</p> <p>(b) English Cuckoo size but crested; black and white (6-7). One species almost entirely black (8). One pale yellow below, slaty, white-spotted above (5)—<i>Distinguish from 4, below (Hornbills), by small bills and by habits, from 5 by bill, size and lack of metallic colouring, from 6 (a) and (b) by size and habits; and from all by "top knot" crest</i></p> <p>(c) Rook size, more or less, uncrested, chestnut wings. Tail broad, wings short and rounded; skulking habits, in long grass—Kiswahili "Tipetipe"</p> | <p>Genus and numbered
References to species</p> <p><i>Cuculus</i> 1-4</p> <p><i>Clamator</i> 5-8</p> <p><i>Centropus</i> 12-14</p> |
|---|--|

*Note that this colouring, and the flight of these cuckoos, is also that of many hawks, which, however, can be distinguished at once from the cuckoos by their short, strongly-hooked bill and their erect attitude when perched.

- (d) Starling size, uncrested. Glossy dark-dusky blue-green above, throat and breast lighter, no gloss below. Skulking habits; in thicket; solitary or in pairs. Distinguish from 8, below, by habits *Ceuthmochares* 15
2. *The Touracos or Louries: green or deep glossy blue with crimson wings, strongly crested, tree-haunters, branch-runners, bold habits and calls—*
- (a) Tame pigeon size; mostly green *Turacus and Gallirex*
17-20
- (b) Same, but crow size, dark metallic blue *Musophaga* 16
3. *The Go-aways: grey and white, strongly crested; conspicuous habits and calls, wood-pigeon size—*
- (a) Grey; abdomen and bar on wings white *Corythaixoides* 21
- (b) Above light grey; green patch on white throat; face black, breast white *Gymnoschizorhis* 22
4. *The Hornbills: enormous Toucan-like bill, plumage black, brown or grey, combined with white; conspicuous habits—*
- (a) Fowl size; bill with large casque on upper mandible. Plumage black and white. Discordant cries *Bycanistes* 54, 55
- (b) Rook size but slighter build; bill large, toucan-like, with or without small casque *Lophoceros* 56-60
5. *The Wood-hoopoes: long thin bill, plumage dark glossy green (or glossy blue-black) below as well as above—Distinguish from Magpie-Shrike, 7 (b) below, by metallic colouring, bill and less white; also see 1 (b) above.*
- (a) Starling size. Bill bright red, slightly curved. Some white on wings and tail. Noisy chatter *Phoeniculus* 62
- (b) Sparrow size. Bill black, thin and strongly curved. With or without white on wings and tail *Rhinopomastus* 63, 64
6. *The Trogons: dense-forest birds. Much glossy green with carmine below* *Trogonidae* 76, 77
7. *The Pied Butcher-birds: bill short, with a hook, plumage black and white, unglossed; Starling size—*
- (a) Black above, white below, some white on wings and rump. One species with much grey above. Perch prominently and erect. Distinguish from 1 (b) (=6-7 of main list) and 14 (b) (=152), each of which see. *Lanius* 155-158

- (b) Black above *and below*; white on flanks, rump and wings; very long tail; magpie-like. In small flocks. Distinguish from (5) above (62-64) by much less metallic gloss, much more white, and short, black shrike-bill
8. *Long-tailed Starlings: Starling size; no white; gregarious, conspicuous habits—*
- (a) Entirely grey, olive gloss on wings and tail }
 (b) Bright glossy green, abdomen bright yellow } *Cosmopsarus* 179, 180
 (c) Dark metallic glossy } *Lamprotornis* 181
 (d) Chestnut on wings } *Onychognathus* 186-187
9. *Smaller birds pied or grey and white—*
- (a) Pied, on ground or roof, Wagtail } *Motacilla* 93
 (b) Much smaller, strongly crested, grey, white and glossed black, tail often fanned out; in dense wooding. Long-crested Fly-catchers } *Trochocercus* 117
10. *Attenuated or plume-like tails, very long: Colies, Widow-birds and Paradise Fly-catchers—*
Sparrow-size or slightly smaller:—
- (a) Grey-brown, sparrow-size or rather smaller, bill stumpy, in small flocks, one species with white head } *Colius* 73-75
 (b) Black, but shoulders (scapulars?) and wing-coverts yellow; or scarlet bar across breast ... } *Coliuspasser*, male 223, 224 and 229
- Smaller still:—*
- (c) Buff and dark-brown. Tail narrowed ribbon-like vertically, with a very large "bustle" at the base } *Steganura* 249
 (d) Pied or steely blue-black, tail attenuated }
 (e) Mainly chestnut or white } See 11 below
- B. ONLY PART OF TAIL ELONGATED, INCLUDING BIRDS WITH FORKED TAILS
11. *Central tail-feathers enormously elongated. Robin size or smaller—*
- (a) Plumage bright chestnut and glossy black or slate, aged male largely white and glossy black } *Tchitrea* 116
 (b) Plumage black and white, black and buff, or entirely dark steel blue. Females brown, short-tailed } *Vidua* 246-248
12. *Two centre tail-feathers narrow and project beyond rest of tail. Much green, or bright blue or carmine—*
- (a) Jay size; much bright blue; bill black, not elongated } *Coracias* 29-30

References to species
Genus and numbered

Urolestes 159

- (b) Thrush size but slenderer; much green or light blue, bill elongated, slightly curved; tinkling note. Bee-eaters Genus and numbered References to species
Merops and *Aerops* 44-49
- (c) As (b) but much carmine *Merops* 45
13. *Forked tails*—
- (a) As 12 (b) above, but *outer* tail-feathers elongated, forming a "swallow-tail" *Dicrocercus* 50
- (b) Swallows and Martins *Hirundo*, *Ptyonoprogne* and *Psaldiprocne* 138-144
- (c) Swifts. Wings long, thin and sickle shaped, on wing continually. In one case tail not forked *Micropodidae* 65-72
- (d) Drongos. Larger than Sparrow size; wholly black: Bold habits and cries, perch conspicuously *Dicrurus* 148

C. TAIL "ORDINARY" (e.g. AS IN THRUSH AND SPARROW)

14. *Black entirely*—
- (a) Small Crow size *Corvus* (Lesser Cape Rook) 178 (b)
- (b) Starling size *Bubalornis* 204
- (c) Sparrow size, less or more *Dicrurus* 149, *Melaenornis* 109, *Campephaga* 145, *Laniarius* 160, *Hypochera* 241, 242
15. *Black and white*—
- (a) Turkey size (skin on face red) *Bucorvus* 53
- (b) Crow size *Corvus* and *Corvultur*, Crows and Ravens 177, 178, 178 (c) (black and grey)
- (c) Starling size *Laniarius* 158, *Bubalornis* 204 (Kenya form); *Ceryle* 34.
- (d) Sparrow size, larger or smaller *Thamnolaea* 123, 124; *Dryoscopus* 162, 163; *Buccanodon* and *Tricholaema* 83, 84
- (e) Smaller *Bias*, *Batis* and *Platysteria* 110-115, *Nilais* 153
- (f) Swifts, 68, 71 and see 69 also see B 13 (c) above
16. *Black and yellow*—
- (a) Thrush size *Oriolus* 173-176
- (b) Around Sparrow size *Ploceus* 211-221, *Euplectes* 222 and *Coliuspasser* 223-224
- (c) Much smaller *Pogoniulus* 86
17. *Black and red*—
- (a) Larger than thrush *Lybius* 82, *Laniarius* 171

- (b) Around Sparrow size *Lybius* again 78 (and see 81), *Laniarius* 172, *Euplectes* and *Urobrachya* 225-229
- (c) Smaller *Cinnyris* 201
18. *Metallic-glossed plumage*—
- (a) Thrush size, green (but tail longish) *Apaloderma* 76, 77
- (b) Starling size, violet, glossy blue-black *Spreo* and *Lamprocolius* 184-188
- (c) Wagtail size, green, bronze or violet *Chrysococcyx* and *Lampromorpha* 9-11, *Cinnyricinclus* 183 (violet)
- (d) Very small *Nectariniidae* (Sunbirds or, South African term, "Honey-suckers") 192-203
19. *Entirely or with much yellow*—
- (a) Thrush size *Oriolus* 173-176, *Malaconotus* 169, *Macronyx* 96
- (b) Sparrow size, less or more ... *Ploceus* 211-221, *Chlorophoneus* 168, *Trachyphonus* 79, *Emberiza* 255-257, *Metothylaceus* 95
- (c) Smaller *Zosterops* 190, 191, *Serinus* 250-251, *Poliospiza* 252
20. *Mainly black or dark brown, with areas or markings of other colours*—
- (a) Thrush size or nearly *Turdus* 119-121, *Sigmodus* 151, *Turdoides* 98-100, *Amblyospiza* 209
- (b) Large Sparrow to Robin size *Thamnolaea* 123, 124, *Pycnonotus* 102, *Oenanthe* 122
- (c) Smaller *Spermestes* 243, *Amauresthes* 245
21. *Mainly green, not glossy*—
- (a) Much bright green, bill long and curved. Some Bee-eaters *Melittophagus* 51, 52
- (b) Much bright green, bill short and thick. Parrots and Love-birds *Poicephalus* and *Agapornis* 24-28; and diagram on page 6 is *Agapornis*
- (c) Thrush size *Nicator* 169, olive
- (d) Sparrow size, dull green or dusky-olive—
- Honey-guides *Indicator* 89, 90
- Green Bulbuls *Pycnonotidae* 103, *Buccanodon* see 103

- (e) Very small *Zosterops* 190-191 and (larger) the Olive Sunbird, of dense forest, not described here
22. *Much bright blue*—
- (a) Kingfisher type Larger, *Alcedo* 38, and *Halcyon* 39-43; very small, *Ispidina* and *Corythornis* 36, 37
- (b) Jay size, *Coracias* 31-32: contrast tail with 29 and 30
- (c) Very small, brown above, blue below *Uraeginthus* 238-240
23. *Much white, grey, or both*—
- (a) Parrot, large grey *Psittacus* 23
- (b) Thrush size *Coracina* 146, 147, *Eurocephalus* 154, *Dinemellia* 205 and *Turdoides* 100
- (c) Sparrow size *Passer* 206, *Prionops* 150 and *Knestrometopon* 152, *Alseonax* 105, *Plocepasser* 207.
- (d) Wren size *Sylvietta* 134
24. *Much dull or grey-brown*—
- (a) Starling size *Creatophora* 182, *Turdoides* 98-100, *Buphagus* 189
- (b) Sparrow size *Passer* 206 and many *Ploceidae* females (as 221-229 *Indicator* 88-90, *Alaudidae* 91, *Anthus* 94, *Phyllastrephus* 193, *Cichladusa* 129, *Pycononotus* 102, *Muscicapidae* 104-108
- (c) Smaller *Sylviidae* 134-136, female sunbirds 192-203, *Eremopteryx* 92, and the smaller female Weavers—as 246-249
25. *Much chestnut, cinnamon or rufous*—
- (a) Jay size, mauve-purple below *Eurystomus* 33. Blue-black *Onychognathus* 177, 178
- (b) Crested, ground bird, long slightly curved bill *Upupa* 61
- (c) Starling size *Argya* 101, *Neocossyphus* 126
- (d) Sparrow size, more or less *Saxicola* 125, *Cossypha* 127, 128 and *Thamnolaea* 123, *Cichladusa* 130, *Erythropygia* 131-133, *Lanius* 164, *Tchagra* 165, 166 and *Ploceus* 208, *Antichromus* 167. Much on ground *Emberiza* and *Fringillaria* 256, 258

- (e) Very small in long grass in
flocks *Spermestes* 244
26. *Some conspicuous red*—
- (a) Thrush size *Trachyphonus* 79-80, *Apaloderma*
76, 77, *Laniarius* 172, *Dinemellia*
205, *Macronyx* 97
- (b) About Sparrow size *Lybius* 78-87, *Picidae* (Woodpeckers
not described). *Anaplectes* 230,
Quelea 231 and *Euplectes* 225-228,
Laniarius 171
- (c) Very small *Pytilia*, *Lagonosticta*, *Hypargos* and
Estrilda 231-237, *Pogoniulus* 85
27. *Black breast-band*—
Ceryle 34, *Batis* and *Platysteria* 110-115, *Lybius* and *Trachyphonus* 78-80,
Laniarius 171, *Macronyx* 95-97, *Oenanthe* and *Cichladusa* 122, 129.

V.—KEY TO THE SPECIES

(Having first found the genus under IV)

ORDER—CUCULIFORMES, THE BIRDS FORMED LIKE CUCKOOS

I. Family—*Cuculidae*—The Cuckoos

Size and colouration most varied, but build and movements of all much like that of the European Cuckoo: forward-leaning attitude.

A. *Parasitic, larger, 13-15 inches. Tail long*

(a) *Not crested, appearance and general habits of the European Cuckoo—slaty above, barred below:*

1. *Throat grey*, in female slightly washed with rufous. Above slaty grey; *bill black*; length 13-14 inches—*Cuculus canorus canorus* Linn., the EUROPEAN CUCKOO, as a migrant.

2. The same but *bill yellow, tip black*—*Cuculus canorus gularis* Stephens, the AFRICAN CUCKOO, a resident.

3. *Throat strongly rufous*; above dark slaty grey; length 12-13 inches. A three-syllabled "whippoor-will"-like whistle (translated by the Dutch "Piet-mij-vrouw")—*Cuculus solitarius* Stephens, the RED-CHESTED CUCKOO.

(b) *Not crested. Black:*

4. Entirely black, 13 inches; slow three-syllabled cry from top of tree—*Cuculus clamosus* Lath., the BLACK CUCKOO. Distinguish from *Clamator serratus* (Sparrm.) below, No. 8.

(c) *Strongly crested, not black and white:*

5. Above slaty brown, head grey, feathers of scapulars, wing-coverts, secondaries and tail-coverts white-spotted, upper breast pale yellow, abdomen white; length 15 inches—*Clamator glandarius* (Linn.), the GREAT SPOTTED CUCKOO, a migrant, October to March. Excited, scolding cry.

(d) *Strongly crested, black or black and white, in each case with white bar across wing :*

6. Black above, white or pale grey below ; length 13·5 inches—*Clamator jacobinus* (Bodd.), the BLACK-AND-WHITE CUCKOO.

7. Black above, less intense in the female, white strongly streaked with black below ; length to 15 inches—*Clamator cafer* (Licht.), LEVAILLANT'S CUCKOO. In undergrowth, retiring.

8. Black above and below, length 14·4 inches—*Clamator serratus* (Sparrm.), the BLACK-CRESTED CUCKOO, of doubtful occurrence in Tanganyika.

B. *Parasitic, smaller ; wagtail size—7-8 inches ; metallic green or coppery above. Tail ordinary*

9. Throat green, rest of under surface yellow, every green feather a separate gem, loud, clear note, length 8·12 inches—*Chrysococcyx cupreus intermedius* Hartl., the male East African EMERALD CUCKOO.

10 and 11. Throat not green ; below never yellow but white, barred or partly barred with green, length 7·0 inches, (10) KLAAS' CUCKOO—*Lampromorpha klaasi* (Stephens), and (11) DIDRIC CUCKOO, *L. caprius* (Bodd.)—length 7·5 inches. The former has metallic green patches on the sides of the breast which the latter lacks. Females of *cupreus* (Emerald Cuckoo) barred with rufous above, *caprius* (Didric) above unbarred, coppery, young barred ; each species narrowly barred below, *cupreus* with green. Klass' Cuckoo occurs higher up the mountains than the Didric. Didric Cuckoo's note—"dee-dee-dee deediric !"

C. *Non-parasitic, large, chestnut back and wings, tail long, heavy ; loud, liquid, bubbling note—"gu-gu-gu-gu-gu-gu", etc. Skulkers in tall grass country with thickets ; large, rough, domed nests in bushes ; Kiswahili name "Tipe-tipe"*

12. Head, neck and underside black ; length 12 inches—*Centropus grillii* Hartl. subsp., the BLACK-CHESTED COUCAL.

13. Head and neck glossy violet-blue-black, underparts white, length 19 inches—*Centropus monachus fischeri* Reichw., Fischer's VIOLET-HEADED COUCAL.

14. A *brownish* bird. Crown brown, strong white eyebrow, nape, sides of neck and upper breast streaked dark brown and white, length 14-15 inches—*Centropus superciliosus loandae* Grant, the WHITE-BROWED COUCAL.

D. *Non-parasitic, smaller, tail long, greenish. Habits similar to Centropus, eggs white*

15. Grey with dark green-blue gloss on back, wings and tail ; without gloss underneath, throat paler ; length 13-13·5 inches—*Ceuthmochares aereus australia* Sharpe, the South African GREEN COUCAL.

II. Family—*Musophagidae*—The Touracos or Louries

General characteristics: Large—rook to tame pigeon size ; long tails ; strongly crested, wings crimson ; bold crowing call—Kurr-kurr-kurr-kurr ; white eggs, dove-like platform nests ; Kiswahili name "Kuru-kuru".

A. Deep metallic blue all over, brown when young; crest in a shock, smallish crimson; rook size, 16-20·7 inches; bill bright orange-yellow, extending back over the forehead

16. *Musophaga violacea rossae* Gould, the CONGO VIOLET PLANTAIN-EATER. Neighbourhood of Lake Victoria.

B. Much green, length 16 to 18 inches; the metallic green *Touracos*

(a) Narrow, upright green crest, laterally compressed; nostrils concealed by feathers, bill therefore appearing short:

17. Crest feathers very long, white tipped. Wings, rump and tail metallic blue-green or green-blue; remainder grass-green, but abdomen blackish; and a little white round eye; bill red, length 17 inches—*Turacus livingstonii cabanisi* (Reichw.), the TANGANYIKA LIVINGSTONE'S TOURACO. Inland to Lake Nyasa in rain-forest.

18. Crest shorter, crimson, rest green and much as in 17—*Turacus fischeri* (Reichw.), the EAST AFRICAN RED-CRESTED TOURACO, length 14-16 inches. Coastal thicket-forests and Usambara rain-forest, not common.

19. Crest short, very dark metallic purplish-blue, as also wings, rump and tail; remainder green with usual crimson; abdomen darker; some white round the eye; bill with green base and reddish tip; length 13-17·3 inches—*Turacus hartlaubi* (Fisch. & Reichw.), HARTLAUB'S TOURACO. Northern rain-forests.

(b) With crest in a "shock", not centrally raised, bill black and conspicuous, the base being unconcealed by feathers:

20. Crest deep metallic purplish-blue, in some lights green. Upper wing-coverts, secondaries and rump grey lilac-blue, non-metallic. Upper tail-coverts and tail deep metallic blue; remainder yellow-green; no white round eye, but some bright metallic green; bill black, length about 16·5 inches—*Gallirex porphyreolophus chlorochlamys* Shelley, the PURPLE-CRESTED TOURACO. Riverine forests and finer Miombo savanna.

C. With much grey, long grey crest; length 18-19 inches

21. Grey except the lower breast, abdomen, a bar across the primaries and a bar across the tail white; rest of primaries, end of tail and some streaks across the upper wing-coverts grey-black; crest feather-like—*Corythaixoides leucogaster* (Rüpp.), the WHITE-BELLIED GO-AWAY. The dry thorn-bush generally.

22. Above light grey; throat and sides of face bare and black. Breast white with a dirty green blotch; abdomen light pinkish-grey; crest hair-like; length 18-19 inches—*Gymnoschizorhis leopoldi* the UGOGO BLACK-FACED GO-AWAY and *G. L. centralis* Neumann, the UGANDA BLACK-FACED GO-AWAY.

III. Family—*Psittacidae*—A. The Parrots(a) *Grey, large; 14 inches:*

23. *Psittacus erithacus* Linn., the big GREY PARROT of captivity, occurs in the north-west of the Territory and in the Kitungulu forest, east of Kasanga on Lake Tanganyika (Loveridge).

(b) *Green, smaller; larger than B (below):*(i) *Rump green:*

24. Green except feathers of head and neck yellowish with brown centres; face and wing-edge sometimes red; mantle, wings and tail dusky-black. Larger, 13-13.75 inches—*Poicephalus rubustus suahelicus* Reichw., the East African BROWN-NECKED PARROT. In the main areas of Miombo wooding.

25. Green all over, with light grey-brown head and neck. Small, length nine inches—*Poicephalus cryptoxanthus tanganyikae* Bowen, the Tanganyika BROWN-HEADED PARROT. The Zanzibar form, with dark brown head, is *P.c. zanzibanicus*.

(ii) *Rump blue:*

26. Head and back dark brown, edges of wing and usually a band across the crown bright yellow, very blue-green below—green-blue in young birds; length nine inches—*Poicephalus meyeri matschiei* Neum., the East African BROWN PARROT. West of Lake Victoria and to Ikoma, the form is nearer *P. meyeri saturatus* Sharpe, the Uganda BROWN PARROT.

B. The Love-Birds—Sparrow Size

27. Green with light salmon-red forehead, throat, upper breast and bill, crown browner green, nape yellower; length 5.5 inches—*Agapornis fischeri* Reichw., FISCHER'S LOVE-BIRD. Often in flocks. From Uzinza and Musoma south to Unyamwezi and Wembere (Friedmann).

28. Green, with the head brown, neck, throat and breast golden-yellow; length about 6 inches—*Agapornis personata* Reichw., the YELLOW-COLLARED LOVE-BIRD. Dry thorn-bush with baobabs. Kenya border to Uhehe.

ORDER—CORACIIFORMES, THE BIRDS FORMED LIKE THE ROLLERS

IV. Family—*Coraciidae*—The Rollers

Jay-sized birds, with much blue, sometimes erroneously called "Blue Jays", with habit of sitting conspicuously on the tops of bushes and trees in open wooding. Back light brown or olive except *Eurystomus* (33). Harsh cries.

A. *With strong black bill and two narrow elongated tail-feathers*

29. With lilac breast, pale blue abdomen and elongated tail-feathers pointed; length 11 inches—*Coracias caudatus caudatus* Linn. the LILAC-BREASTED ROLLER.

30. Below entirely pale blue, elongated tail-feathers expanded at their ends into a small racquet; length 10.5 inches; found in Miombo wooding—*Coracias spatulatus spatulatus* Trimen, the RACQUET-TAILED ROLLER.

B. *With strong black bill but without elongated tail-feathers*

31. Below entirely reddish-lilac, each feather with white central streak, blue confined to rump and side tail-feathers; large—length 14 inches—*Coracias naevius naevius* Daud., the PURPLE ROLLER.

32. Below entirely pale blue, length 13 inches *Coracias garrulus garrulus* Lin., the EUROPEAN ROLLER, common here November-April on migration; in the tree-savannas generally.

C. *With short thick yellow bill and without elongated tail-feathers*

33. Below mauve-purple; above cinnamon-brown, with dark blue on wings; length 10·25 inches—*Eurystomus afer suahelicus* Neum, the SHORT-TAILED ROLLER.

V. Family—*Alcedinidae*—The KingfishersA. *Without blue*(a) *Large Thrush size, 10-11·5 inches:*

34. Habitual hoverer over open water, both fresh water and sea. Above mottled black and white, below white with two black breast bands, only one in female—*Ceryle rudis rudis* (Linn.), the PIED KINGFISHER.

(b) *Nearly Rook size. Length 17 inches:*

35. Above black covered with round white spots, upper throat white, lower throat and breast in male chestnut, abdomen white. In female upper breast closely blotched with dark grey producing similar effect to that of the upper surface, throat white, abdomen chestnut—*Megaceryle maxima maxima* (Pall.), the GIANT KINGFISHER. Wooded streams.

B. *With blue*(a) *Almost wren-like in smallness, light chestnut below with white throat, bill vermillion in adults, length 4-5 inches; usually near streams:*

36. Crested; above mottled dark and light blue—*Corythornis cristata* (Pall.), the MALACHITE KINGFISHER.

37. Uncrested; above, except chestnut nape, rich deep royal-blue. on head mottled—*Ispidina picta picta* (Bodd.), the PIGMY KINGFISHER. Merges southward into the form *natalensis* with a blue spot on the hind edge of the ear-coverts.

(b) *Sparrow size, length 6-7 inches:*(i) *Much blue:*

38. Above blue of mixed shades, mainly cobalt; throat white; rest of under-surface fulvous-buff except for an extension of the blue on the breast from either side; near water—*Alcedo semitorquata* Swains., the HALF-COLLARED KINGFISHER.

(ii) *Appearance streaky, little blue:*

39. Rump, tail and secondaries blue, rest of upper surface blackish-brown except nape white and head streaked brown and white; breast white, faintly,

narrowly barred; flanks streaked; our commonest species—*Halcyon chelicuti chelicuti* Hartert., the STRIPED BUSH KINGFISHER. Insectivorous; found even in driest parts.

(c) *Thrush size, length 8-9 inches:*

(i) *Head brown, much black:*

40. Head brown, back and wing-coverts black; rump turquoise, margins of wing-quills and tail blue, throat white, rest of lower surface and collar light fawn, in female the black browner, blue greener, breast browner—*Halcyon albiventris orientalis* Peters, the East African BROWN-HOODED BUSH KINGFISHER. Insectivorous.

41. Head, nape and upper back brown; mid-back, upper wing-coverts and primaries black, rest of wing, rump and tail rich shining French-blue, deeper than the turquoise of 42 and 43. Throat white; breast tinged brown; abdomen deep chestnut—*Halcyon leucocephala leucocephala* (Müll.), the CHESTNUT-BELLIED KINGFISHER. The coastal form is *H. l. hyacinthina* Reichw.

(ii) *Head light grey; less black, more blue:*

42. Shoulders and primaries black; rest of upper surface light greenish-turquoise blue, except head, greyer. Under surface white, with breast and cheeks pale grey. Upper mandible vermilion, lower black—*Halcyon senegalensis cyanoleucus* (Vieill.), the South African RED-AND-BLACK-BILLED KINGFISHER. A particularly lovely bird.

43. As 42 but blue rather duller; bill entirely deep red—*Halcyon senegaloides* Smith, the MANGROVE KINGFISHER.

VI. Family—*Meropidae*—The Bee-eaters

Long, thin, curved, pointed bill. long pointed wings, swallow-like flight, hawking for insects in the air or perching conspicuously; note a bell-like tinkle uttered while flying.

A. *Two central tail-feathers elongated, pointed; commonly in flocks; length about from 9 to 10 inches*

(a) *Not green below:*

44. Top of head and sometimes secondaries chestnut, latter tipped blackish, forehead pale blue, throat yellow, rest of under surface pale blue; length about 9·4 inches—*Merops apiaster* Linn., the EUROPEAN BEE-EATER, here on migration October to March.

45. Carmine except for head and throat blue and blackish-green (effect dusky peacock), vent and rump turquoise; length 10 inches—*Merops nubicus nubicus* Gmel., the Nubian CARMINE BEE-EATER.

(b) *Green below:*

46. Bright olive-green above, under side, light bluish-green, chin yellow, lower throat chestnut brown. Forehead and streaks above and below eye pale greenish-blue; length 10·5 inches—*Merops persicus persicus* Pall., the BLUE-CHEEKED BEE-EATER, on migration.

47. Duller, top of head dark brown; streak under eye white, prominent. Otherwise similar to 46—*Merops superciliosus* Linn., the MADAGASCAR BEE-EATER.

48. Top of head black, eyebrow and throat white, back and wings green, in part washed with russet, rump blue, under side bluish-green, white in the middle—*Aerops albicollis major*, Parrot, the Eastern WHITE-THROATED BEE-EATER.

49. Crown cinnamon rufous, cheeks and throat paler; above generally grass green, rump and upper tail-coverts washed with blue; rest of under surface green—*Aerops boehmi* (Reichw.), BOEHM'S BEE-EATER.

B. *Outer tail-feathers elongated, the whole forming a swallow-tail.*

Not in flocks

50. Above and below bright golden-green; rump and under tail-coverts cobalt, tail dull blue. Throat yellow with a collar of blue. Black band through eye. Length 8.5 inches—*Dicrocercus hirundineus hirundineus* (Licht.), the SWALLOW-TAILED BEE-EATER.

C. *Without individually elongated tail-feathers*

51. *Large.* Above green except head, nape and rump; front half of head whitish, back half, nape and breast cinnamon-chestnut; rump and under tail-coverts a deep french-blue; chin and beard-stripe white; side of the face, forming a stripe through the eye, black; throat carmine. Length 9-10 inches—*Melittophagus bullockoides* (Smith), the WHITE-FRONTED BEE-EATER. Often in pairs, sometimes parties.

52. Much smaller (Robin-size but slenderer and longer), length 6.4 inches, *upper surface green*, throat light yellow, these two characters showing up especially as the bird sits perched, with its tail moving constantly slightly to and fro, while the black-edged cinnamon-buff of the wing-quills and tail shines out when it takes a short flight. Small black breast collar edged narrowly above with blue, eyebrow blue, face, back of eye, black. Underside cinnamon-buff to greenish-cinnamon-buff—*Melittophagus pusillus meridionalis* Sharpe, the Southern LITTLE BEE-EATER. The race *M. p. cyanostictus* (Cab.) has the forehead blue. Usually in pairs perching low—on twigs, tall grass or reeds.

VII. Family—*Bucerotidae*—The Hornbills

Large birds with great Toucan-like bills. The entrance to the nest-hole (in a tree) is mudded up, the incubating female inside being fed by the male through an aperture.

A. *Turkey-size*

53. Small casque on bill, plumage black with white primaries, and skin on throat and round eye scarlet; length 42 inches; searches ground in small parties; booming, drum-like call—*Bucorvus cafer* (Schleg.), the GROUND HORNBILL. "Bromvogel" of South Africa, sometimes wrongly called "Turkey Buzzard". Protected under the Game Law as a snake-eater,

B. Size of Fowl.—Casque on bill large, live in rain-forest and forage thence; black and white; sawing flight, loud, discordant, wailing cries

54. Casque larger, cream-colour in male (black in 55), crest and sides of face much more grey than 55, no white on wing-quills; length 31.34.5 inches in the flesh—*Bycanistes cristatus*, the SILVER-CHEEKED TRUMPETER HORNBILL.

55. Differing from above in points mentioned and somewhat smaller—length about 27 inches—*Bycanistes buccinator* (Temm.), the BLACK-HEADED TRUMPETER HORNBILL.

C. Rook size, but slenderer, with or without small casque; most with rather weak piping notes, flight ascending and gliding downward alternately.—

All from about 18-21 inches

(a) *Small casque:*

56. Above brown with pale edges to feathers; head, neck and throat grey; white eyebrow; underside whitish, tail with white tips, *bill black* with white stripe extending to a point half way along the upper mandible; length 18 inches—*Lophoceros nasutus epirhinus* (Sund.), the South African GREY HORNBILL.

57. Very like 56 but *bill yellow* with orange point—*Lophoceros pallidirostris neumanni* Reichw., the Masai PALE-BILLED HORNBILL.

58. Above, also throat and upper breast, brown-black, sides of neck commonly streaked with grey, rest of under surface white. In flight upper side looks all black with a large white spot on either side of the end of the tail. Bill and casque red; length about 23 inches—*Lophoceros melanoleucos* (Licht.), form *suahelicus* Neumann in east Tanganyika, *stegmanni* Neumann in west, the CROWNED HORNBILL.

(b) *No casque:*

59. Upper surface brownish-black; upper wing-coverts and secondaries spotted and margined conspicuously with white. Eyebrow, nape, side of face, lateral tail-feathers and lower surface also generally white. *Bill red with yellow base* and a black stripe extending along the lower mandible; length 18.5 inches—*Lophoceros erythrorhynchus erythrorhynchus* (Temm.), the East African RED-BEAKED HORNBILL. Distinguish from 60 in flight by smaller size and much smaller bill.

60. Eyebrow, whole lower surface, nape, middle of back, some secondaries and terminal half of the three outer tail-feathers on each side white; cheeks grey; rest black. *Basal half of bill red; forward half cream*, tip and edges reddish-black—*Lophoceros deckeni* (Cab.), VON DER DECKEN'S HORNBILL.

The Crowned Hornbill and *Lophoceros deckeni* (Cab.) lack the white streak down the centre of the back which, or a trace of it, the others possess, but this is not usually visible in the field.

VIII.—Family—*Upupidae*—The Crested Hoopoes. Brickly colour, huge crest

61. *Upupa africana* Bechst., the African CRESTED HOOPOE, is brickly-cinnamon in colour with black tips to the enormous crest, black markings on

the scapulars, black tail with a white bar across it near the base, two broad white bars, conspicuous in flight, across the black wing, but excluding the primaries. (In the European bird there is a bar of white in the crest.) Length 10·5 inches. A melodious "Poo-poo-poo-poo-poo" call. Nearly always seen on the ground, often on roads.

IX. Family—*Phoeniculidae*—The Wood-Hoopoes

Nearly black, highly glossed with metallic colours, with (mostly) white markings on tail and wings.

A. *Between Starling and Magpie in size*

62. Bill and feet bright red in adult bird, plumage very dark glossy-blue and green, wings and tail very dark glossy-purple, white bar across primaries, white sub-apical markings on all but the two central tail-feathers. Length 13-16 inches. Search bark in pairs or parties, with harsh chattering—*Phoeniculus purpureus maru itzi* (Reichw.), the Tanganyika RED-BILLED WOOD-HOOPE ("KAKELAR" of South Africa).

B. *Body Sparrow size, black bill, thinner and more curved than in Phoeniculus*

63. General colour very dark glossy-purple, white band across primaries and white tips to all but central tail-feathers; length 10·5 inches; not in parties—*Rhinopomastus cyanomelas schalowi* Neum., the East African WHITE-BANDED SCIMITAR-BILL.

64. No white, *Rhinopomastus minor cabanisi* (Defil.), Friedmann, the BLACK SCIMITAR-BILL.

X. Family—*Micropodidae*—The Swifts

The Swifts are not all readily distinguishable from each other with their long sickle shaped wings, swift, cleaving flight and similar screams.

(a) *Amongst the larger are:*

(i) *No white rump:*

65. *Micropus apus pekinensis* (Swinhoe), the Eastern form of the COMMON SWIFT—which migrates hither from Persia and China—brown *with only throat* white; length about 7 inches : 65a. Same size and colour (as European Swift) but a resident, *M. a. shelley* (Salvod.) : 66. *Micropus melba africanus* (Temm.), the African WHITE-BELLIED SWIFT (thus distinguishable); haunts mountain ranges; length 8 inches : 67. *Micropus aequatorialis aequatorialis* (Müll.), the MOTTLED SWIFT, breast feathers being edged paler; whitish throat, otherwise all smoky brown.

(ii) *White rump:*

68. *Telacanthura ussheri stictilaema* (Reichw.), the MOTTLED PIN-TAILED SWIFT. Tail square with the feather-shafts projecting as base "pins", throat mottled, rump white. Dark. Length 5·23 inches.

69. *Micropus horus* (Heugl.), the HURUS SWIFT. Black, head and neck dark grey-brown; rump white; tail less forked than in some. Length 5.51 inches. Much as 70 but larger, etc.

(b) *Three small species, distinguishable by tails and rumps, are:*

70. *Tachynautes parvus myochrous* (Reichw.), the East African PALM-SWIFT. Grey-brown, including rump, whitish throat, long attenuated "tails", outside tail-feathers nearly 4 inches, total bird only 7; nests in palm-trees. In body no larger than 71.

71. *Micropus affinis abessynicus* (Streubel), the African LITTLE SWIFT. Back and under-surface black, glossed steel, throat and rump white; length 5.5.5 inches; tail square.

72. Also with white rump and throat but tail strongly forked, whole bird 6.5 inches long, *Micropus caffer streubeli* (Hartl.), the Abyssinian WHITE-RUMPED SWIFT. This form perhaps hardly comes south of the Usambaras.

XI. Family—Coliidae—The Colies (Mousebirds)

Sparrow-size. Brown or grey with short stout bill; tail very long and tapering, head crested; gregarious, a fruit pest, laying unglossy white eggs in open nests.

73. *Colius striatus affinis* Shelley, the East Coast SPECKLED MOUSEBIRD, and *C. s. cinerascens* (central and north-west races). Tail tapering twice as long as body. Above mouse-coloured, head and nape paler, greyer, head crested; breast and throat faintly and narrowly barred brown (when seen closely), throat grey. Length 13-14 inches. A darker form, *C.s. berlepschi* Hartert, occurs in south-western Tanganyika.

74. *Colius leucocephalus leucocephalus* Reichw., the WHITE-HEADED MOUSEBIRD (scrub country west of Kilimanjaro). Length 11-12.99 inches. Head with white crest, upper side conspicuously barred; tail and wings grey; underside with a pink tinge.

75. *Colius macrourus griseogularis* (Someren), the Kivu BLUE-NAPED MOUSEBIRD. Above grey-brown, rump grey; nape light blue. Underside plain grey to grey-brown. Length 12-14.2 inches. In north-east Tanganyika the race is *C. m. pulcher* Neum. Tail long and very thin.

XII. Family—Trogonidae

Carmine-metallic green, short yellow bill, thicket-dwellers retiring, missel-thrush size.

76. *Apaloderma narina narina* (Steph.), the Eastern NARINA TROGON. Male above metallic blue-green, female metallic gold-green; male with very finely barred upper wing-coverts, whole head and throat metallic green, rest of underside lovely carmine, outer tail-feathers white. In the female abdomen carmine, middle breast light grey, upper breast, throat and forehead light buffy chestnut. Length 11-12 inches. In dense forest and thicket. *A. Z. littoratis* Van. Som. has been recorded from north-east Tanganyika.

77. Another Trogon, *Heterotrogon vittatum* (Shelley), occurs in the mountain forests. Smaller, breast mottled green with conspicuous purple-blue bar; rest of underside carmine. Outer tail-feathers conspicuously barred and wing-coverts barred. Length 10-11·2 inches. In female head and upper breast somewhat like 73, shading to brown-cinnamon, only abdomen carmine.

XIII. Family—*Capitonidae*—The Barbets

General Characteristics: Thick-set birds, large to very small, very thick bills; loud notes.

(a) *With red or red-speckled heads, black breast band and pale yellow abdomen*:

78. Uncrested, smaller—*Lybius torquatus irroratus* (Cab.), the East African BLACK-COLLARED BARBET. Back of head and upper mantle black, rest of back and wing-coverts mouse-coloured, faintly speckled, wing-quills sepia with yellow outer edges; tail sepia; eyebrow, usually forehead, throat and upper breast scarlet; a conspicuous black band across the breast, then below this the abdomen, sulphur. Length 7·5 inches. Loud ringing call—"Kweboro! kweboro!" while the bird bobs up and down a branch.

79. Crested, larger, *Trachyphonus vaillantii suahelicus* Reichw., the "Coastal," and *suschkini*, the "Tabora" LEVAILLANT'S BARBET. Face and forehead yellow thickly speckled with blood-red, back and crest blue-glossed black. Wings and tail the same with white markings, two white bars on coverts, rest of wing and tail white-spotted. Wide black breast-band spotted with white and the yellow immediately above and below it with blood-red "drops". Upper tail-coverts red. Length 8 inches.

80. *T.s. erythrocephalus* Cab. (thorn-bush, north), cheeks and eye-stripe red, white ear-coverts, crown black in male, reddish in female. Black throat-streak in male, breast-band narrow, black with white spots, back and wings spotted white, tail barred. Length 7-9·8 inches.

(b) *Red head, brown breast-band and white abdomen*:

81. *Lybius melanopterus melanopterus* (Peters), the Mozambique BROWN-BREASTED BARBET; top of head, cheeks and throat scarlet, nape feathers with light tips and shafts. Primaries, secondaries and tail very dark sepia; breast brown, abdomen white. Length 7·5 inches.

(c) *Very large, black above, entirely blood-red below*:

82. *Lybius bidentatus aequatorialis* (Shelley), the Uganda DOUBLE-TOOTHED-BARBET. Length 9·5 inches. In Bukoba. Heavy ivory bill strongly toothed, by which distinguish it from 172, the BLACK-AND-CARMINE BUSH-SHRIKE (where read (f)).

(d) *Black head, otherwise brown above, white abdomen and white face stripe above cheek*:

83. *Buccanodon leucotis kilimense* (Shelley), and *leucogrammicum*, the Kilimanjaro and Uluguru WHITE-EARED BARBETS, respectively. Whole upper breast brown glossed blue-black, abdomen plain, length 6·5 inches, and 84,

Tricholaema lacrymosum lacrymosum Cab. and *Tricholaema lacrymosum ruahae* Neum., the northern and central Tanganyika SPOTTED-FLANKED BARBETS, respectively, in which a black "dicky" on the throat and upper breast is separated from the black cheeks by an additional white stripe and the flanks are spotted thrush-like with black. Length 6 inches.

(e) *Very small, mixed colours:*

85. *Pogoniulus pusillus affinis* (Reichw.), the East African RED-FRONTED-TINKER BIRD. Notes like the striking of metal. Forehead scarlet. Rest of upper surface mottled black and white, edges of upper wing-coverts and primaries bright yellow. Underside very pale buff. Length 5.5 inches. Not uncommon in Dar es Salaam.

86. *Pogoniulus bilineatus* (Sund.), the GOLDEN-RUMPED TINKER BIRD. Notes similar. Upper surface black, rump golden-yellow, underside sulphur. Length 4 inches.

87. *Trachyphonus danaudii emini* Reichw., the BLACK-CAPPED WAXY BARBET. Common in the Central Province, crown, eyestripe and throat black. Ear-coverts, cheeks, nape and a narrow breast-band bright yellow, spotted with black; black breast-band with white spots; back brown with white spots, rump yellow and a little red, tail barred, black and whitish. Length 7.7 inches.

XIV. Family—*Indicatoridae*—The Honey Guides

General features: Sparrow size or smaller brown or olive-green: conspicuous white outer tail-feathers. These birds guide man and (it is said) honey-badger to honey, chattering to attract their attention, and are also parasitic like the Cuckoos.

88. *Indicator indicator* (Sparrm.), the BLACK-THROATED HONEY GUIDE. Sparrow size; upper side and throat wholly sepia, this absent in female. Some grey on upper wing-coverts and rump. A yellow spot on each shoulder; breast and upper abdomen light grey, lower abdomen whiter. Length 7.8 inches. The wooded savannas generally.

89. *Indicator variegatus variegatus* Lesson, the SCALY-THROATED HONEY GUIDE. Smaller; above yellowish-olive-green, head darker, throat grey with darker markings, giving the feathers a scaly appearance; rest of underside pale buff lighter towards the vent. Length 7.25 inches. Denser forest and thicket.

90. *Indicator minor teitensis* Neum., the East African LESSER HONEY GUIDE. Length 6.6 inches. Much resembles 89 but the back is duller, head greyer and underside plain grey.

[The Woodpeckers—*Picidae*—are omitted, the species being mostly difficult to distinguish at a distance. In most, the male has a red head, the female a brown one.]

ORDER—PASSERIFORMES, THE PASSERINE OR "SPARROW-FORM" BIRDS

XV. Family—*Alaudidae*—The Larks

Many species are found, all ground-runners and ground nesters like the Song Lark, but most are inconspicuous and resemble each other more or less

closely, and will not be described here. The most obvious is 91, the FLAPPET-LARK (*Mirafrja fischeri* (Reichw.)) which makes a loud vibrating clapping sound in flight. Length 5·70 inches. In south central Tanganyika, form *zombae* O. Grant, merging into typical *fischeri* (Reichw.) and *kavirondoensis* v. Som. in Unyamwezi. The Sparrow-Larks are worth mentioning separately:—

92. *Eremopteryx leucopareia* (Fisch. & Reichw.), FISCHER'S SPARROW-LARK, Great Tit-size, blackish; crown and nape chestnut; eyebrow and throat black; cheeks white; breast and abdomen light fawn with some black. In pairs and small flocks on ground, including roads. Length 4·4·7 inches.

XVI. Family—*Motacillidae*—A. The Wagtails

93. *Motacilla aquimp vidua* Sund., the East African PIED WAGTAIL; is known to everyone—a very robin in tameness. Length 8 inches.

And see "Migrants"—Section VI.

B. The Pipits (*Anthus*, etc.)

Have long hind-claw, much resemble Larks in habits and appearance, are numerous and are like each other, and are omitted except for Richard's Pipit (the commonest of our Pipits of typical pipit-colouring), and two Long-Claws.

(a) *Dull above, buff below, no breast-band:*

94. *Anthus richardi lacuum* Meinertz., the northern RICHARD'S PIPIT, from the northern half of Tanganyika and *A. r. raaltenii* Layard, the South African form, probably occurring in the south and west of the Territory and differing in being darker and more heavily mottled, less grey-fulvous, above, than *lacuum*, here described. Above tawny, mottled darker; light eyestripe, throat white; breast-band strongly spotted with black; rest of underside buffy. Length 7·1 inches.

95. *Metothylacus tenellus* (Cab.), the Kilimanjaro GOLDEN PIPIT, resembles *M. croceus* (Vieill.) (96) but very small, half the size; very conspicuous yellow on wings and tail, black gorget. Length 5·5·6·3 inches.

(b) *Bright yellow or carmine below, black breast-band:*

96. *Macronyx croceus croceus* (Vieill.), the YELLOW-THROATED LONG-CLAW. Length 8·5 inches.

Nearly thrush-size, above brown, centres of feathers almost black; eyebrow, edges of primaries, and underside bright yellow except breast-band black.

97. *Macronyx ameliae wintoni* Sharpe, the ROSY LONG-CLAW, is rose below and it is said to be found particularly in the areas round Ikoma. Length 7·20 inches.

XVII. Family—*Timaliidae*—The Babbler. Thrush size

Search ground and low bush in parties with loud raucous chatterings. Glossy blue eggs in open nests.

98. *Turdoides jardinei* (Smith) subsp. *kirki* (Sharpe) in the coast districts, *emini* (Neum) darker in the north-west, the ARROW-MARKED BABBLER. Length 9 inches.

Above grey-brown; *head usually darker*, primaries and tail still darker brown, throat and breast grey-brown. Belly sometimes tinged with ochreous-brown.

Feathers generally, other than quills, *pointed*, the pointed tips paler, on the breast forming *central white "arrow-points"* contrasting with the brown-grey of the margins and bases.

99. *Turdoides melanops sharpei* (Reichw.), the Tabora BLACK-FACED BABBLER.

Slightly larger than the Arrow-Marked Babbler. Length 9.5 inches. Above grey, back and especially *head paler* than in 98, belly not tinged with ochre. Lores black, hence the bird's name. At close quarters it is seen that the feathers generally are rounded and are *grey centrally, margined with paler*. Definitely a *grey* bird as opposed to the brown or grey-brown of *jardinei* (Smith). The west of the Territory from Bukoba probably to Chunya.

100. *Turdoides hypoleuca* (Cab.), the KENYA PIED BABBLER. Brown above, white below, with an interrupted brown breast-band. In the Handeni district and northwards. Length 9.9-3 inches.

101. *Argya rubiginosa* (Rüpp.) subsp. *A. r. emini* Reichw., Unyamwezi, *A. r. heuglini* Sharpe, Dar es Salaam, the RUFOUS CHATTERER. Upper surface and under tail-feathers dusky rufous brown, under surface rufous. Length 7.5 inches.

XVIII. Family—*Pycnonotidae*—The Bulbuls

Sparrow size, brown with black crest, green or olive-green.

102. *Pycnonotus tricolor* (Hartl.) subsp. (*micrus* Oberh. from Kilimanjaro to Tabora, where it intergrades with *minor* Heugl.); *littoralis* on coast; and a mountain form *fayi* Mearns.—the BLACK-CAPPED BULBUL, "Bully" or "Toppie". Head and side of face black; rest of upper side, breast and throat dark brown, abdomen whitish; vent and under tail-coverts yellow. Top-knot often erected, notes cheerful, but a great scolder; a fruit-eater (half fruit, half insects). Length 7.75 inches.

103. Most of the *Green* Bulbuls or "Greenbuls" are seldom met with outside of thicket and rain-forest. Robin size or larger. In colour they are usually either yellow-green or dusky green, paler or yellower below. Distinguish from the OLIVE-GREEN BARBET, *Buccanodon olivaceum olivaceum* (Shelley), of the Usambara and Uluguru mountains, by the latter's much heavier black bill. The local form of *Phyllastrephus terrestris suahelicus* Reichw., the NYASA SCRUB BULBUL, is olive-brown. washed rusty. Length 6.7 inches.

Searchers of bark, twigs and ground.

XIX. Family—*Muscicapidae*—The Fly-catchers

Small birds, bill usually flattish and with stiff "rictal" bristles on each side.

(a) *Light brown or grey. Sparrow size or less:*

104. *Less: Breast striped; plumage light brown—Muscicapa striata striata* (Pall.), the SPOTTED FLY-CATCHER. Length 5·9 inches. Light brown above, feathers of the top of the head with darker centres. Whitish below, striped brown on throat and breast. Here as a common migrant.

105. *Less; no breast stripes; grey. Alseonax cinereus kikuyuensis* v. Som., the ASHY FLY-CATCHER. Above plain ashy blue-grey. Below light grey to whitish, no stripes. White on outer tail-feathers.

106. *Large; no breast stripes; light brown. Bradornis griseus griseus* Reichw., the GREY FLY-CATCHER. Length 5·9-6·7 inches. Above and breast (paler) grey-brown, slightly tinged rufous; wings darker with feathers edged rufous; pale eyestripe; throat and abdomen whitish.

107. *Bradornis pallidus suahelicus* v. Som., in the northern half of the Territory.

108. *Bradornis microrhynchus* van Someren (*toruensis* in the north; typical *microrhynchus* elsewhere) occur also.

(b) *Much black:*

109. All black. *Melaenornis pammelaina tropicalis* (Cab.), the East African BLACK FLY-CATCHER. Glossy blue-black; less glossy than *Campephaga Vieill.*, 145, and smaller, no yellow under wing and primaries brown. A supposed colour-mimic of the Drongos (148 and 149) perhaps "Mullerion" or co-operative mimicry, for itself disasteful to enemies; tail not forked. Length 7·75 inches.

110. Above and throat black. *Bias musicus changamwensis* v. Som., the BLACK-AND-WHITE FLY-CATCHER. Length 6·25 inches. Black with greenish gloss. Underside white, throat black. Coastal districts, *B. m. feminina* Jacks. in the north-west, where obtained by me near the Geita Mine.

(c) *Black breast-band:*

111. *Batis molitor* (Hahn. & Küst.), races *puella* Reichw. and *soror* Reichw., the CHIN-SPOT FLY-CATCHER. Very small; top of head blue-grey, back the same but with some white spots; rump white, wings and eye-stripe black, former with some white; underside white with black breast-band, no chin spot. Length 4·7-5·1 inches. Female has chestnut band instead, and a large chestnut spot on the throat. Widely distributed.

112. *Batis minor suahelicus* Neum., the East Coast BLACK-HEADED FLY-CATCHER and (probably just) *Batis minor nyanzae* Neum., the Uganda BLACK-HEADED FLY-CATCHER, occur here also; not dissimilar from *puella* Reichw., but head black and no chin spot. Further grey-headed forms occur also.

113. The Mikindani PUFF-BACK FLY-CATCHER, probably a form of *Batis capensis* (Linn.), the CAPE FLY-CATCHER (very broad breast-band, no chin spot, length 4·4-9 inches) peculiar to Lindi.

114. *Batis mixta* (Shelley), the SHORT-TAILED PUFF-BACK FLY-CATCHER, on Kilimanjaro and in the Usambaras and Ulugurus. A very wide breast-band in the male.

115. *Platysteira peltata peltata* Sundev., the BLACK-THROATED WATTLE-EYE (a grey-backed bird, white below with a black chest-band and black crown), may, with its smaller coastal form, *P. p. brevipennis* Grote, be known from birds of similar colouration by the scarlet flap of skin above its eye, conspicuous in the field. Length 4·7 inches.

(d) *Mainly chestnut or white, very long tails:*

116. *Tchitreia viridis suahelicus* Reichw., the Swahili PARADISE FLY-CATCHER. Crested head and throat black strongly glossed blue, underside dark grey, back bright chestnut, primaries blackish edged white. The male has two centre chestnut tail-feathers enormously elongated. In late age all the chestnut parts of the male, including the tail-feathers, are snow white. In the female the headparts are slaty and the tail is much shorter. Length 13-15 inches. This race intergrades with the South African race, *plumbeiceps*, in the south of the Territory. Call-note like the noise made by a cork when twisted in the neck of a bottle.

(e) *Very small, crested grey and white; tail constantly fanned out:*

117. The LONG-CRESTED FLY-CATCHER, *Trochocercus bivittatus* Reichw., a little bird, blue-grey with white abdomen and truly enormous crest and a relatively large tail which it fans out, is nearly sufficiently described by its name. Whole head, including crest, and chest, black heavily glossed with metallic greenish-blue. Length 5·20 inches. In female greyer and less glossed. Distinguish from the closely-related CERULEAN-MANTLED CRESTED FLY-CATCHER, *Trochocercus albonotatus subcaeruleus* (Sharpe).

118. The latter's shorter (yet conspicuous) crest and white breast; only the throat (of the under parts) being dark.

XX. Family—*Turdidae*—The Thrushes

The Thrush Family includes not only the actual thrushes, but the robins, wheatears, chats and many other birds.

(a) *Above grey, olive or brown, below fawn or ochre:*

119. *Turdus libonyanus* (Smith), the KURRICHANE THRUSH in its forms *cinerascens* Reichw., the Tabora Kurrichane Thrush (inland generally), and *costae*, the Coastal Kurrichane Thrush, and, in Bukoba, *centralis* Reichw., the Great Lakes Kurrichane; size of English Song Thrush. Length 8·25 inches. Above dusky grey-brown, throat white or ochre with short longitudinal brown stripes, broader at the side; breast dull fawn, abdomen centre white, sides orange rufous.

120. The THORN-SCRUB THRUSH, *Turdus tephronotus* Cab., is grey above, wings and tail darker and browner; chin and throat white—cream with dark brown streaks; breast grey, abdomen orange rufous, vent white. Bill orange

Length 7·87 inches. Forms of 121, the OLIVE THRUSH, *T. olivaceus* Linn., sufficiently so described, of the rain-forests, also occur.

(b) *Brown, white rump, black breast-band:*

122. *Oenanthe pileata livingstonii* (Tristram), the Zambezi CAPPED WHEATEAR.

Characteristic white rump, very visible in flight. Upper side brown, head almost black; throat, eyebrow and forehead white, broad black band on breast and side of throat. Abdomen whitish. Habits like English Wheatear, commonly seen perched on ant-heaps. Length 6·50 inches.

(c) *Black and orange:*

123. *Thamnolaea cinnamomeiventris subrufipennis* Reichw., the Kenya CLIFF-CHAT. Length 8·80 inches. Amongst rocky outcrops. Shoulders white, rump and abdomen light chestnut, whitish band between breast and abdomen. Rest purplish-black. Females duller, black replaced by dark grey; no white.

(d) *Black and white:*

124. *Thamnolaea arnotti* (Tristram) subsp. *leucolaema* (Finsch & Reichw.) (central districts) and *collaris* (Reichw.) (Unyamwezi), the WHITE-HEADED BLACK CHAT is all black except for the back of the head and shoulders and wing-coverts white. Length 6·60 inches. In female no white on back of head, but white on breast and throat.

(e) *Black and chestnut, white rump:*

125. Forms of the European STONE-CHAT, *Saxicola torquata* (Linn.), are found in the mountain areas—*Saxicola torquata promiscua* Hart., the ULUGURU STONE-CHAT (Uluguru Mountains to Lake Nyasa and in Kasulu) and *Saxicola torquata axillaris* (Shelley), the KILIMANJARO STONE-CHAT. Head and back black, rump, abdomen, flanks white, breast chestnut. Black of throat less extensive in *axillaris* (Shelley) than in *promiscua* Hart., brown of breast more so. Perches conspicuously on low vantage points in more or less open country.

(f) *Olive and cinnamon:*

(i) *No white eyebrow:*

126. *Neocossyphus rufus* (Fisch. & Reichw.), the RED-TAILED ANT-THRUSH, on the coast and the Ulugurus. Length 8·7-9·1 inches. Rump, tail and underside very bright cinnamon; head, upper back and wings dusky olive-brown.

(ii) *Conspicuous white eyebrow:*

127. *Cossypha heuglini* Hartl. subsp. the WHITE-BROWED ROBIN-CHAT. Length 7·80 inches. Wings grey, back grey with reddish wash, underside chestnut-orange; rump, tail, the same but greyer, *top of head and cheeks black, eyebrow white*. A dweller in thickets in savanna—riverine thicket in the drier areas; a fine songster.

(g) *Grey and orange:*

128. *Cossypha natalensis* Smith, the ORANGE-CAPPED ROBIN-CHAT. Above blue-grey; head, nape, rump and underside orange-brown, mantle mottled with

orange; tail bright chestnut, part black. Uses more continuously dense forest and thicket than *heuglini* Hartl. Length 7 inches. Note a slow "Tree-tro! Tree-tro!"

(h) *Brown, black chest-band*:

129. *Cichladusa arquata* Peters, the MORNING WARBLER. Primaries, secondaries and tail chestnut, head and back chestnut grey, nape greyer; throat and upper breast ochre, a black down-curving band across the breast. Sides of breast and flanks grey, abdomen ochreous. Length 7·75 inches.

Also among the best songsters of the Territory; common in Dar es Salaam.

(i) *Orange-chestnut rump or tail*:

(i) *With streaked or spotted breast*:

130. *Cichladusa guttata guttata* (Heugl.), the SPOTTED MORNING WARBLER, by the latter's black spotted *cream* breast and flanks, lack of a breast-band and absence of grey, a smaller bird, reddish-brown above, comparable with scrub-robins 131 and 132 through its red-brown tail, but without any grey above. Length 6·3-7·5 inches.

131. *Erythropgyia leucoptera* (Rüpp.), the WHITE-WINGED SCRUB-ROBIN, north of Territory. Good songster, robin size; cinnamon-brown bird with *dusky-grey* head and conspicuous orange-chestnut tail. Length 5·9-6·3 inches. Latter with a black end-band and narrow white tips and margins, primaries and secondaries sepia, the inner ones with ochreous outer edges; throat white with brown streaks at side; breast *white* with brown streaks, sides cinnamon, abdomen whitish.

132. *Erythropgyia leucophrys* (Vieill.), the WHITE-BROWED SCRUB-ROBIN. Length 5·50 inches. Top of head and mantle *dull brown*, lower back with a chestnut tinge; rump and tail bright chestnut, *a brown-black subapical bar, and white tip*; sepia wing-quills, white tips to coverts, breast white, striped. *Races*: in extreme south of the Territory, *iubilaea* Grote, in north *soror* Reichw., in Bukoba *vansomereni* Sel.

(ii) *Without spotted breast*:

133. *Erythropgyia barbata* (Finsch & Hartl.), the BEARDED SCRUB-ROBIN, has a form, *rovumae* Grote, the Zambezi SCRUB-ROBIN, in the south of the Territory, and a darker-backed form *quadrivirgata* (Reichw.), the Tana Scrub-Robin, which replaces it further north and extends inland to Kilosa from the coast. An orange-rufous or isabellina-brown band across chest, *breast and flanks unstreaked*. A white eyebrow bordered by a black stripe above and below, cheeks white separated from white of throat by a black mustachial line. Rump orange-rufous, tail black except centre-feathers slaty, but edged and tipped white. Length 6·7-7·1 inches.

XXI. Family—*Sylviidae*—The Warblers

There are so many Warblers that occur in Tanganyika, that it would be impossible to begin to describe them here. Amongst the genera most likely to be seen are: *Cisticola* Kaup. (the common GRASS-WARBLERS, brown above,

pale buffy below, fully dealt with by Admiral Lynes in a special number of *The Ibis**); *Eremomela* Sund. (the TREE-WARBLERS—pale olives, greys and yellows, and Tit-like habits).

134. *Sylvietta* Lafres. (the "TAIL-LESS" WARBLERS or CROMBECS—light brownish-buff below, with light grey backs, length 6·9-8·3 inches), *Apalis* Swains (the BUSH-WARBLERS, bar-throated and others).

135. *Melocichla mentalis* (Fraser), the GIANT MOUSTACHED WARBLER.

136. *Prinia mistacea* Rüpp. (chiefly in its form *tenella* Cab.), the common little TAWNY-FLANKED LONG-TAIL, a "tailor-bird", length 5·40 inches—sewing its woven domed nest between large leaves—and coloured as described for *Cisticola* Kaup.

See also "Migrants" section VI.

XXII. Family—*Hirundinidae*—The Swallows and Martins

137. *Hirundo rustica rustica* Linn., the ENGLISH SWALLOW with its black breast-band, chestnut forehead and throat and white belly, is almost too well known to describe. It is here in large numbers on migration from August to May.

Key to some other species

A. Small

138. No chestnut. Head, lower back and rump brownish-grey. Mantle, wings and tail blue-black, whitish eyebrow. Underside white with brownish-grey on sides of breast. Length 5·80 inches. The GREY-RUMPED SWALLOW—*Hirundo griseopyga* Sundev.

139. No chestnut. Black with white under wing-coverts visible in flight. Length 5·40 inches. The Masai ROUGH-WING. Nests in holes in ground like Sand-martin—*Psalidoprocne holomelaena massaica* Neum.

140. Only head chestnut; above glossy blue, two pointed tail-feathers, underside white. Length 7 inches. The WIRE-TAILED SWALLOW—*Hirundo smithii smithii* Leach.

B. Medium

141. All blue-black. Length 7·25 inches. The BLUE SWALLOW—*Hirundo atrocaerulea* Sundev.

142. Head and rump chestnut, back and wings glossy blue; outer tail-feathers elongated; underside white streaked with black, more thickly on throat. Smaller STRIPED SWALLOW—*Hirundo abyssinica abyssinica* Guer.

143. Above and breast dull smoky brown, throat paler; a white spot on most tail-feathers, visible in flight. Length 5·75 inches. The ROCK MARTIN—*Ptyonoprogne rufigula rufigula* (Fisch. & Reichw.).

C. Very Large

144. Head, back, wings and tail glossy blue, rump and sides of neck and underside rufous, but throat white. Found near baobabs. Length 9 inches. MONTEIRO'S MOSQUE SWALLOW—*Hirundo senegalensis monteiri* Hartl.

*Sold by Taylor and Francis, Ltd, Red Lion Court, Fleet Street, London, E.C.4. Price 12/6.

XXIII. Family—*Campephagidae*—The Cuckoo-Shrikes

Sparrow size, black-yellow, searchers of foilage, but sometimes perching prominently.

145. *Campephaga flava flava* Vieill., the BLACK CUCKOO-SHRIKE. Male wholly *very* glossy greeny-blue-black, except primaries sepia and under wing-coverts yellow. Length 8.9-30 inches. Female quite different; head, neck, back, wing-coverts and upper tail-feathers olive, rump whiter. Back, rump and wing-coverts faintly barred with black. Wing-quills black with yellow outer edges. Underside white, tinged yellow with black bars. Male regarded as a possible colour-mimic of the Drongo (148, 149) and shown experimentally to be much more palatable to enemies. Much more timid and retiring than the Drongo. Female at a short distance is reminiscent of the female of the Emerald Cuckoo—which has been suggested to be unpalatable.

146. *Coracina pectoralis* (Jard. & Selby), the WHITE-BREADED CUCKOO-SHRIKE. Starling size. Length 8.7 inches. Above grey; primaries and secondaries blackish with white outer edges; chin white or grey, throat greyer, breast and abdomen white with or without a few greyish spots. Chiefly in the Miombo woodlands, searching high in the trees.

147. An all-grey species, *Coracina caesia pura* (Sharpe), Elgon GREY CUCKOO-SHRIKE, inhabits our rain-forests and their equivalents; similar habits and size. Length 10.50 inches.

XXIV. Family—*Dicruridae*—The Drongos

Wholly black, young greyer (with white-edged breast feathers). Bold, attack hawks, and shown experimentally to be highly distasteful to carnivores.

148. With forked tail, the Senegal SAVANNA or FORK-TAILED DRONGO, *Dicrurus adsimilis divaricatus* (Licht.). Length 9.50 inches.

149. With square tail, slightly forked (usually in dense forests), the SQUARE-TAILED or FOREST DRONGO, *Dicrurus ludwigii ludwigii* (Smith.) Length 7 inches.

Both species are bold and fearless and have been shown experimentally to be highly nauseous to enemies. They are regarded as “models” for protective mimicry, less nauseous species having developed the colouration and habits that may lead them to be mistaken for Drongos.

XXV. Family—*Prinopidae*—The Helmet Shrikes

With a scarlet or bright yellow wattled eye-ring, one species with a plush-fuzz in the forehead.

150. *Prionops poliocephala poliocephala* (Stanley), the Southern HELMET SHRIKE, usually in Miombo wooding or the equivalent. Below, forehead, collar and a stripe from the shoulder to the tip of the wing white; top of head dark-grey; ear, back, rump, top of tail and rest of wing black. Hunts in small flocks, keeping low.

151. *Sigmodus retzii* (Wahlb.) subsp. *tricolor* (Gray) (south) and *intermedius* Neum. (north), the RED-BILLED SHRIKE; *S. r. graculinus* (Cab.) in

north-east Tanganyika. Head, throat and underside, back, rump and wings grey-brown, primaries and tail sepia; vent and part of tail white; bill and eye-ring red. Length 9 inches. Hunt usually higher.

152. *Knestrometopon scopifrons scopifrons* (Peters), *K. s. kirki* W. Scl. on coast. Black crown with an extraordinary light chestnut-coloured brush of stiff feathers on the forehead. Tail-tip and under tail-coverts white, bill and feet red, rest dark grey. Length 7.1 inches.

153. *Nilaus nigritemporalis* Reichw., the BLACK-BROWED BRUBRU. Length 5.9 inches. Solitary or in pairs, searching foliage! Crown, tail and wings black, latter with white bar, back mottled black and white; eyebrow and underside white; chestnut markings on flanks. Distinguish by these from 161, 162 and 163.

154. *Eurocephalus rueppelli bohmi* Zedl., the WHITE-CROWNED SHRIKE. White except back, wings, tail and cheeks dark brown. Large, 9 inches. Often in flocks.

XXVI. Family—*Laniidae*

The Shrikes. "True" shrikes or Butcher-birds—*Lanius* and *Urolestes*; bold, upright stance. Bush-shrikes—*Laniarius*, *Chlorophoneus*, *Malaconotus* and *Tchagra*; searchers of thicket, forward-leaning in their movements.

A. Tail long; Starling size larger or smaller; black and white

(a) Black or black and grey above, white below, bold, perching conspicuously and upright on telegraph wires and small trees, cries mostly harsh:

155. Smaller. Scapulars white, long white ends to most tail-feathers. Whole underside, a bar across the primaries (seen in flight), and rump white; rest black, length 8 inches.—*Lanius collaris humeratis* Stanley, the East African FISCAL or Common PIED BUTCHER-BIRD. *L. c. marwitzi*; in south-west Tanganyika.

155b. *Lanius fuscus dorsalis* Cab., from our extreme north and Kenya, is similar but has the mouth grey. Length 7.5-9.2 inches.

156. Larger. Scapulars and back grey, tail-feathers barely tipped white (invisibly so in field). Rest much as in 155—*Lanius cabanis* Hart., the LONG-TAILED FISCAL or LONG-TAILED PIED BUTCHER-BIRD of the dry thorn-bush.

157. As large, much grey. Grey above except forehead, broad eye-stripe, wings and two centre tail-feathers, which black or brown-black. Whole underside and basal half of remaining tail-feathers white—*Lanius excubitorius bohmi* Reichw., the Tanganyika Great GREY-BACKED FISCAL.

(b) Black above, white below, tail nearly "ordinary". Very retiring, haunting the interior of thicket:

158. Very like 155 and 156, but tail, which black, less length of body and habits quite different. Length 7.9-9.4 inches. Scapulars black, but wing-coverts white. Below white, often with a light rufous wash; rump grey with some white; remainder black—*Laniarius ferrugineus* (Gmel.) subsp., the PIED BOUBOU. In pairs which keep up a duet of fine notes—flute-like answered by harsher.

(c) *Magpie* colouring, tail very long. Hunting through low trees and shrubs in small parties, cries harsh:

159. Tail one-and-a-half times length of body, as compared to 155 and 156 in which tail is about the same length as the body; all black except for under wing-coverts, flanks (partly), end of upper wing-coverts, bar on primaries and rump which are grey, feathers long, like hackles, making the head more or less crested; length 15·7-18·5 inches—*Corvinella* (or *Urolestes*) *melanoleucus aequatorialis* Reichw., the East African MAGPIE SHRIKE.

B. Tail "Ordinary"

(a) *Black*:

160. Larger than Sparrow size. Entirely dull slaty black; head, primaries and tail darker; retiring; inhabits thickets and is responsible for loud liquid notes of great variety; length 6·9-8·7 inches—*Laniarius funebris funebris* (Hartl.), the BLACK BOUBOU. The thickets of the dry thorn-bush.

(b) *Black above, white below*:

161. See again, first 158 above—*Laniarius ferrugineus* (Gmel.), the PIED BOUBOU, very retiring.

162. Smaller, not retiring, but searching overhead foliage fearlessly (see also 158). Underside, rump, part of wing-coverts and edges of primaries and secondaries white, rest black, glossy on head and nape. The white feathers on the rump are often puffed out either in flight or when calling, resembling a powder puff; note a bright "trk-whee, trk-whee" and the wings make a cracking noise in flight, length 6-7 inches—*Dryoscopus cubla hamatus* Hartl., the East African PUFF-BACK SHRIKE.

163. As 162 but whole of upper surface, including wings, black, but rump white. Found near the coast; length 5·9-6·7 inches—*Dryoscopus affinis* (Gray), the Zanzibar Puff-back Shrike.

(c) *With chestnut* (see also 153):

(i) *Back chestnut*:

164. Large Sparrow size. Head, nape and rump a light, bright grey, back and wing-coverts chestnut, eyestripe, upper tail-coverts and wing-quills brown. Underside white with pink tinge, darker on breast and flanks. Perches conspicuously, bold. Young is duller in colour, underside white, breast and flanks with narrow brown crescents on feathers producing faint barring, length 7·10 inches—*Lanius collurio* Linn., the EUROPEAN RED-BACKED SHRIKE, here on migration.

(ii) *Wings chestnut; in most a conspicuous eyebrow, buffy-white or pale rufous; crown dark*: the chestnut-winged bush-shrikes or *Tchagras*:

165. Smaller, crown brown. Underside grey or fawn, eye-stripe black, eyebrow buffy-white. Two centre tail-feathers dull greyish-green, rest black with broad buffy-white tips, this colouration showing up well when the tail "fans" on short flights; length 7·7-9 inches—*Tchagra* (or *Pomatorhynchus*)

australis minor (Reichw.), the BROWN-HEADED TCHAGRA. *T. a. littoralis* (v. Som.), the small coastal form with whiter breast, inland to Kilosa, and *P. a. minor* (Reichw.), the "Masai" form, inland generally.

166. Larger—full Sparrow size. *Crown black*. Colouring and shape otherwise much as 165, back redder. Note—a plaintive slow whistle, like whistling a sentence; length 8·3-9·1 inches—*Tchagra senegala* (Linn.), the Greater BLACK-CAP TCHAGRA, forms being *orientalis* (Cab.), the Coastal BLACK-CAP TCHAGRA—whiter breast, paler back, and *armena* (Oberholser), the inland BLACK-HEADED TCHAGRA.

167. Smaller again. Back of head and eyestripe black, wings and back chestnut, tail dark sepia. Underside pale fawn. Perches conspicuously unlike 165 and 166, which slink through the lower vegetation; length 7·1 inches—*Antichromus anchietae* (Boc.), the CHESTNUT BACKED BLACK-CAP TCHAGRA. In the form *reichenowi* Neumann, the black cap is separated by a white band from the rufous colour of the nape, in typical *anchietae* it is not.

(d) *Head grey, back olive-green, yellow underside:*

168. Smaller, Wagtail size. Tips of under tail-feathers, like underside, bright lemon; breast bright orange; forehead and eyebrow lemon. Back of head and nape grey; back, wings and tail olive; length 7·1 inches—*Chlorophoneus sulfureopectus suahelicus* (Neumann), the East African SULPHUR-BREASTED BUSH-SHRIKE. Note—Pi-pipit-ye, pi-pipit-ye! Searches high foliage and low.

169. Much larger, Missel-Thrush size. Breast brown-orange; head and nape grey; back, tail, rump and wings except inner webs of primaries, green, latter blackish; a black, powerful bill—*Malaconotus poliocephalus blanchoti* Stephens, the Southern GREY-HEADED BUSH-SHRIKE, length 9·45 inches, occurring in most of Tanganyika, including Dar es Salaam but with *M. p. approximans* (Cabanis), darker-breasted, replacing it in the north-east of the Territory and to the Tana.

(e) *Green above:*

170. *Olive above, grey below, longish tailed*. Thrush size; length 8·50 inches. Above olive, rump lighter, several yellow-white spots on wing-coverts, primaries edged, secondaries tipped with white; underside grey-white, breast rather darker grey with green tinge. Under tail-coverts yellow—*Nicator chloris gularis* Hartl. and Finsch, the Zambezi NICATOR, a retiring haunter of thickets, often heard, rarely seen.

171. *Smaller, green above, scarlet throat, black breast-band, yellow abdomen*; length 7·65 inches *Laniarius quadricolor* (Cass.), the FOUR-COLOURED BUSH-SHRIKE, a thicket haunter.

(f) *Black above, brilliant carmine below*. Distinguish from the Double-toothed Barbet (No. 82) by its slighter, black bill.

172. *Missel-Thrush size*. Length 7·9-9·1 inches. The black blue-glossed, the carmine replaced by brownish-buff on the thighs and under tail-coverts, and no white bar on the wing as in *Laniarius atrococcineus* Burch, the

South African bird of similar appearance. Melodious and varied flute-like notes; confined in Tanganyika to the country round Lake Victoria—*Laniarius erythrogaster* (Cretzsch.), the BLACK-AND-CARMINE BUSH-SHRIKE.

XXVII. Family—*Oriolidae*

The Orioles. Bright yellow, tails "ordinary".

Distinguish in field from yellow weavers by larger (Missel-Thrush) size, "normal" length bills and flute-like notes.

A. Head yellow

173. Wings black with bright yellow spot on outer wing-coverts. Tail black but ends of feathers bright yellow. Eyestripe not extending behind eye black, rest brilliant yellow; length 10 inches—*Oriolus oriolus oriolus* (Linn.), the EUROPEAN GOLDEN ORIOLE.

174. Wings black, yellow on wing-coverts and endges of secondaries, tail much as in 173. Eyestripe extending behind eye, rest brilliant yellow; length 8 inches—*Oriolus auratus notatus* Peters, the South African GOLDEN ORIOLE.

B. Head Black

175. Head and throat black—in female much duller, streaky; nape and rest of underside brilliant yellow; back, wing-coverts and upper tail-feathers greenish-yellow; wings black with white spots near base of primaries; primaries and secondaries edged with grey or gold; length 8·7-9·1 inches—*Oriolus monacha kikuyuensis* v. Som., the Kenya BLACK-HEADED ORIOLE.

C. Head green

176. *Oriolus chlorocephalus* Shelley, the GREEN-HEADED ORIOLE, is known from the Uluguru and Usambara mountains in the Territory. Length 9·8 inches.

XXIII. Family—*Corvidae*

The Crows and Ravens. Tails "ordinary".

177. *Corvus albus* Müll., the PIED CROW. Sides of neck, nape, mantle and breast white; rest glossy blue-black. Length 18 inches.

178. *Corvultur albicollis* (Lath.), the WHITE-NECKED RAVEN.

Heavy bill. Entirely glossy black except for a broad white collar round the back of the neck. Length 18 inches.

178b. The lesser CAPE ROOK, *Corvus capensis kordofanensis* Laubm. Length 18 inches. In Kavirondo, but south of it rare; all black, might be looked out for.

178c. *Corvus splendens splendens* Vieill., the INDIAN HOUSE-CROW, black and grey, is found only in Zanzibar. Length 15·7 inches.

XXIX. Family—*Sturnidae*

The Starlings. Mostly with flashing metallic sheen, deep green or blue, English Starling size or larger.

A. Tail elongated

(a) Grey, little sheen:

179. *Cosmopsarus unicolor* Shelley, the ASHY LONG-TAILED STARLING. Entirely grey-brown but primaries, secondaries and tail darker; tail with slight greenish sheen, much lengthened. A dry thorn-bush bird, very commonly in parties. Length 10·6-12·6 inches.

(b) Strong metallic gloss:

180. Head metallic green, breast band bronze, back and wings purplish-blue, underside golden yellow; length 11-13·5 inches—*C. regius magnificus* v. Som., the YELLOW-BELLIED STARLING. Round Arusha.

181. The GLOSSY LONG-TAILED STARLING, *Lamprotornis purpuropterus purpuropterus* Rüpp.; metallic bluish-green, head greener, tail more purple (central Tanganyika). Length 14 inches.

B. Tail "ordinary" or short

(a) Grey:

182. *Creatophora carunculata* (Gmel.), the WATTLED STARLING, or LESSER LOCUST BIRD. Length 8·75 inches.

Old males have fleshy protuberances issuing from the base of the lower mandible and top of head; wattles black, rest of head bare and yellow. Young males have small protuberances, and white feathers on head, females no wattles. Colour drab. Primaries and tail blackish; rump whiter. They follow the swarms of locusts and prey on them.

(b) Glossy purple and white, females brown:

183. *Cinnyricinclus leucogaster verreauxi* (Bocage), the Southern VIOLET-BACKED STARLING. Length 6·60 inches. In the male, the head, throat, upper breast, and entire upper surface is glossy violet, except primaries sepia. Rest white. The Thrush-like female has its upper surface entirely brown, feathers of head and neck with lighter edges. Underside white with brown spots. Usually high in the foliage, e.g. of big fig-trees, the fruit of which they eat.

(c) Very glossy deep blue or green:

184. *Lamprocolius chalybeus sycobius* Hartl., the East African BLUE-EARED GLOSSY STARLING. Length 8 inches. Wholly glossy green, or blue, depending on how the light catches it; ear blue, flanks violet. There are, however, other species of glossy starling which look much the same at a distance.

(d) Glossy blue and chestnut:

185. Large, nearly Jackdaw size. *Onychognathus morio shelleyi* (Hartert), the East African RED-WING STARLING. Entirely navy blue with some gloss, except primaries bright chestnut tipped with black; tail broad and elongated. Female greyer. Length 12-14 inches. Widespread and commonly in flocks. Very similar to it.

186. *Onychognathus walleri walleri* (Shelley), WALLER'S CHESTNUT-WING, but smaller, 9-10 inches. Kilimanjaro, Usambara and Uluguru.

187. *Spreo superbus* (Rüpp.), the SUPERB STARLING. Length 7-8.3 inches. Crown and sides of head black, with slight green gloss; breast, nape, back, rump, wings and tail glossy blue, green or violet, depending on light. *Abdomen bright chestnut separated from breast by narrow white line. Under tail-coverts white.* A bird of the dry thorn-bush and mostly seen on the ground, e.g. about the Masai villages.

188. *Spreo hildebrandti* (Cab.), HILDERBRANDT'S STARLING. Very similar; *no white underneath*, chestnut darker.

(e) *Brown and buff: on animals:*

189. *Buphagus erythrorhynchus caffer* Grote, the Southern RED-BILLED OX-PECKER. Length 8.50 inches. Lower breast, abdomen and under tail-coverts buff; upper breast brownish-yellow, rest brown. Found on the large game animals; feeds on the ticks and gives the animals the alarm if danger approaches.

XXX. Family—*Zosteropidae*—The White-eyes

Blue Tit size and habits. Green; a ring round eye white.

190. *Zosterops senegalensis* Bp., the Kenya YELLOW WHITE-EYE. Length 4.50 inches. Olive-yellow above; forehead and underside bright yellow. Primaries and secondaries brown edged with yellow or yellow-green.

191. *Zosterops virens* Sund. subspp., the GREEN WHITE-EYE. Length 4.80 inches. Above grass green; primaries and tail brown with green edges; forehead and under surface bright yellow.

XXXI. Family—*Nectariniidae*—The Sunbirds

Very small, reminiscent of humming-birds (to which they are not in the least related) and mostly with brilliant metallic sheen. Many with brilliant non-metallic colours on chest.

No females are described as they are nearly all dull in colour and hard to differentiate.

A. *Two centre tail-feathers elongated*

(a) *Wings and abdomen black, rest glossed metallic-green, blue, bronze and violet:*

192. No bright unglossed breast-band; length 5.1-5.5 inches—*Nectarinia kilimensis kilimensis* Shelley, the BRONZY SUNBIRD, found at high elevations in the Northern Province, occurs under the smaller form *N. k. arturi* P. L. Sel. in the south-west.

193. Centre strip of broad breast-band bright scarlet, sides bright yellow; length 4.7-5.1 inches—*Nectarinia melanogastra melanogastra* Fisch. & Reichw., the FLAG-BREASTED SUNBIRD.

194. Broad breast-band deep purplish-indian red; length 4.4-9 inches—*Nectarinia erythroceria erythroceria* Hartl., the RED-CHESTED SUNBIRD, from the islands and mainland round Lake Victoria.

195. Centre of belly black, breast-tuft bright red, otherwise like 196 but darker; length 5.9 inches—*Nectarinia johnstoni* Shelley, the SCARLET-TUFTED MALACHITE SUNBIRD of Kilimanjaro and the Livingstone Mountains.

(b) *Without black belly:*

196. Wings and tail black, otherwise shining malachite green, head, neck, back and breast shot with gold; length 5.9-6.7 inches—*Nectarinia famosa aenigularis* Sharpe, the Kenya MALACHITE SUNBIRD. Kilimanjaro, Usambara and Uluguru.

B. *Tail-feathers "ordinary"*

(a) *Above bright metallic green:*

197. Centre of throat, abdomen and tail black; sides of throat, cheeks and upper breast as the back; a deep purple, followed by a blood-red band across the breast; length 3.7-4.1 inches—*Cinnyris bifasciatus microrhyncus* Shelley, the East-Coast Little PURPLE-BANDED SUNBIRD.

198. Throat as back; green, more yellow or coppery; tail black; chin and throat blue; a purplish-blue followed by a reddish-purple breast-band; abdomen black; length 4.7-5.3 inches—*Cinnyris mariquensis suahelicus* Reichw., the Swahili MARIQUA SUNBIRD.

199. Throat as back; a violet breast-band, abdomen *pale yellow*; bill short; length 4 inches—*Anthreptes collaris zambesiana* Shelley, the Zambezi VIOLET-COLLARED SUNBIRD.

200. Very small. Forehead, breast and throat bright glossy purple; *abdomen bright orange yellow*—*Cinnyris venustus falkensteini* Fisch. & Reichw., the Kenya YELLOW-BELLIED VIOLET SUNBIRD. Length 3.9-4.3 inches.

(b) *Not green above:*

201. Bright scarlet breast; forehead and chin glossy green. Rest black—*Chalcomitra senegalensis inaestimata* (Hart.), the East Coast SCARLET-CHESTED SUNBIRD. Length 5.25 inches.

202. Dull black with glossy dark green forehead and crown; throat violet—*Chalcomitra amethystina kirkii* (Shelley), the Zambezi AMETHYST SUNBIRD. Length 4.80 inches.

203. Above metallic violet-blue, also chin; underside white. Young birds yellowish below; females like males but with some yellow on the lower abdomen—*Anthreptes longuemari neglectus* Neum., the VIOLET-BACKED SUNBIRD. Length 5.5-5 inches.

XXXII. Family—*Ploceidae*—The Weavers

A. *Larger, Starling size; in small flocks; noisy; building untidy nests of sticks in thorn or baobab trees*

204. *Black*; a few greyish feathers; bill carmine; the Kenya race differs in having the inner margins and bases of primaries white. Length 8.7-9.4 inches—*Bubalornis albirostris nyanzae* (Neum.) (north-west) and *B. a. intermedius* (Cab.) (north-east), the Kavirondo and Kenya BUFFALO-WEAVER.

205. Head, neck and underside white; *upper and under tail-coverts scarlet*; rest dark brown to black; length 8·7-9·4 inches—*Dinemellia dinemelli böehmi* Reichw., the UNYAMWEZI WHITE-HEADED BUFFALO-WEAVER.

B. *Smaller: Sparrow size or somewhat small (cf. C)*

(a) *With no red or yellow (unless bill):*

206. *Grey and nut-coloured above, grey-white below.*—Head and nape dark grey; rest of upper surface nut-coloured, except primaries and tail sepia; underside grey-white. Common round houses; length 6 inches—*Passer griseus suahelicus* Reichw. (north-west) and *P. g. mosambicus* v. Som. (south and east), the GREY-HEADED SPARROW-WEAVER.

207. *Brown above, white below.*—Crown and back dark brown; wings and tail the same but the feathers edged with white; eyebrow, *rump and underside white*, except the breast feathers brown with white edges; length 6·80 inches—*Plocepasser mahali melanorhyncus* Bp., the STRIPE-BREASTED SPARROW-WEAVER.

208. *Black and chestnut.*—Head, throat and primaries black, a little grey on the wings, remainder deep chestnut—*Ploceus rubiginosus rubiginosus* Rüpp., the CHESTNUT WEAVER. Length 5·9-6·7 inches.

209. *Deep chocolate.*—Forehead white, whitish bar near base of primaries, wings and tail chocolate-black, remainder deep chocolate, *bill thick*; in female breast pale, spotted like that of a thrush—*Amblyospiza albifrons unicolor* (Fisch. & Reichw.), the East-Coast GROSBEAK WEAVER (E). Length 7·40 inches.

210. *Buff, black and brown above, black and buff below.*—Crown and underside buff; eyestripe, cheeks and throat black; back brown, centres of feathers darker, bill red—*Quelea quelea aethiopica* (Sund.), the Sudan DIOCH (E). Length 4·75 inches.

(b) *With yellow, also often black, sometimes chestnut; black, if present, dull* (Compare (c) below):

(i) *Head (or part of it) and throat black, back yellow or green.*

211. Back and rump bright yellow, wings black and yellow; *head and throat black; underside chestnut tinged with yellow*; length 5·9-7 inches—*Ploceus jacksoni jacksoni* Shelley, the GOLDEN-BACK WEAVER. *P. j. jucundus* (Lake Tanganyika).

212. Back and wings yellow and olive-green; *forehead, cheeks and throat black*; front of crown reddish-chestnut, back of crown yellower; rump and underside yellow—*Ploceus intermedius cabanisi* (Peters), Cabanis's MASKED WEAVER. Length 5·5-7 inches.

213. Back and wings greenish; head, cheeks and underside golden-yellow, *throat and eyestripe black*—*Ploceus ocularius suahelicus* Neum, the East African SPECTACLED WEAVER.

214. As 213 but *cheeks black*; some yellow on the primaries, rump and tail greenish-yellow—*Ploceus reichenowi* (Fisch.), REICHENOW'S WEAVER.

(ii) *Head (or part of it), throat and back black.*

215. Upper side, throat and head black; remainder of underside yellow—*Ploceus bicolor kersteni* (Finsch & Hartl.), the East African DARK-BACKED WEAVER.

216. Back and wings black, *spotted and streaked with yellow*; head and throat black; collar and underside yellow—*Ploceus nigriceps nigriceps* (Layard) and *P. n. graueri* Hart. (north-west), the SPOT-BACKED WEAVER.

217. *Forehead and front of crown yellow*; eyestripe, throat and rest of upper side including wings and tail black; remainder yellow—*Ploceus nigricollis melanoxanthus* (Cab.), the BLACK-BACKED WEAVER. (Compare 214.)

(iii) *Yellow mainly or entirely: no black.*

218. Almost entirely uniform yellow, with bright orange—red head, darker gorget—*Ploceus bojeri bojeri* (Cab.), the MOMBASA GOLDEN WEAVER (coast).

219. Duller greenish-yellow; head and upper breast tinged chestnut—*Ploceus aureoflavus* Smith (coast to Kilimanjaro), the ZANZIBAR GOLDEN WEAVER. Length 4·7-5·5 inches.

220. Brighter yellow below, more olive-green on back; chestnut on head limited to nape—*Ploceus castaneiceps* (Sharpe), the INLAND GOLDEN WEAVER (Kilimanjaro to Morogoro).

221. Larger; back greenish-yellow; primaries dusky brown; head and underside yellow; length 6 inches—*Ploceus xanthope camburni* (Sharpe). Camburn's LARGE GOLDEN WEAVER.

(c) *Yellow and black—always velvety jet black:*

222. *Tail short.* Entirely velvety black except rump and shoulders bright yellow. Wing-coverts dark brown and fawn, some whitish feathers on abdomen; length 6 inches—*Euplectes capensis xanthomelas* Rüpp., the Abyssinian YELLOW BISHOP.

223. *Tail long.*—Entirely velvety black, except shoulders yellow, remaining upper wing-coverts with much white, under wing-coverts white, length 6·60 inches—*Coliuspasser albonotatus eques* (Hartl.) the East African WHITE WINGED WHYDAH.

224. *Tail long.*—Entirely velvety black, except shoulders and mantle bright yellow—*Coliuspasser macrourus macrourus* (Gmel.), the YELLOW-MANTLED WHYDAH. Length 7·8·3 inches.

(d) *Red and black:*

225. *Tail not long in 225-228.*—Forehead, sides of face, wings and tail, chin and abdomen black, rest bright orange-scarlet, back browner; length 4·7 inches—*Euplectes orix wertheri* (Reichw.), the Wembere RED BISHOP (inland).

226. Very similar to 225 but slightly less black—*Euplectes hordeacea changamwensis* (Mearns), the East Coast FIRE-CROWNED BISHOP.

227. *Small.*—Below entirely black, except thighs and under tail-coverts orange-scarlet. Above orange-scarlet, *including forehead*; mantle tinged

brown, wings brown. Smaller than 225 and 226—*Euplectes nigroventris* Cass., the ZANZIBAR RED BISHOP. Length 3·9-4·1 inches.

228. Entirely velvety black except shoulders scarlet, wing-coverts cinnamon; length 6·30 inches—*Urobrachya axillaris zanzibarica* Shelley, the EAST AFRICAN FAN-TAILED WIDOW-BIRD.

229. Tail very long. Entirely black, but a scarlet streak across the breast; length 12·50 inches—*Coliuspasser ardens ardens* (Bodd.) (north), the CUT-THROAT WHYDAH. *C. a teitensis* (v. Som.) (Kilimanjaro).

(e) *With red but no black:*

230. Head and throat bright red, bill orange-red; breast white, abdomen white. Above brown, wings the same but some pink on the outer webs of the primaries; length 5·3-5·9 inches—*Anaplectes melanotis* (Lafres.), the RED-WINGED ANAPLECTES.

231. Head and throat carmine, bill black; breast fawn, centres of feathers darker, abdomen whitish; back brown, centres of feathers darker; usually in flocks near streams; length 4·3-4·7 inches—*Quelea erythrops* (Hartl.), the RED-HEADED POKER-BIRD.

231a. Crop also red; length 4·1 inches—*Quelea cardinalis* (Hartl.), the CARDINAL DIOCH.

C. Tit size, large or small

(a) *With red but no black, tail not long:*

(i) *Olive and bright red:*

232. Duller abdomen, not conspicuously barred.—Forehead, cheeks and chin carmine; throat and back of head grey, back dusky brownish-yellow; primaries with cinnamon, upper tail-coverts red; tail black with reddish tinge; underside as back but with dull white bars; length 4·3-4·7 inches—*Pytilia afra* (Gmel.) the YELLOW-BACKED PYTILIA.

233. Brighter; abdomen conspicuously barred, forehead and throat scarlet, a scarlet wash extending to the junction of the upper and lower breast where it is bounded by a wash of olive-yellow; crown, nape and cheeks grey; abdomen and flanks white "honeycombed" and barred with olive-brown, wings and back rather bright yellow-olive, rump and tail crimson; head and neck in the female plain grey; length 4·80 inches—*Pytilia melba grotei* Reichw. (east) and *P. m. belli* O. Grant (west), the Tanganyika and Central African MELBA.

(ii) *Brown and crimson:*

234. Above deep chocolate; nape, breast, throat, etc., deep crimson, abdomen black, flanks with many round white spots; length 5·50 inches—*Hypargos niveoguttatus* (Peters), Peter's TWIN-SPOT (east).

235. Crown and nape grey, back brown, rest crimson, bill black; very small; length 4·75 inches—*Lagonosticta rubricata haematocephala* Neum., the FIRE-FINCH, ANIMATED PLUM or RUDDY WAXBILL. Seen in pairs on ground, as also 236.

236. Crown and nape brown, rest crimson, bill red, habits as 235, also called by the two latter names, *Lagonosticta senegala somaliensis* Salvad.

(east) and *L. s. ruberrima* Reichw. (north-west), the RED-BILLED FIRE-FINCH.

237. Above brown with narrow dark cross-bars; around tail tinged red; eyestripe crimson, below light grey washed with pink, vent black. Bill red—*Estrilda astrild minor* (Cab.), the MOMBASA RED-WAXBILL. In small flocks.

(b) *With light blue; tail not long:*

238. Very small, in pairs; abdomen and upper side dull brown, except upper tail-coverts and tail blue; ears deep crimson; remainder bright cambridge blue. Female has no crimson and its blue is much duller and paler; length 4·7 inches—*Uraeginthus bengalus* (Linn.) (east) and *U. b. ugandae* Zedl. (north-west), the RED-CHEEKED CORDON-BLEU.

239. Male as 238 but without red ear; female as female of 238 but brown duller—*Uraeginthus angolensis niassensis* Reichw., the CORDON-BLEU.

240. The same but the forehead and front of crown blue; *Uraeginthus cyanocephalus* (Richm.), the BLUE-CAPPED CORDON-BLEU.

(c) *Deep blue-black:*

241. Larger; entirely black with purplish gloss; bill and legs whitish; length 4·25 inches—*Hypochera funerea funerea* (Tarrag.), the DUSKY-INDIGO BIRD.

242. As 241 but with blue gloss; bill whitish; legs orange-red—*Hypochera ultramarina purpurascens* Reichw., the PURPLE-INDIGO BIRD. Length 4·10 inches.

(d) *Other very small birds—without long tails:*

243. *Mainly brown*; crown glossy green-black; nape, back and wings brown, rump lighter and slightly striped; breast, throat and flanks brown, latter striped white; abdomen white. Female plain brown, paler below. Large flocks in grass; length 3·60 inches—*Spermestes cucullatus scutatus* Heugl., the Abyssinian BRONZE MANNIKIN.

244. *Chestnut*; head black; rump and upper tail-coverts black spotted and barred with white. Habits as 243; length 3·50 inches—*Spermestes nigriceps nigriceps* Cass., the RUFIOUS-BACKED MANNIKIN.

245. *Pied*; slightly larger, head, throat, flanks and tail black, breast and abdomen white, back and wings brown; length 5·10 inches—*Amauresthes fringilloides* (Lafr.), the MAGPIE MANNIKIN.

(e) *Small birds with very long tails:*

246. *Pied*, black and white; tail thin; underside, rump and wing-coverts white; rest black; bill coral; in parties with dull coloured females; length 7·1-8·3 inches—*Vidua macroura* (Pallas), the PIN-TAILED WHYDAH.

247. *Black glossed with blue*; under wing-coverts white with brown tips, habits as 246; length 10·2 inches—*Vidua hypocherina* Verr., the STEELY BLUE PIN-TAILED WHYDAH.

248. *Black and buff*; long tail-feathers straw-coloured; above black, below creamy buff; length 9·8 inches—*Vidua fischeri* Reichw., Fischer's PIN-TAILED WHYDAH.

249. *With a bustle*. Tail ribbon-like, narrowed vertically with a large "bustle" at the base on top; breast chestnut, abdomen and nape buff; rest black; length 13·8-15·7 inches—*Steganura paradisaea paradisaea* (Linn.), the PARADISE WHYDAH.

XXXIII. Family—*Fringillidae*—The Finches

A. *With yellow, lemon or brighter*

250. *Serinus mozambicus mozambicus* (Müll), the YELLOW-FRONTED CANARY. Forehead, eyebrow, rump and whole underside lemon. Back and wing-coverts olive-brown, centres of feathers darker. Primaries, secondaries and tail sepia with lighter edges.

251. *Serinus sulphuratus shelleyi* Neum., the BRIMSTONE CANARY. Length 6 inches. Eyebrow, throat and abdomen bright yellow, breast and flanks greener as are beard and eye-stripe. Above greenish-yellow. Primaries, secondaries and tail black with yellow edges.

252. *Poliospiza angolensis reichenowi* Salvad., the Kenya YELLOW-RUMPED SEED-EATER. Length 3·9-4·5 inches. Back and scapulars in male deep red-brown. Above pale brown, streaked darker. Rump bright yellow. Primaries and tail dark brown edged lighter. Narrow white eyebrow; cheeks, chin and underside white, latter duller streaked with grey on breast. Seen searching for seeds in small parties, on ground and in low herbage.

B. *Light brown, streaky, no yellow*

253. *Poliospiza gularis reichardi* Reichw., the STREAKY-HEADED SEED-EATER. Length 6·05 inches. Head brown streaked with very pale greyish-white; cheeks, back, rump and upper tail-coverts pale grey-brown, tail and wings darker. Eyebrow and under-parts whitish, greyer in places.

254. The STREAKY SEED-EATER, *Poliospiza striolata* (Rüpp.), common in Kenya, comes south to Kilimanjaro and the Usambaras. Length 5·5-9 inches.

XXXIV. Family—*Emberizidae*—The Buntings

Feed on the ground and (the three species here referred to) have a central white stripe through the crown and two other white stripes running back longitudinally through the dark colour of the face.

A. *Much of under-surface yellow*

255. Back and scapulars bright chestnut; breast chestnut-orange; throat yellow, also upper abdomen; considerable white on the outer tail-feathers that shows up conspicuously in flight; a white wing-band—on coverts, head black with five stripes; primaries black edged with white; reminiscent of chaffinch on ground—*Emberiza flaviventris flaviventris* Steph., the GOLDEN-BREASTED BUNTING. Length 6·50 inches. The female is darker chestnut on the back, streaked black; the male in the "off" season has the back feathers edged paler and is generally dingier.

256. Rump and back more mottled; breast tinged with rufous—*Emberiza poliopleura* (Salvad.), SOMALI GOLDEN-BREASTED BUNTING.

257. Above dark brown, feathers margined paler, hence streaky; throat, sides of neck, of breast and of flanks grey, centre of throat and breast yellow. Crown brown streaked with black; the usual white stripes—*Emberiza cabanis orientalis* (Shelley), CABANIS'S BUNTING.

B. Under-surface light reddish-brown

258. Above reddish-brown mottled with black. Head black or dark brown with the usual white stripes, the head in the female like the back and the breast paler, head-stripes less distinct, as also in non-breeding male—*Fringillaria tahapisi tahapisi* (Smith), the CINNAMON-BREADED ROCK BUNTING. Length 5.25 inches.

VI.—MIGRANTS FROM THE NORTH THAT VISIT TANGANYIKA OF THE ORDERS REPRESENTED IN THIS KEY

Cuckoo, Nightjar and Swift

European Cuckoo (*Cuculus cuculus canorus* Linn) rarely if ever calls. European Nightjar, southern race (*Caprimulgus europaeus meridionalis* Hartert.); European Swift (*Cypselus apus* (Linn.)).

Wagtails and Pipits

Blue-headed Wagtail, *Budytes flavus flavus* (Linn.), and the Eastern Yellow Wagtail (*B. f. luteus = campestris* (Pall.)); the Tree-Pipit (*Anthus trivialis trivialis* (Linn.)), thrush-like spots on breast.

Fly-catchers and Thrush Family

The Spotted Fly-catcher (*Muscicapa striata striata* (Pall.)): the European Wheatear (*Oenanthe oenanthe oenanthe* (Linn.)), also a regular visitor: distinguish from *O. pileata livingstonii* (Tristram) (No. 122) by absence of black breast-band (but other species of *Oenanthe* occur); the European Whinchat (*Saxicola rubetra rubetra* (Linn.))—in western Tanganyika; the Nightingale (*Luscinia luscinia* (Linn.)).

Warblers. White-throat (*Sylvia communis communis* Lath.); Garden Warbler (*Sylvia borin borin* (Bodd.)); Icterine Warbler (*Hippolais icterina* (Vieill)), one recorded: Reed-warbler (*Acrocephalus arundinaceus arundinaceus* (Linn.)); Sedge Warbler (*Acrocephalus schoenabanus* (Linn.)); Willow-warbler (*Phylloscopus trochilus trochilus* (Linn.)).

Swallow and Shrike. European Swallow (*Hirundo rustica rustica* Linn.); Red-backed Shrike (*Lanius collurio* Linn.), see No. 164.

VII.—NESTING HABITS AS AN AID TO IDENTIFICATION

1. White Eggs

(a) *In holes in trees.*—The Parrots (23-27); the Rollers (28-32); the Hornbills (52-59); the Crested Hoopoes (60, pale bluish); the Wood Hoopoes (61-63); the Barbets (72-80)—Barbets commonly make their own holes like Woodpeckers; the Woodpeckers and African Wryneck (*Jynx ruficollis* Wagl.).

(b) *In holes in the ground and banks.*—The Kingfishers (33-42), but *H. chelicuti* (Stanley) (39) sometimes uses a hole in a wall or Striped Swallow's nest (142); the Bee-eaters (43-71); the Crested Hoopoes again (60); the Lesser Black Swallow (139).

(c) *In covered nests.*—The Coucals (12-15), in shrubs; the Swifts (64-67); in buildings and rocks; except Palm Swift (*Tachynautes* Oberh.—70) in palms; the Broad Bill, *Smithornis capensis suahelicus* Grote (not given here), nest slung in a shrub in rain-forest.

(d) *In open nests.*—The Touracos and Go-aways (16-22), on platform stick nests in trees; the Colies (68-69) in cup nests in large shrubs and small trees.

2. Coloured Eggs

(a) *In holes.*—The Wagtails (86); some of the Starlings (XXIX)—also in cliffs and rocks; the Grey-headed Sparrow (206).

(b) *In covered nests.*—Starred Bush-robin, *Pogonocichla* (Vieill.) not given here, moss, domed, on ground; *Cisticola*, *Prinia* and some other Warblers; the Striped Swallow (142) under caves and rocks (WHITE ?); the Sunbirds (189-200), nests with porches and much cobwebs, slung from twigs of large shrubs.

(c) *In cup nests on ground.*—The Larks (84, 85 and those not listed); the Pipits (87, 88 and not listed). In bare depression—or none—the Nightjars, not here described.

(d) *In other birds' nests.*—The Cuckoos from 1-11; the Honey-guides (81-83 and the Pin-tailed Whydah).

(e) *In cup nests—usually in trees and shrubs.*—Nearly all the rest of the birds in the present key.

Prehistory in Tanganyika

By W. H. Reeve

IN 1913, the late Professor Hans Reck found a skeleton of a prehistoric man at Olduvai (Oldoway)* in Tanganyika Territory⁽¹⁾. Reck subsequently reported on his discovery and published his views concerning the age and type of the man. In 1931, other workers entered the Olduvai field, notably Dr L. S. B. Leakey of Kenya Colony, Mr E. J. Wayland, Director of the Uganda Geological Survey, J. Reid Moir, Professor D. S. M. Watson, C. Forster Cooper, Professor P. G. H. Boswell, Dr A. T. Hopwood of the Palaeontological section of the British Museum (Natural History) and Dr J. D. Solomon, and during the two succeeding years, keen controversy raged with regard to the problem of the age of the Olduvai skeleton. It was not until 1933 that agreement was reached on this point by a number of those participating in the dispute.

It is the object of this paper to give a brief, connected account of the steps of the controversy, the sole record of which has hitherto been confined to scattered accounts in the pages of *Nature*, and to state the final conclusions and implications.

The discovery of this man, no less the ultimate decision as to his age, is of great interest and importance to science generally and to the study of prehistory in East Africa, but in order to estimate its significance, it is necessary to know something of the geological and archaeological sphere in which the original discovery was made.

Olduvai lies twenty-six miles north-north-west of Ngorongoro crater and is reached by the motor-road which connects Arusha via Ngorongoro to Loliondo by way of the Serengeti Plains. The name is now permanently attached to the valley and gorge where are exposed the strata of Pleistocene age in which the fossil man was found.

During the rains and for some time after the end of the rainy season, the Olduvai stream discharges into the depression of Olbalbal, north-west of the giant craters, but from the middle to the end of the dry season there is no surface water to be relied upon. For about fifteen miles of its course before opening out into the Balbal depression, the Olduvai valley is gorge-like and for the whole of that distance an observer may see on both sides a striking section of beds of the Pleistocene epoch rising to a maximum height of 300 feet above the water channel. These beds rest on a foundation of lava which is exposed at the base of the strata in many places along the gorge.

*The Royal Geographical Society has decided that "Olduvai" is the correct spelling of the name that has hitherto commonly been spelled "Oldoway". The form "Olduvai" will therefore be used here.

There are five distinct beds at Olduvai overlying the basal lava, though each of these exhibits some heterogeneity within itself. They can, however, readily be distinguished *in situ*. They are generally termed "Beds 1 to 5" and for the sake of clarity will be so designated here, Bed 1 being the lowest.

Careful examination of the material of the beds has shown that the lower part of Bed 1 was laid down on a land surface and the upper part in water, as the fossil fauna indicates. The fauna of Bed 2 shows that it, also, was deposited in water. Bed 3 is noteworthy for its intense red colour and in this respect it differs from the other strata. It is terrestrial in origin and points to a change in climate in the direction of drier conditions, a suggestion that is borne out by the increasing number of antelope remains among the fossil fauna.

This bed contains lime concretions, the presence of which, together with the intense reddening indicates a pause between the consolidation of this bed and the deposition of the succeeding Bed 4. In other words, Bed 3 probably existed for some time as a land surface and underwent a certain amount of erosion before Bed 4 was laid down.

The latter is predominantly a grey clay with fish remains and a fauna that is very similar to that of Bed 2. There is little doubt that it was laid down in water and there are indications here, therefore, of another change in climatic conditions, this time towards a wetter phase.

Bed 5 is an aeolian deposit marking a recurrence of dry conditions as is shown by its fossil fauna which consists mainly of antelope remains, some of them being extinct forms.

There was a pause after the deposition of Bed 4 concomitant with the change in climatic conditions and this is supported by the existence at the base of Bed 5 of a thin layer of gravel and steppe-lime. Therefore, for some time of uncertain duration, Bed 4 also was a land surface on which ultimately Bed 5 was deposited.

After the consolidation of the red Bed 3, a considerable period must have elapsed before the deposition of Bed 4. This is confirmed by three facts:—

(i) The fossil fauna of Bed 3 includes dry climate forms such as antelopes and is a terrestrial deposit.

(ii) The fossils of Bed 4 (fish and wet fauna) indicate deposition in water.

(iii) Bed 3 is intensely reddened, probably as a result of repeated seasons of desiccation which would have occurred only had the bed been a land surface for some time.

That a considerable period must have elapsed between the consolidation of Bed 4 and the deposition of Bed 5 is apparent from several sections in the Olduvai gorge where the strata in question are exposed, for Beds 1 to 4, as well as the basal lavas, are all dislocated by faulting while Bed 5 remains undisturbed, in places transgressing each of the beds below, and unconformably overlying them.

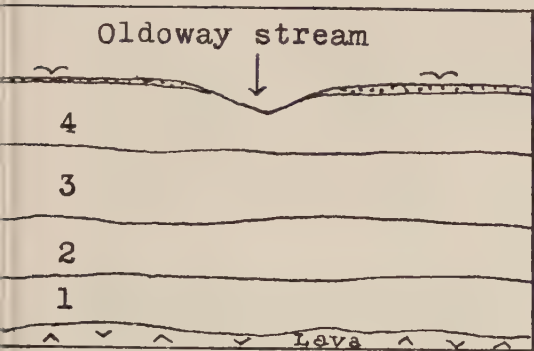


Fig. 1

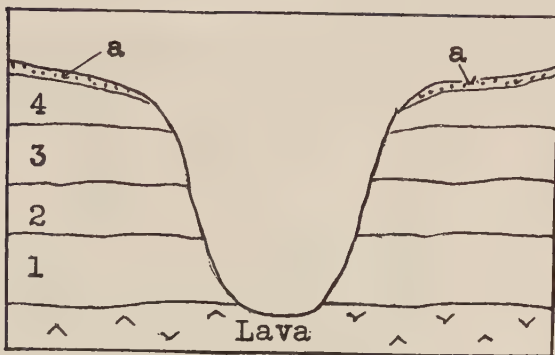


Fig. 2

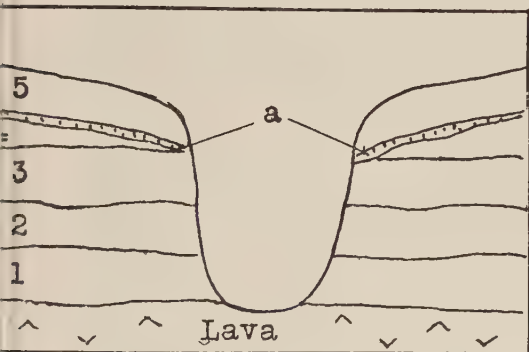


Fig. 3

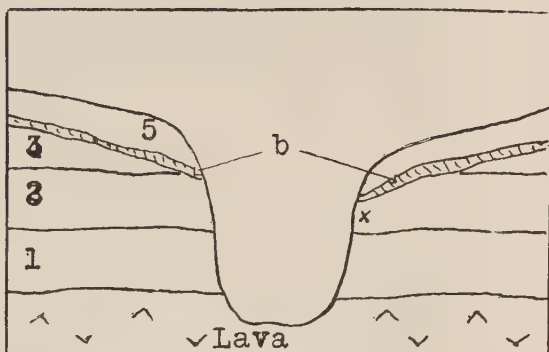


Fig. 4

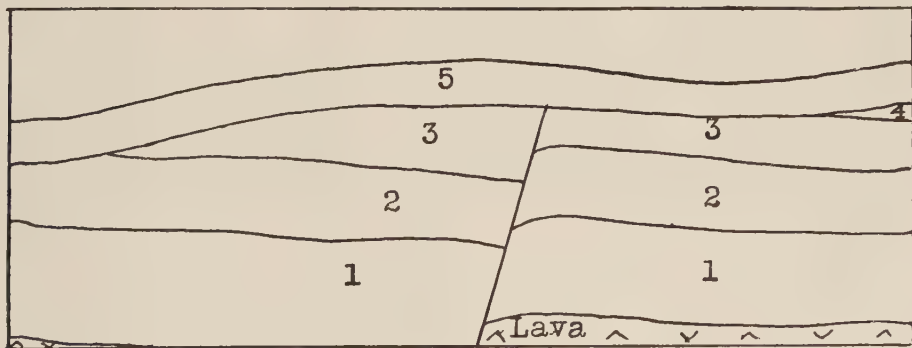


Fig. 5

EXPLANATION OF FIGURES

Fig. 1. Section of Middle Pleistocene beds prior to the faulting; — = alluvium and river gravel.

Fig. 2. Section showing gorge cut subsequent to faulting but prior to deposition of Bed 5. Relics of alluvium and river gravels left on top edges of gorge.

Fig. 3. Typical section of present-day gorge showing Bed 5 deposited on the eroded surface of the pre-fault beds 1 to 4.

Fig. 4. Represents the position and relation of the beds at the time and place x of burial of the Oldoway man. Hillwash material deposited on eroded surface of Beds 2 and 3, and overlain by Bed 5. At site of burial, Beds 3 and 4 eroded away completely.

Fig. 5. Diagrammatic representation of faulting shown in Fig. 2, Plate II.

a, alluvium; b, hillwash.

x, represents position of burial site (Fig. 4.)

This period of dislocation is connected with the formation of the Eyasi trough to the south and of the Balbal depression, for both form a continuous tectonic feature. They are separated by the volcanic mass of Lemagrut, part of which unquestionably antedates the faulting as it is itself affected by the dislocation. The youngest lavas of Lemagrut, however, were extruded subsequently, in common with those of Oldeani and others of the giant cauldron mountains of the volcanic highland to the east, and now partly cover the floor of the depression.

During the period succeeding the deposition of the earlier Olduvai strata 1 to 4, and preceding the faulting, a deposit of alluvium and river gravel was formed along the Olduvai valley. (Plate II, Fig. 1.) The formation of the Balbal depression produced a new base-level of erosion, rejuvenating the Olduvai stream and enabling it to cut a gorge through the strata already laid down and consolidated. (Plate II, Fig. 2). Thus, the youngest bed, 5, was ultimately deposited over the dissected and eroded earlier strata and the alluvium and river gravel resting on them. (Plate II, Fig. 3).

At several points along the gorge, the Bed 5, consisting of sand and tufa, can be observed to transgress Beds 4 and 3 and to be overlying Bed 2 directly. In at least one such place, denudation of the pre-fault landscape removed Beds 3 and 4 completely and brought down a certain amount of hillwash material of a predominantly red colour. At the spot where the fossil skeleton was unearthed, some of this hillwash was lying directly over Bed 2 and was itself overlain by Bed 5, as in Fig. 4 of Plate II. This hillwash, being also red in colour, was mistaken by the earlier investigators for the substance of Bed 3, thus leading to a nerroneous conclusion as to the age of the skeleton.

Reck claimed that the skeleton lay in Bed 2. Leakey, however, could not agree to this view⁽²⁾, maintaining that what Reck thought was Bed 2 was, in fact, a pocket of Bed 4. Reck himself had previously stated that Bed 2 closely resembled Bed 4. Leakey's argument was based upon Reck's assertion that the deposits of the supposed Bed 2 were at the same level and alongside the reddened Bed 3, and *not* beneath it. Leakey concluded that this contiguity was accounted for by supposing erosion of Bed 3 to have taken place prior to the deposition of Bed 4. He regarded the skeleton as of later date than the fossils of Beds 1, 2 and 3 and as an intergral part of Bed 4. However, while agreement on this point was not reached at this time, both Reck and Leakey decided that the idea of the skeleton having been a later burial into the deposit in which it was found was untenable, a view that was modified when further evidence was brought to light later on.

Subsequently⁽³⁾ both these workers restated their ideas and conclusions in such a way that both were agreed that the skeleton must have lain in Bed 2 and *not* in a pocket of Bed 4, as Leakey earlier suggested.

In 1933, samples of the material of all the Olduvai strata were examined in England by Boswell and Solomon with the result that the red deposit present in the section of the site where the fossil man was disinterred, overlying Bed 2



Infra-red photo, W.H.R.

Fig. 2—Southern side of the Olduvai Gorge near the Balbal depression, showing the beds dislocated by the last step-fault

and underlying Bed 5, was finally recognized as hillwash material in which occur the characteristic minerals of Beds 4 and 5⁽⁴⁾.

It was this red hillwash that was earlier mistaken for the reddened Bed 3. It is thus obvious that in the region of the fossil discovery, erosion had removed the whole of the overlying Beds 3 and 4 before the hillwash that formed during the later stages of this process was deposited and afterwards covered up by the formation of Bed 5. This points to the existence of the top of Bed 2 as a land surface with a covering of hillwash prior to the deposition of Bed 5.

All the participants in the controversy were, by this time, agreed that the Olduvai skeleton could not reasonably be regarded as having been buried subsequently to the deposition of Bed 5 and the steppe-lime that now overlies it. In this connection, it should be mentioned that Boswell observed fragments of steppe-lime in the matrix adhering to the skeleton, but was not at that time aware that steppe-lime existed also *below* Bed 5, as it actually does, its formation being connected with the existence of Bed 4 as a land surface before the formation of Bed 5.

The presence of this latter steppe-lime as matrix on the skeleton proved that the man must have existed *after* the Bed 4 had become a land surface and after this steppe-lime had formed. The position at the present time is, therefore, that the skeleton is regarded as having been buried into Bed 2 (Beds 3 and 4 having been at this time eroded away at the burial place) and that the date of the intrusion is not earlier than the great unconformity separating Bed 5 from the lower strata. Further, it is fairly certain that the skeleton (it would perhaps be more correct to say, the man) was deposited in Bed 2 before the main mass of Bed 5 and the overlying steppe-lime were formed.

Fig. 4 (Plate II) represents the position and relation of the Olduvai beds at the time and place of burial of the man whose skeleton Reck found. It shows Beds 2 and 3 completely eroded away from the site of burial, and the hillwash material covering Bed 2. Fig. 3 is a diagrammatic representation of a typical section of the present-day gorge, showing the post-faulting Bed 5 unconformably overlying the pre-fault Beds 1 to 4, with a thin layer of river gravel and steppe-lime immediately below Bed 5. In places, where erosion had removed portions of Beds 3 and 4, Bed 5 with its underlying steppe-lime rests directly on beds lower than 3.

The faulting of Beds 1 to 4 is shown in Plate I, Fig. 2 (photograph). In this part of the gorge, the height of the strata above the lava that is exposed in the bed of the stream, is about 100 feet. Bed 5 is lying directly on Bed 3 in the left-hand half of the photograph and the right-hand side shows a cliff-like face composed of Beds 1 and 2, with a small remnant of 3 on the top. The fault indicated here is the last of five step-faults which strike more or less transversely across the valley at intervals along the first fifteen miles from the Balbal depression. Such a disposition of the faults enables the effects of the dislocations to be most clearly observed. The throw of the

fault in this place is not very great; it does not amount to more than about thirty feet. Further up the gorge, the throw of the other faults is considerably greater. In each place, the basal lava, too, is faulted along with Beds 1, 2, 3 and 4, but Bed 5 remains undisturbed. A short distance to the left of the section shown in Plate I, Fig. 2, Bed 5 rests on Bed 2, Bed 3 having been eroded away at that spot. This is represented diagrammatically in Fig. 5, Plate II.

The outstanding facts and events in the history of Olduvai may now be summarized as follows:—

- (1) Deposition of lower part of Bed 1 on an old lava land surface.
- (2) Change of climatic conditions with general inundation of the region; upper part of Bed 1 laid down in water.
- (3) Continued deposition in water of material which became Bed 2.
- (4) Further change in climatic conditions, drying up of water and formation of Bed 3 as a terrestrial deposit. Fauna predominantly dry climate forms. Alternating seasons of desiccation produces reddening of this bed.
- (5) Recurrence of pluvial conditions; deposition of Bed 4 under water. Fish and wet fauna.
- (6) Decline of water level and elevation of top of Bed 4 to form a land surface. Commencement of cutting of Olduvai channel.
- (7) Period of intense earth-movements in this region resulting in the faulting of all the earlier deposits and the basal lava, the formation of the Eyasi-Balbal trough and cutting of the Olduvai gorge.
- (8) Cessation of earth-movements followed by a period of erosion and desiccation. Erosion of Beds 3 and 4 in various places in the Olduvai region, exposing Bed 2. Accumulation of hillwash material on this bed; formation of steppe-lime on the land surface formed by the upper part of Bed 4 where this was not eroded.
- (9) Burial of Olduvai man in Bed 2 through the red hillwash material overlying it.
- (10) Formation of bed 5, a terrestrial deposit of tufa and sand.
- (11) ? Later volcanic outbursts resulting in extrusion of lavas on to the floor of the Balbal depression and the Eyasi trough.

It is seen from this chronological table of events that the prehistoric man whose remains were found in the Olduvai gorge, lived in the period of quiescence that followed the intense earth-movements in this region and that owing to the accident of erosion, his remains were found in strata of undoubted pre-fault age into which he had been intrusively buried. Thus arose the original misconception as to the exact age of the man himself.

The faulted beds at Olduvai (1 to 4) have been shown to be of Lower to Middle Pleistocene age. The evidence for this estimate is to be found in the fossil fauna and the culture. The fauna in Bed 1 includes *Deinotherium* sp., *Hipparion* sp., and also *Elephas (antiquas)* Recki?). In the same bed, artefacts of a pre-Chellean type actually occur with *Deinotherium*. Bed 2 at

its base contains early Chellean tools of large size and in the upper portion, at the same horizon at which Reck found the skeletal remains, tools of a more advanced Chellean type.

The fauna of this bed also includes *Hipparion* and *Elephas antiquus* Recki. Bed 3 yielded tools regarded as transitional from a Chellean to an Acheulean stage of culture. Bed 4, in its lower part, yielded a large series of tools of an early Acheulean type and in the upper part, more than five hundred advanced Acheulean-type tools were discovered. This bed, also, includes the fauna common to the lower strata with, in addition, *Hippopotamus gorgops*, *Equus* sp., and *Pelorovis*. More than fifty per cent of these species are extinct forms.

On these grounds and from the fact that the fauna and culture resemble that of Gregory's Kamasian series in Kenya, the Olduvai beds 1 to 4 have been fixed as Lower to Middle Pleistocene in age.

In Bed 5, on the other hand, tools of an Upper Kenya Aurignacian (Phase C) type were found, quite distinct from the culture of Beds 1 to 4. An interesting point is that work on Gamble's cave in Kenya revealed the fact that men of this culture stage buried their dead in the contracted position, which was also the case with the Olduvai skeleton. It thus appears likely that the Olduvai man was one of the race of people responsible for the manufacture of the tools found on the old land surface formed by the top of Bed 4, and in the basal portions of Bed 5, that is, of the Kenya Aurignacian and *not* of the more advanced Chellean type associated with the stratum in which his remains were discovered.

A more recent discovery of prehistoric man in Tanganyika Territory was made by Dr L. Kohl-Larsen during the period 1934-36. In the course of an expedition to the north-east end of Lake Eyasi, Dr Kohl-Larsen discovered parts of three fossil human skulls in the lake beds west of the Mumba Hills. Of the three skulls represented, the partial reconstruction of one only was possible, but this reconstruction was sufficient to indicate that the skull represents a low type of human with some markedly anthropoid characters, while in other ways it approximates more to the *Sinanthropus* type. In a preliminary report by the late Professor Hans Reck and Dr Kohl-Larsen^(*) it is attributed to the genus *Palaeoanthropus* (sp. *njarasensis*) and an Upper Pleistocene age is assigned to it.

In November of last year, Dr L. S. B. Leakey, in company with the writer, visited the site with a view to obtaining, if possible, further evidence that might either confirm or deny this estimate of the age of the Eyasi skull. The evidence resulting from this investigation contained nothing to contradict the view expressed by Professor Reck and Dr Kohl-Larsen—rather did it confirm the Upper Pleistocene age.

The chief facts elicited as a result of both these expeditions to Eyasi which influenced the determination of the age of the skull, may be summarized as follows :—

The skull remains were found in an ill-consolidated sandstone containing fossil mammalian remains and obviously a terrestrial deposit. This was underlain and overlain by fine-grained marls with fossil fish remains, indicating deposition in water. The fauna of the sandstone included rolled bones and teeth (that is, derived fossils) of such extinct genera as *Hipparion* and *Simopithecus*, while the unrolled fauna, that is, that contemporary with the skull, included present-day forms, such as the white and black rhinoceros, hippopotamus, forest-pig, wart-hog giraffe and porcupine, and also *Bos bubalus*, an extinct bovid which, in Kenya, South Africa and North Africa is typical of Upper Pleistocene. Apart from *Bos bubalus*, the remaining fauna is typical of the Gamblian Pluvial period in Kenya, that is, Upper Pleistocene.

Further, associated with the fauna was found a series of artefacts, the majority of which are contemporary with the unrolled fauna and therefore with the skull. The culture represented by these artefacts proved to be essential Levalloisian. The assemblage apparently represents a stage of development similar to that which occurs in early and middle Gamblian Pluvial deposits in other parts of East Africa. The culture evidence thus confirms the Gamblian (Upper Pleistocene) age of the fauna.

The undisturbed nature of all the Eyasi beds argues for an age that post-dated the latest faulting though it is conceivable that had faulting taken place subsequent to their deposition and consolidation, and had the dislocations been confined only to the margin of the area in which they were laid down, the beds might still present an undisturbed attitude. In point of fact, the deposits examined are situated much nearer the middle than the margins of the present-day Eyasi trough.

On the other hand, the presence of *Bos bubalus* (an extinct type) in the fauna is against a Recent age.

Thus it appears that the Olduvai man and the Eyasi man, while not strictly contemporaneous, lived in the same epoch, an interesting fact when the further fact is taken into account that one is representative of the palaeoanthropid branch of the human stem and the other, *Homo sapiens* himself.

Dr Leakey has summed up the interest and importance of the Eyasi skull in the following words:—

“Quite apart from the fact that the skull represents a new genus of man, it is of the greatest importance because it once again demonstrates the association of the great Levalloisian-Mousterian culture complex with that branch of the human stem which is characterized by . . . specialized features which are never found in any *Homo sapiens*, but are typical of the palaeoanthropid branch of man. It is also of particular importance because it demonstrates still further the already established fact that during the Pleistocene period (and even the Upper Pleistocene), the human family was represented in the world by a number of distinct genera and species of which only one, *Homo sapiens* has survived.”

It is hoped that future investigations in this, and other parts of East Africa will add to our all too scanty knowledge of prehistory in this part of the world.*

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(⁴) 1933 LEAKEY, L. S. B. and others, The Oldoway Human Skeleton: *Nature* Vol. 131, March 18th p. 397.

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EDITORIAL NOTE.—To this hope the layman, with all respect due to the learned anthropologists, may add the further hope that future finds will produce more ample and more connected skull fragments which would permit of a more convincing reconstruction than the one I had the privilege of inspecting at the Berlin Palaeontological Institute in 1936.—c.g.

Rift Valley Ruins

By H. A. Fosbrooke

THERE exists a striking similarity between the ruins at Engaruka, and the stone works to be found in the Sonjo villages some fifty miles to the north-west of this site. To illustrate this resemblance I propose to examine the report on Engaruka, by Dr L. S. B. Leakey, published in the first number of this journal, quoting relevant sections for ease of reference, and then adding comments from my observations in Sonjo country. As this method of presentation will tend to obscure the differences, it should be stated at the outset that these are manifold.

The population of Sonjo is about two thousand five hundred souls; probably no village has more than eight hundred inhabitants; this contrasts strangely with the thirty thousand at Engaruka. The Sonjo's actual dwellings are beehive huts; they erect no burial cairns, but inter their dead in the large heaps of goat manure that accumulate outside the houses; their dwellings are confined to the scree slopes, and nothing corresponding to the valley ruins of Engaruka is to be found.

Having made these differences clear, it is now possible to turn to the similarities, working step by step through the article under reference.

The Geographical Position.—"The Engaruka ruins are situated along the scree slopes of the Rift valley wall on either side of the small stream." Every Sonjo village, and there are five, is situated on the scree slopes of an upper scarp of the Rift valley, fifteen to twenty miles west of Lake Natron. In every case a stream runs past the village.

"Also on the plains, there is to be found a complicated network of low stone walls . . ."

In one case, Sale, a complicated series of low walls (Fig. 1) exists, being irrigation basins to which water is led down from a mud and stone dam with a well-made sluice gate. Stone cairns (Fig. 2) are also found on the cultivated flats below the Sonjo villages, but these are merely formed of surface stones piled up in the course of agricultural work.

"The site of the Engaruka city seems to have been selected with a view to having a good strategic position for defence . . ."

This also is the case in the Sonjo villages, which are protected from Masai raids, in the front by an elaborate system of pallsades and gateways (Fig. 3) in the rear by a steep scree slope (Fig. 4).

"The houses of the main city are all built upon very well-made terraces upon the scree slope . . . the terraces are cut into this, and are built up with very well made stone walls. The terraces include pathway terraces and house terraces."



Fig. 1—Irrigation basins in valley below Sale Sonjo



Fig. 2—Dam and sluice gate of stone work, Sale Sonjo



Fig. 3—Palisade and gate of Sonjo village with inner fortifications beyond



Fig. 4—Huts at the top of Sonjo village showing steep scree slope in rear

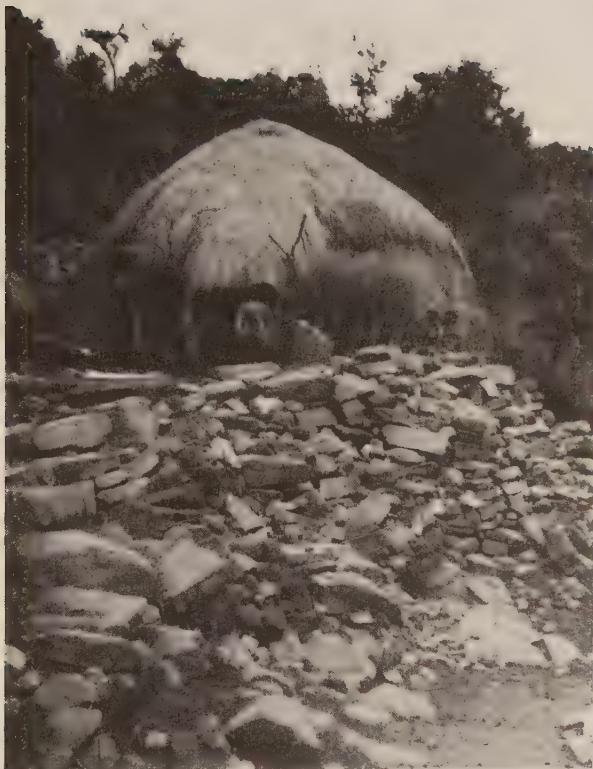


Fig. 5—Sonjo hut on platform with ten-foot terrace in front. In left foreground the path, almost completely formed steps, can be seen



Fig. 6—Outside fireplace in Sonjo village, taken from the terrace next above. In background path terraces with figure ascending



Fig. 7—Hut at Engaruka excavated by Dr Leakey.
Fireplace clearly shown

This quotation from Dr Leakey can be applied word for word to a Sonjo village; one finds house sites at the top of a ten-foot terrace (Fig. 5) whilst pathway terraces are of a very elaborate nature (Fig. 6). This photograph also shows in the foreground a peculiar outside fireplace, common in all Sonjo villages, which is in fact the next point for comparison.

"The excavation also revealed the very curious way in which the fireplaces of these houses were built."

I was privileged to visit Engaruka whilst Dr Leakey was at work, and it was with his assistance that I obtained the photograph of the fireplace which he excavated (Fig. 7). The similarity to the Sonjo type of fireplace is most striking; the inner ring of small flat stones placed upright (well figured in the Engaruka photograph and just discernible in the Sonjo illustration) the intermediate space, presumably for the feet, represented by bare earth in Engaruka and by small flat stones in Sonjo; and finally the outer ring of large flat slabs for sitting on; each feature on examination is practically identical.

"*Inscriptions.* The origin of the rumour of the existence of inscriptions probably lies in a small number of blocks of stone upon which there are engravings. For the most part they consist of irregular lines and round cup marks."

A large slab of stone, about six feet by five, is to be found in the Sonjo village of Samunge (Fig. 8) of which no adequate explanation is given by the natives. The cup marks are not sufficiently evenly spaced to suggest their use in any game; I have found no ceremonial observances in connection with this stone nor is there any reason to believe that it is associated with the clan organization of the Sonjo.

A feature that might more readily be regarded as a true inscription is the existence on the walls of rock shelters and on exposed slabs of crude representations of Masai shields, painted in ochre and fat (Fig. 9). The Sonjo's usual answer to one's enquiry is that the drawings are merely child's play; but certain elders have suggested that they were painted up to celebrate the repulse of Masai raiding parties in bygone days.

"*Masai Tradition.*— . . . that according to their (the Masais') tradition handed down by their forefathers, this city of Engaruka was inhabited by the Mbulu tribe, and that the Mbulu were driven out by the Masai about a hundred to a hundred and fifty years ago."

It happens that I was with Dr Leakey when he was asking the Masai about their traditions, and that I fell into the same trap as he did. Later I discovered that the Masai apply the name Il Datwa, the term used by the elders on that occasion, to two local tribes. The Mbulu they call the Datwa of the Black Cattle, the Mbugwe they term the Datwa of the Bare Place. On further enquiry I have found considerable confusion in Masai tradition as to which Il Datwa inhabited Engaruka, but the general consensus of opinion seems to favour the Mbugwe.

Further Masai tradition links up the Sonjo with Engaruka in the following manner. It is said that the Sonjo lived with the Datwa at Engaruka,

more or less in the position of serfs. When the Masai, after repeated attacks, finally captured the city the Sonjo pleaded with the victors for mercy. They pointed out that they possessed no cattle nor had they resisted the Masai except under compulsion. The Masai accepted their plea as reasonable and so allowed them to remain in Masailand, an island of agricultural Bantu in a sea of nomadic Masai.

I would here state frankly that I have formed no opinion on the origins of Engaruka. I quote the above, well knowing that other legends associate the origin of the Sonjo with the Ikoma or Kuria, that no tradition has been discovered amongst the Mbulu or Mbugwe indicating a previous occupation of Engaruka, and that in fact the last mentioned tribe believe themselves to have come up from the south.

Nevertheless the material evidence is so strong that one cannot but believe that the Sonjo were either associated with the actual building of Engaruka or lived in very close contact with the builders. Perhaps these notes will stimulate research into tribal history in the neighbourhood and so enable a definite answer to be given to the perplexing question: "Who built Engaruka?"



Fig. 8—Cup marked stone in village of Samunge



Fig. 9—Shields painted on rock shelter in Samunge village

The Kilwa Civilization and the Kilwa Ruins

By M. H. Dorman

KILWA UNDER THE SHIRAZIS

THE known history of Kilwa does not start till the tenth century. Before that we can only as for most of East Africa's past make more or less likely guesses about what happened. It may have been the Pharaoh's daughter whom Solomon married who began it. Solomon's wife wanted ivory and apes and peacocks and all the luxuries of the East which had long been known to Egypt. Solomon needed gold and silver for the treasury of Jehovah, for the building of the temple, for his palace and his garrisons. It may have been she who told him of the Land of Punt, of Ophir and of Havillah; so Solomon chartered ships, embarked Phoenician crews and set them to sail a three years' course down the Red Sea from Muscat to Malabar, from Malabar to Sofala and home again. Such early voyagers may well have touched at the fine anchorage behind the island of Kilwa on their way to or from Sofala⁽¹⁾.

It is not till the early days of the Roman Empire that any further information about Kilwa or the Azanian coast as it was called is available. About the middle of the first century Greek influence began to be felt and a trading post was established at Rhapta. I do not propose to argue here the identity of Rhapta and Kilwa, but it is sufficient to say that the case for Kilwa is at least as strong as for any other East African port. The early Greek traders, like Diogenes who was blown off his course homeward bound from India, had a lively appreciation of modern trading methods; a commercial directory of the Indian ocean referring to Rhapta states that wine is imported "not for trade but to serve for getting the goodwill of the natives."⁽²⁾

The decline of the Roman Empire effected a rapid contraction in the known world and places like Kilwa existing on the edge of it dropped from sight until the rise of Mohammedan power. The Azanian coast then became the natural outlet for some of the adventurers and malcontents thrown up by the expansion of the Caliphate under the Abbasid dynasty. About the middle of the eighth century an unsuccessful party for power in Oman in the Persian gulf began to emigrate to East Africa settling first at Mogadisho and Brava, and from there "like a slow plague" (de Barros's forceful simile) they worked their way down the coast until they reached Sofala (possibly occupying Songomanara and some of the ruined towns adjacent thereto). Some seventy years after the founding of Mogadisho, that is to say about the middle of the tenth century, an expedition of two ships set sail from the small town of Shiraz on the Persian Gulf under the leadership of Ali bin Husein, a bastard of the ruling house who "made up in personal qualifications for what he lacked in lineage." Coasting southwards Ali found no place which attracted him until he reached Kilwa, for northwards the Arabs did not welcome the Persian adventurer. He settled on the island after he had procured by treaty

FERRY TO MAINLAND

SHOW HARBOUR

ARAB FORT

MOTOR
& GRAVEYARD

FOUNDATIONS

NATIVE VILLAGE

LARGE MOSQUE

SMALL MOSQUE

ARAB or SHIRAZI 'BOMA'

LOW TIDE MARK

HIGH TIDE MARK

WALLS

MANGROVES

'KOSUM'

SAN IAGO
PORTUGUESE FORT

KILWA KISIWANI

A CHAIN, COMPASS & PLANE TABLE SURVEY OF THE RUINS.

1:3600



MAG. N.
V. S.

the evacuation of all the native inhabitants, but even here he was not free from Arabs. "He fortified himself not only against them (the Kaffirs) lest they should harbour malice, but also against various Moorish towns in the neighbourhood and also against Moors who inhabited the islands called Songo and Xanga and had conquered the country as far as Mompana about twenty leagues from Kilwa." (3).

From the founding of Kilwa which took place about ninety years before the invasion of England by William of Normandy there sprang a civilization generally known by the term Shirazi which lasted from the tenth to the fourteenth centuries and was purely local to the East African coast. The only authorities for this period are certain Arabic chronicles⁽⁴⁾ copies of which were collected in the last century by various people, and a very early edition of the Chronicle of the Kings of Kilwa incorporated in de Barros's history of India⁽⁵⁾. It is at this point that rather an important divergence occurs between the earlier and the later copies. De Barros's edition speaks of two ships sailing from Ormuz and "his settlement grew to be a noble town to which he gave the name by which it is now known and he began to conquer the neighbouring people until he sent one of his sons, a fine young man, to take possession of the islands of Manfia". Thus de Barros described a Persian culture always centring in and emanating from Kilwa. But the later copy of this same chronicle describes the sailing of seven ships, each captained by a son of Ali bin Husein, which settled at places so far apart as Mogadischo and the Comoro Islands; it was an odyssey of an almost legendary character; it described one culture springing up in several places at once, with Kilwa by virtue of her strategic position gradually dominating her fellows. De Barros describes a centralized culture of the Roman type, he chronicles a loosely knit confederation acknowledging the hegemony of Kilwa akin to the early Athenian Empire. The truth probably lies halfway between the two.

From 975 to 1505 sultan succeeded sultan. Some were bad and in one sultan's case "being a wicked man the people rose against him and threw him alive into a well." Some were good as he who "besides being a conqueror—beautified the town of Kilwa, building a stone fortress there and walls and towns and noble houses for until his time the town was constructed of wood, and all these matters he accomplished in a reign of eighteen years." Some were weak—"this tyrant being afraid of his nephews who were men of great deeds, he sent them from Kilwa to govern the lands dependent on it."

At the zenith of her power in the twelfth and thirteenth centuries Kilwa was the mistress of Melinde and Sofala, of Mombasa, Pemba, Zanzibar, Mafia, Comoro, Mozambique, stations in Madagascar and trading posts as far south as Cape Corientes. Her rise to power was largely facilitated by her geographic position. Sofala was the post from which most of the gold of South Africa and Rhodesia found its way north; for hundreds of years, probably since the time of Solomon, the gold trade had been intermittently carried on. Kilwa on an island which forms a large land-locked harbour was ideally situated for preying upon this trade. But, more than that, a well worn

road centuries old leads from Kilwa to Lake Nyasa and is one of the few main caravan routes from central Africa to the coast. Thus Kilwa had valuable inducements to offer to the merchant in trade with her own hinterland and at the same time could at will apply pressure to the merchant community by closing the route to Sofala.

The Government derived extortionate revenues from this trade. Any merchant entering Kilwa surrendered to Government sixty per cent of his trade cloth and paid three per cent import duty on the balance in addition to an entrance duty on the whole consignment. In Sofala he paid fourteen per cent import duty and export duty of forty-four cents in the pound on ivory. On returning to Kilwa a merchant paid fourteen per cent on ivory and five per cent on gold even if it was only in transit⁽⁶⁾. With such a revenue Kilwa was, under a reasonably efficient sultan, never short of funds. Ibn Batuta of Tangiers⁽⁷⁾, who travelled extensively in the East about 1330, testified to the wealth of Kilwa when he says "the greatest gift bestowed by the people of these countries is ivory which is the elephant's tooth; they seldom give gold." Leo Africanus⁽⁸⁾ reflects a general opinion of the wealth of Kilwa when he writes "that it is built of pure marble and the streets are very narrow."

Commerce was in Arabian or Persian hands but probably there were a few Indian traders also⁽⁹⁾. Kilwa exported gold from Sofala, ivory and rhinoceros horn from the Great Lakes, and pearls, tortoise shell and ambergris from the adjoining coasts. She had to import for her own local consumption millets, rice, cattle and honey from the mainland; from abroad she bought bowls, dishes, water jars and all kinds of pottery from Egypt, China and possibly Persia; she bought calico from India and gold embroidered silks, copper, semi-precious stones and beads; from Persia and Arabia she bought carpets, coffee and dates, and the daggers, scimitars and turbans worn in the every-day dress of Moslems⁽¹⁰⁾. Besides all this trade principally to and from the Persian Gulf and India, there was a certain amount of commercial intercourse with China.

Of the more wealthy citizens Duarte Barbosa writes "of the Moors there are some fair and some black, they are finely clad in many rich garments of gold and silver and cotton and the women as well; (on Vasco da Gama's first voyage the Portuguese gifts of cloth were rejected at Sofala on account of their poor quality); also they have much gold and silver in chains and bracelets which they wear on their legs and arms and many jewelled earrings in their ears." ⁽¹¹⁾ Their houses were built of stone with carved doors, flat roofs and balconies, the whole backed by orchards containing fruit and palm trees; as in most eastern towns the streets were merely alleyways. The sultan had his palace or fort close to the shore where the ships were hauled up. Behind this façade were the poorer classes, native slaves living in wooden or mud houses existing on millet, rice, different kinds of cultivated roots and a large quantity of wild fruit. De Barros's final comment before describing the sack of Kilwa is "From our ships, the fine houses, terraces and minarets with the palms and trees in the orchards made the city look so beautiful that our men were eager to land."

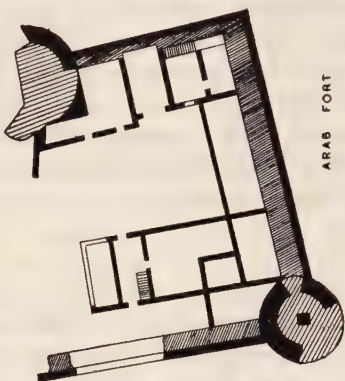
Such was the civilization which the early Portuguese explorers found at Quiloa as they called it. From reports brought home Kilwa soon gained a reputation equal to that of Ormuz, Cananor and Calicut. In 1577 a map of Kilwa⁽¹²⁾; showed a green palmy island with a town of red-roofed white-washed houses, a turreted fort and a few ships hauled up on the beach; in the Zanzibar Museum there hangs a map of 1726⁽¹³⁾, which bears the terse title, "Fort de Quiloa, Quiloa Ruinee." The maps and plans accompanying this article illustrate the only tangible remains, besides a few beads and coins and some fragments of pottery, of the great days of Kilwa's power.

THE RUINS : KILWA

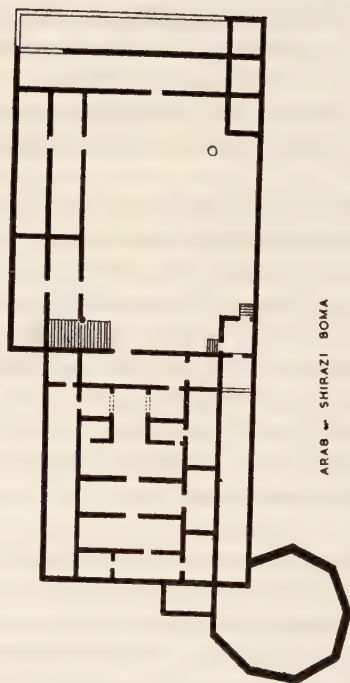
When I landed at Kilwa Kisiwani for the first time it was at night; since sunset we had been silently drifting down the long dark reaches of mangrove, past Songomanara and Sanji ya Kati until at last we drew into the shore and were aware of the mass of Kisiwani Fort dwarfing our dhow. When we left next morning it was an unforgettable picture, its walls alight with the rising sun. The old Arab fort is the most impressive of all the buildings. It stands pugnaciously facing the harbour mouth; seaward its walls are in ruins: two bastions with the half of a tower still stand and in places the old crenellated battlements are visible. The glory of the fort is its wooden gate; its silver-grey lintel and doorposts are boldly carved with a kind of *fleur de lys* and Tudor rose—the lintel bears a date plaque flanked by two large conventionalized flowers. Through the gate a broad passageway leads into a small inner courtyard with rooms on all sides, some of them of two stories. It is still possible to climb across the gateway up a small flight of stairs and on to the original battlements and towers.

The large mosque is one of the best preserved of all the ruins. Its roof, cut up into cupolas and small barred vaults, present a grotesque and undignified appearance from the outside. Inside from hexagonal pillars spring simple pointed arches, giving the impression of a groined roof, and on the arches rest the small domes or cupolas; its proportions resemble more than anything the crypt of a cathedral. North of this central portion which has its own Kibla is a later edition which must have had a flat roof and where there are no traces of stone pillars. Similarly southwards there are further walls which are difficult to identify, lying ages deep in debris. The simplicity of line in the central portion and its lack of ostentatious ornament must make a strong appeal to the modern mind.

The small mosque of the same type and period is not so austere as the larger one; the refinements include small blue bowls let into the cupolas and a more ornamental Kibla. Some of the cupolas have a corrugated surface and there is a hexagonal pillar in the centre of the roof. Neither of these mosques can compare for precision of craftsmanship with Songomanara examples; where plaster is used in Kilwa, carefully dressed stone is used in Songomanara, and where a doorway in Kilwa is a simple unadorned arch, in Songomanara it is a stone arch within a lintel and doorposts.

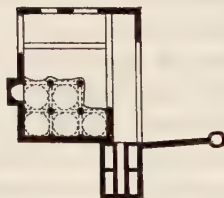
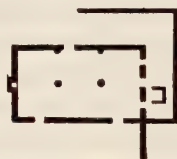


ARAB FORT

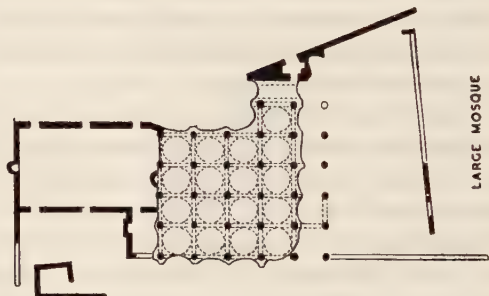


ARAB SHIRAZI BOMA

MOSQUE N° GRAVEYARD



SMALL MOSQUE



LARGE MOSQUE

PLANS OF BUILDINGS AT

KILWA KISIWANI



North

Close to the small mosque there is a large *boma*; many half-fallen overgrown walls and buildings are near and the whole was entirely surrounded by a wall, the foundations of which are still traceable; to the west much of it is standing with the original guardhouses intact. There are also two other small mosques of no particular interest. The *boma* contains its own well in a large courtyard, and across this there are two parallel corridors leading into a series of rooms now a jumble of fallen masonry. There is nothing in this set of buildings to distinguish it, its walls are rubble masonry and its doorways of a very simple type. It was clearly intended for defence as a fort and in general characteristics appears to be more Arab than Persian. Immediately facing the old Arab fort under a large baobab tree another small mosque has come to light alongside a graveyard. For a quarter of a mile up the shore in an easterly direction there are apparent scattered remnants of an old wall with near the fort the foundations of a number of houses. This wall peters out in a guardhouse and it has not so far been possible to pick up any traces of it inland as this area is largely covered by the present native settlement; in places also the sea has encroached and washed much away.

Another half a mile in the same direction is the fort of San Jago. This consists of two large ruins separated by a gully from each other. They are set on the edge of a cliff fifty feet high in the best position that the terrain offers, commanding a view over the surf of the outer reefs to the open sea. The more easterly is unmistakably European in form and quite certainly must represent part of the Portuguese encampment; it is a large courtyard containing a well and a small shed, enclosed by a thick wall about six feet high with buttresses at regular intervals, nothing more. The other ruin has slightly the better site, being built right on to the edge of the cliff. It is now in a very dilapidated state as if the fort had at some time been sacked. It consists of three contiguous courtyards, the sides of which are formed by single rows of small rooms. At the rear a separate wall encloses a dungeon twelve feet square by thirty-seven feet deep which was at one time covered with a roof. This latter building is not European in conception and is referred to by the natives as *Husuni*, in contradistinction to San Jago, the *Gereza* and the *Boma*. De Barros states that the sultan's fort or palace was at the end of the town, and was rebuilt by Don Francisco d'Almeida on his way out to India. The relevant passage reads "After the first three days which were employed in taking the town and in honouring the new king Mohamed Ancony, upon the fourth day the Commander-in-Chief began preparations for building a fortress . . . The first thing that he did was to pull down seven or eight houses built against the walls on the side of the town so that there might be an open space in front of the towers for the better defence of the fortress and on the side of the sea he built a wide passage with a tower close to the water that our men might hold the sea and the land securely. He commanded that in the new building the largest tower of the fortress should occupy the place of that in which the oath of fealty was taken and that all should be as well built as the position of the land and the shortness of the time permitted. It was

completed in twenty days and this fortress he named Santiago as our Lord had given him the victory over the town on the eve of the festival of that apostle." (14) This passage with its reference to towers is not very helpful; the large boma near the mosque fits de Barros's description better, but de Barros probably never visited Kilwa, since when he was in India, Kilwa had been superseded by Mombasa as the Portuguese port of call, and therefore the local tradition is more likely to be correct.

The Kilwa ruins in short are a number of distinct unconnected buildings, of varying ages and varying styles and purposes. At Songomanara on the other hand the ruins are all part of one town, of approximately one age and one style.

THE RUINS : SONGOMANARA

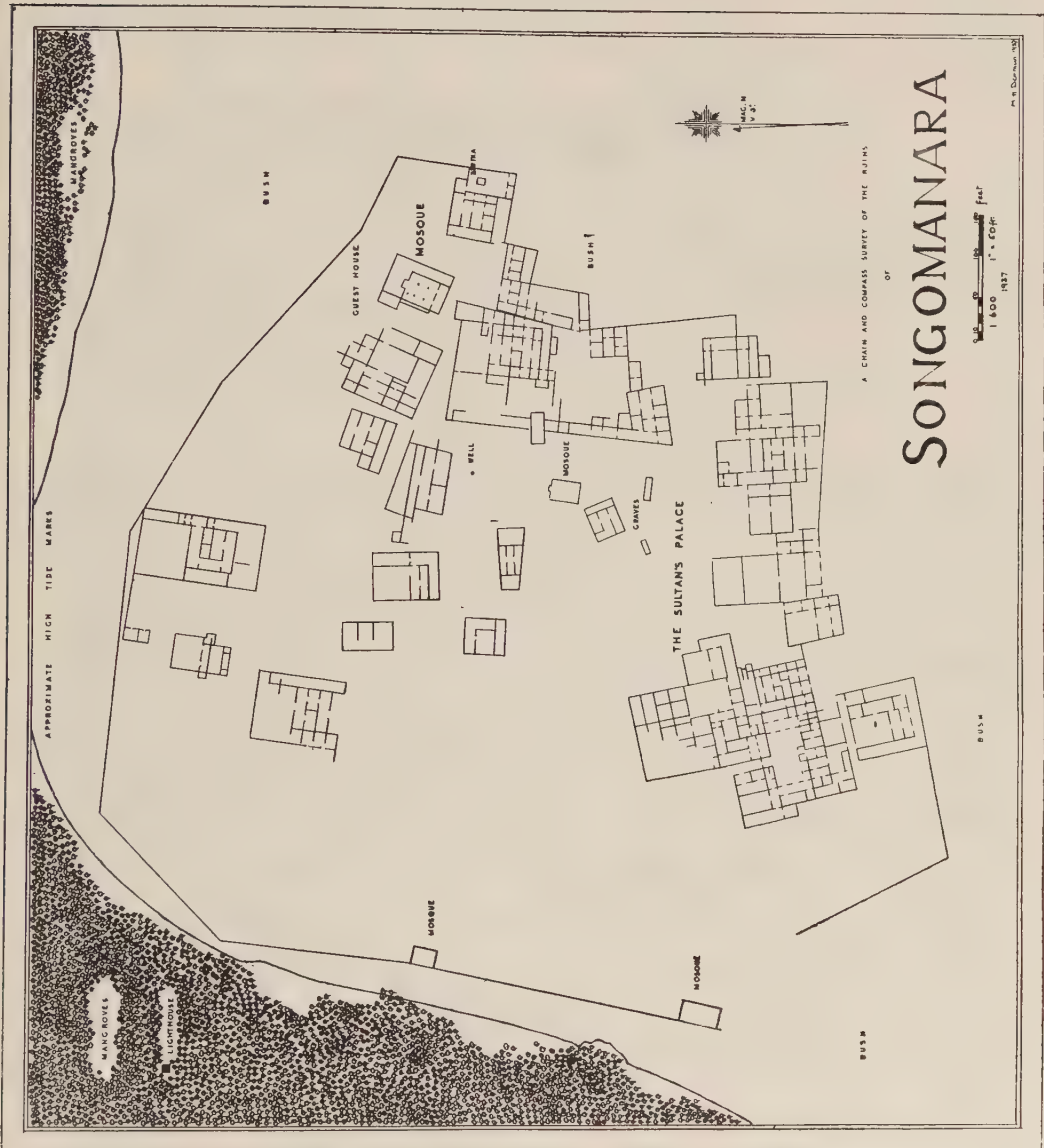
Songomanara is a walled town built on a neck of land facing on one side across reefs to the open sea and on the other towards the island of Sanji ya Kati in the deep water harbour. The principal buildings still standing are a mosque with a guesthouse attached and three large rambling buildings, one of which must have been the sultan's palace. The foundations of a wall are still visible almost round the whole town and there are the remains of a lighthouse from which the island takes its name; the mangroves are a comparatively recent growth.

In the mosque the roof and walls have disintegrated and only the bases of the hexagonal pillars are visible, but the Kibla, though badly cracked, is intact. It is a niche of lime concrete about five feet high relieved inside with dressed stone cleanly cut, a double row of tiny arches rest on rectangular columns and from these arches a demi-dome of concrete springs, moulded into a corrugated rather than a flat surface; it was faced on its outside with a stone course carved in herringbone pattern. At the opposite end of the mosque there is standing a double row of arches of unusual height. The nearby guesthouse, of rubble masonry, contains nothing of interest.

The palace, as a glance at the plan will show, is a building in which it is easy to lose one's way; all the walls in the centre of the building stand at least ten feet high, and in some places there is evidence of a double storey. It is remarkable for its exceptionally beautiful doorways which are best set off in the central court. A rectangular course of square cut stone frames each doorway like a lintel and doorposts; slightly recessed within this framework is an arch reminiscent of early English except for the slight peak at its apex; the curves of the arch are faced with long thin edgings of stone which meet at the apex, as there is no keystone. The space between the arch and the lintel is filled with large facing stones perfectly fitted. The proportions of these doorways are so graceful that they must command admiration. In the centre court there are at one end three large doorways of this type and down the other side there was a cloister, roofed with small cupolas most of which have fallen in.

The building near the palace is less finished; its doorways are more often rectangular gaps in the wall than arches. It is however important for one

room which is roofed with a barrel vault, in which earthenware bowls are still set in the concrete: this might be of value in ascertaining the date of Songomanara. The building opposite the mosque has a very wide rectangular



The notable points of architecture at Songomanara are rectangular windows, rectangular door frames, rectangular and divided wall niches; arches of an early English type to which an eastern form is given by the peak at the apex; hexagonal stone faced pillars; and flat stone roofs or small cupolas. Plaster or stucco is conspicuous by its absence. Lastly many of the apparently square cut stone courses, especially in the wall niches, are actually a few degrees less than a right angle.

Of the origin of Songomanara little is known. Burton identified the island of Xanga with Sanje Majoma; Ali Husein, founder of Kilwa, "fortified himself against some Moors who inhabited the islands of Songo and Xanga who had conquered the country as far as Mompana which was about twenty leagues from Kilwa." Leo Africanus who never visited Kilwa wrote "without the port lieth Misa and three miles off Songo and Xanga inhabited by Moors." If Xanga is Sanje Majoma, as it may well be, for there is another smaller set of ruins there including a mosque. Songo is probably Songomanara, and not Songo Songo fifteen miles off Kilwa Kivinje. Native tradition states that it was founded by people who came from the south. The purity of its architectural details however suggest that it was built before any degeneration in style had time to set in; the two mosques at Kilwa seem to be of the same culture but of a later period.* Glass beads of the same type as at Kilwa have been found there, a handful of the copper coins of Kilwa dating to the fourteenth century have also been identified. Fragments of heavy green pottery of the Egyptian Commune type of the fourteenth century similar to pieces displayed in the Zanzibar Museum were picked up and some other fragments of small earthenware bowls, quite unlike anything found in Kilwa or anything displayed in Zanzibar, proved on inspection by the authorities at the South Kensington Museum to be Egyptian also of the fourteenth and fifteenth centuries; as far as is known at present these pieces are only found in Songomanara. Songomanara may have been founded by Arabs, but it seems undeniable that it must have had many cultural affinities with its wealthy and powerful neighbour at Kilwa; it is perhaps not surprising that Songomanara has survived where Kilwa has not; Kilwa was twice sacked by the Portuguese and once by natives called Wazimba.

Whatever may be the origin or antiquity of Songomanara, there is no doubt that the buildings still standing are of higher architectural attainments than anything in Kilwa, but that Kilwa was the power in the land. The political position of Kilwa and the variety of her ruins gives it at least as great an interest as the more highly finished town of Songomanara.

*The Mosque at Kaole, Bagamoyo, seems to be between the two.

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The T.R.S. *Mwanza*

By L. P. Lane

"It is notified for information that the steamer service operated by the T.R.S. *Mwanza* between Kigoma and the Northern Ports will be withdrawn after the completion of the voyage ending Thursday, the 16th June 1938."

THE few lines above recently appearing as part of a notice published in the Tanganyika Official *Gazette** possibly were not of great interest to the majority of those Tanganyikans who read them; even so there must be quite a number who, if they had not actually travelled in the old *Mwanza*, had at least seen her up at Kigoma. Some perhaps, on observing her size†, have congratulated themselves that they had no just cause to travel in her as her appearance might indicate a probable liveliness under certain lake conditions!

Seeking information as to her age and past history one never seemed to progress much further than that she was German-owned originally and had seen service on Lake Victoria. Details of her activities there, of her coming to Tanganyika, and her eventual transfer to Lake Tanganyika, appear to have been lost in the limbo of the past and so the following incidents of her career on the former lake‡ as well as a résumé of her later activities on the latter may be of some interest.

As is known the two principal German ports on Lake Victoria before the war were Mwanza and Bukoba, both being outlets for a considerable amount of produce. Having no railway to the lake, however, the Germans were not competitors in the carrying trade and thus possessed only a small tug, the *Mwanza*,§ two or three lighters and several launches.

On the outbreak of war two small guns (about seven-pounders) were mounted immediately in the *Mwanza*, the launches being too small to be similarly fitted, and although the British had the great advantage in number of ships, the fact of there being no guns available to mount in them for several weeks resulted in the *Mwanza* becoming a serious menace in the commencing stages of the conflict.

As early as the 3rd August, all British ships having been recalled to Kisumu, the *Nyanza* (one thousand tons) had a very narrow escape from the *Mwanza*.

*Vol. XIX, No. 29, 17th June 1938.

†Details of the *Mwanza* are given at the end of the article.

‡Information collected from some papers describing naval operations in the East African campaign.

§In those days spelt "Mwansa", as was the port.



T.R.S. "Mwanza" 1925



T.R.S. "Mwanza" 1934

The next incident occurred in early September when, towing lighters, the *Mwanza* was employed transporting to Karungu some sixty whites and five hundred askaris who then advanced overland to Kisii having Kisumu as their probable objective. On the eventual retreat of this force the *Winifred*,* having embarked some troops, was ordered to Karungu to operate on the German flank. As she rounded the headland into the bay she was met by a heavy fire from the *Mwanza*, hidden in bushes near the beach, and from rifles and machine guns ashore. The *Winifred* was totally outclassed and was lucky to escape with a few shells through her upperworks and the *Mwanza* then retired south.

The *Mwanza* continued to be a constant menace to the *Clement Hill* and other vessels still running in peace routine and of necessity unarmed—in fact she had almost become a sort of raider on a small scale and even gave rise to great apprehension in Entebbe and Kampala.

In early October an expedition sent out to locate the *Mwanza* and bring her to decisive action proved fruitless—it was not an easy task as the Germans had established an excellent system of smoke signals by day and beacons by night operated by native watchers.

In March 1915, however, she was located by the *Winifred* and *Kavirondo* in the Rugesi Passage when on her way north, towing a lighter with stores, etc., for the Germans in the Shirati area. The *Winifred*† had steamed down the middle of the lake by day and at dark proceeded up Speke Gulf, making the lee of Mafuba Island before dawn. There she lay hidden having landed a party to prevent the headman from giving the usual warning. The *Kavirondo*‡ had proceeded to the north of Ukerewe Island to cover the possibility of escape by the Rugesi boat passage. The *Mwanza* reaching this passage during darkness was, in the morning, headed back by the *Kavirondo* and so proceeded towards the east end of the gulf with the intention of landing the stores at Guta whence they could be sent overland. The *Winifred* then emerged and gave chase, whereupon the *Mwanza*, slipping her lighter (which was sunk later), made off at full speed for the shore. She reached shoal water before the *Winifred* could get within effective range and was scuttled by her crew in about nine feet of water, but continued firing with her deck awash until silenced by the *Winifred*'s heavier armament, when the crew escaped ashore. The *Winifred* had not been struck and proceeded to Mafuba to pick up the party landed there and then returned with the object of finishing off the *Mwanza*. A boat sent in to find out the extent of the damage already done had to retire under heavy fire from the shore and the *Winifred* opened fire. After several salvos had smashed up the *Mwanza*'s upperworks it was considered that she was a total wreck and beyond salvage, so the *Winifred* then rejoined the *Kavirondo* and they both proceeded north.

*Six hundred tons. Armament: one ancient French two-and-a-half-pounder of less than a thousand yards effective range.

†Now armed with a four-inch quick-firer, a twelve-pounder and a maxim.

‡One thousand one hundred tons. Armament: one twelve-pounder and one three-pounder.

Soon afterwards the *William Mackinnon* was sent south to inspect the *Mwanza* and found Germans at work on her. On the former's departure to Kisumu to report they succeeded in raising her and she was towed back to Mwanza. The vessel was thus saved with great skill from a critical situation both during action and afterwards. As the hull and engine were submerged they were little damaged by the *Winifred's* fire and she was repaired within about two months but was used then only for transport work at night in Speke Gulf.

The *Mwanza* was not heard of again definitely until the capture of Mwanza port on the 15th July 1916. It was found then that she had, early that morning, with the help of two large lighters and two steam launches, successfully evacuated practically the whole garrison of some six hundred rifles together with three guns, stores and bullion, and had departed up Smith Sound. She was located by the *Winifred* at Nyatembe, twenty-three miles or so from Mwanza, scuttled once more and lying half submerged in eight feet of water. The Germans had retired to Msumgi, twelve miles away on the Tabora road, leaving the stores, ammunition, some of the bullion, and the lighters intact and these the *Winifred* towed back to Mwanza.

Before the end of the campaign on the lake the *Mwanza* was salvaged again and used in conjunction with lighters by the British for transport work.

So much then for the *Mwanza's* early career on Lake Victoria and we turn now to her work on Lake Tanganyika where she has achieved a lengthy and active service in peaceful pursuits under the Railway Administration.*

It appears that the *Mwanza* was transported to Dar es Salaam from Kisumu in 1917, but information as to her activities, if any, for the next few years is lacking.† Her boiler (presumably the original German one) was examined in May 1921 and underwent repairs in November 1922. In 1921 or 1922 she was railed in sections to Kigoma where she was rebuilt in 1922 on a slipway constructed for the purpose.‡ In October 1922 she was launched on Lake Tanganyika but her engine (German) had yet to be installed and the boiler was not finally tested until January 1923.

The *Mwanza* ran her maiden voyage between the 17th and 26th April 1923 with five European and thirty-five native passengers, and five tons of cargo, taking over the service to the British southern ports§ formerly carried out by the government steam launch *Fifi*, which had been laid up for some time then. Her captain was J. R. Warden Wolhuter who had previously seen

*In her early days she was under the control of the Director of Marine but when the Railways took over the Lake Marine on the 1st June 1923 she came under the control of the Traffic Department. Finally on the 26th July 1926, when the Railways took over the Marine Department, she reverted again to the latter.

†That is, as far as the writer is concerned. However enlightening correspondence may ensue to fill the gap, and it would be interesting to know whether she was employed at all in salt water during this time.

‡£5,000 was voted for her rebuilding which was to include also the building of a forty- to fifty-ton lighter for her to tow.

§Fortnightly to Kibweza, Karema, Kirando, Kala and Kituta (Northern Rhodesia). Monday to Monday.

service on the lake as a paymaster with the Royal Naval flotilla at Kasanga, and she had an Indian engineer ex-*Fifi*.

On her third voyage the *Mwanza* left Kigoma at 6 p.m. on the 21st May with five European (three adults and two children) and ten native passengers, and a full cargo. At 3 a.m. on the 22nd, when sixty-three miles south of Kigoma, a considerable escape of steam occurred and it was found that the boiler was seriously damaged through lack of water. This resulted in the vessel being at the mercy of the wind and so sails, fashioned out of the canvas side screens, were set with the object of making Mtoa Island which was the nearest point on the Congo coast from which word could be sent to Albertville for assistance, the latter also being in wireless communication with Kigoma. Owing to unfavourable winds this object was not achieved as the *Mwanza* was blown backwards and forwards across the lake, but fortunately always in a northerly direction. At noon on the 24th a position was reached towards the Tanganyika side where it was considered advisable to send the dinghy in to land, whence runners could be despatched with a message to the salvage party* at Kigoma to send out their motor boat. No boat arrived, however, and meanwhile the *Mwanza* sailed further north and eventually was able to make Kigoma harbour at 1 a.m. on the 27th after five days (less two hours) from the time of breaking down. The motor boat which had been sent out to look for her arrived back the same afternoon, having searched both shores of the lake as far as Mtoa. The runners had delivered their message at 4 p.m. on the 25th and the motor boat left that evening, proceeding across the lake, so during the night she must have passed within about ten miles of the *Mwanza*. It was found on enquiry that the gauge glass had blown out and was not replaced and at the time of the accident the water was ten inches below the crown plate. Three plates in the combustion chamber had to be renewed and in June both the boiler and engine were sent to Tabora for repair and overhaul. A report (24th August 1923) stated that had the boiler not been damaged the engine would not have lasted for any length of time in the condition in which it was then. In the interval the vessel was reconditioned and new cables were supplied.

In January 1924 the *Mwanza* ran trials and commenced service again but not to a detailed schedule. Boiler trouble was experienced in March and in April the vessel was laid up again. In September the fortnightly run south was continued, and on the 19th October she towed the hull of the *Fifi*,* her predecessor, three miles out from Kigoma where it was sunk in two hundred feet of water.

It is presumed, through lack of definite knowledge, that the *Mwanza* ran as usual throughout 1925, but probably further boiler trouble was experienced towards the end of that year for early in 1926 she was laid-up and a new boiler fitted. During this time several much needed improvements were

*Working on the *Goetzen*, now *Niemba*.

†The *Fifi* was formerly the German *Kingani* and was captured in action by the *Mimi* and *Tou Tou* on Lake Tanganyika in December 1915.

effected, chiefly to the superstructure, and her lighter also was in course of rebuilding at Kigoma. In July the fortnightly schedule was in operation again but having Sumbwa, affording more shelter, as the port of call for Karema, and Mpulungu as the port for Northern Rhodesia in place of Kituta, the former being a sheltered harbour and the latter exposed and shallow.

During a voyage in August, having four European and thirty-six native passengers and twelve tons of cargo on board, the *Mwanza* left Kipili at 5.30 p.m. on the 19th with a southerly swell running. At about 9.20 p.m. she struck an uncharted submerged rock when abeam of the Msamba Islands. The captain who was on the look-out for another rock and standing on the cabin-top, immediately forward of the bridge, was hurled into the water. He was rescued by the dinghy after an exhausting struggle to keep afloat owing to his heavy clothes. At Kala, the next port, it was found that she was making water slightly in the forepeak and forehold and so on arrival at Mpulungu at 6.30 a.m. on the 21st she was beached for examination. The damage was not extensive, there being two small cracks near the stem, a dent low on the starboard bow, and three frames cracked in the forehold over the dent, and she continued her return voyage. She arrived at Kigoma on the 23rd and was slipped for repairs.

From January to March 1927 the *Mwanza* continued the fortnightly service south, and commenced in January towing her forty- to fifty-ton lighter T.R.1 on these voyages. The *Liamba* ran her trials in April and Captain Wolhuter was transferred to her as Chief Officer, being relieved in the *Mwanza* by Mr Mohamed Ahmed the former Master of the *Fifi*. In April also the *Mwanza* took Captain Barker round the southern ports to decide on the positions for the new A.G.A. (automatic gas) lights which had been ordered for the lake; and from the 14th June to the 10th July she was away on a special voyage with Captain Hewlett-Cooper and Commander Harrison who were engaged on a survey of certain anchorages, etc., on the south run. On the 18th July she was laid-up for refitting which was not completed until towards the end of November.

In January 1928 the *Mwanza* made a special voyage with Captain Barker to instal the A.G.A. lights previously mentioned. These were established at Bangwe, Kibweza, Sumbwa, Nkondwe, Mvuna, and Wapembe. From April to September, with her lighter, she cleared the harvest from the ports between Kigoma and Kibweza. This was a fortnightly schedule (Monday to Friday), and included Ulambolo, Karago, Rugufu River, Lagosa and Katumbe. In September she was chartered with the lighter by Mr Mavricos, running between Kigoma and the northern ports several times a month. Of these ports Nyanza, Rumonge and Usumbura are in Belgian Mandated Territory on the east side of the lake, and Uvira on the west side at the top of the lake is in Belgian Congo.

The *Mwanza* was under charter throughout 1929 although in June she took two of *Liamba's* sailings to southern ports, and for the last half of the year ran south as far as Katumbe once a month in addition to the northern running

on charter, and also in December she again ran a voyage south in place of the *Liemba*.

In January 1930 the charter was cancelled and she commenced a schedule to the northern ports with her lighter, probably sailing weekly.

The schedule for the *Mwanza* and lighter during the next two years (1931-32) consisted of two voyages north and one voyage south (Mpulungu) every month. In 1931 a European engineer was appointed to the ship. She was slipped in July 1931, and between January and April 1932 was laid-up for boiler repairs, being slipped again in October. During this year T.R.8, a new eighty- to a hundred-ton lighter for the *Mwanza*, was completed at Kigoma, and in 1933 she ran a weekly schedule with this lighter to northern ports, being slipped in April.

For the first six months of 1934 the *Mwanza* ran once a month to Mpulungu with petrol, calling at other southern ports as required, in addition to running twice a month to the northern ports. (The *Liemba* ran a similar programme thus giving a fortnightly service to the south.) For the second six months she reverted to the weekly schedule to northern ports with a week's lay-up every three months for boiler cleaning.

Throughout the years 1935, 1936 and 1937 the weekly schedule to the north, with three-monthly lay-ups for boiler cleaning, was continued. Boiler repairs were necessary in May 1936, and she was laid-up for overhaul between the 19th June and 26th July of the same year. In these last few years it was increasingly apparent that, with an efficient and adequate service to the north maintained by the Belgian "Grand Lacs" Company, the *Mwanza's* schedule was becoming not only superfluous but uneconomical and it was finally decided to withdraw her into reserve.

There were several changes in the personnel of the *Mwanza* during the fourteen years of her service. As has been mentioned Captain Wolhuter was the first to command her, being assisted by an Indian engineer who was relieved by a Goan in 1923. Mr Mohamed Ahmed was appointed Master in 1927 and on his resignation Mr (Sheik) Shamsudin Hussein, ex-Second Mate *Liemba*, relieved him in April 1931. The same year it was considered necessary for the ship to have an European engineer, Mr Steers being the first appointed. Mr Shamsudin Hussein regrettably died in February 1934, after an operation for appendicitis, whereupon the engineer, Mr Scott, was appointed as "Officer in Charge" and given the assistance of a native pilot. The following have served from time to time in the *Mwanza* either as Engineer or as "Officer in Charge" (those in italics having served in both capacities):—Messrs *Steers*, Wright, *Scott*, Goodwin and Barnes. Philip Manakate, the native pilot, was originally with the Royal Naval flotilla at Kasanga and then went to the *Fifi*. He became the first serang of the *Mwanza* and later went to the *Liemba* as senior quartermaster, returning to the *Mwanza* as pilot which post he has held for over four years.* Philip Manakate, deservedly received the King's Jubilee Medal.

*He is serving now in the *Liemba* again.

Anyone who has had the patience to read through this recording of the *Mwanza's* career, particularly the last ten years, will be able to appreciate her service with a realization of the many thousands of miles she has covered.* She would appear to have been unfortunate in regard to boiler troubles, but the engine is still the original German one. And she is by no means finished yet—although she has been laid-up now, her recent schedule proving uneconomical, there is no knowing that she may yet be called upon to “go down to the lake again”.

DESCRIPTION OF THE T.R.S. *Mwanza*.

The approximate dimensions, etc., and other particulars of the *Mwanza* are as follows :—

Length : 75 feet. Beam : 15 feet. Depth : 10 feet.

Draught : Light, 3 feet aft; 2 feet forward; loaded, 5 feet aft.

Gross tonnage : 80. Net tonnage : 45. Dead weight capacity : 35.

Engine : Single screw. Compound reciprocating. Non-condensing. H.P. 60. Speed (without lighter) : 6·7 knots.

Boiler : One, wood-firing.

Hull : Plating $\frac{1}{2}$ inch.

Holds : Two (one used for wood fuel).

Accommodation : Saloon, 4-berths (formerly 3), aft. One officer's cabin (formerly 2), forward. Deck passengers now limited to 30. Crew about 14.

*The lake is just over four hundred miles in length and, needless to say, the various ports are not situated along a straight coast-line.

Soil Conservation amongst the Matengo Tribe

By A. H. Pike

SOIL erosion and its attendant evils are now regarded as matters of vital importance. Various means of dealing with the problems have been devised, so the method evolved by an African tribe may be of interest.

This method was not the result of a conscious effort to deal with erosion: that probably never entered into the mind of the original cultivators. It was born of necessity as certain areas of strategic importance to the tribe had to be kept in cultivation, producing their maximum harvest almost indefinitely, if the tribe were to survive.

In south-west Tanganyika in the Songea district, there is a strip of high pleasant land between the Ngoni Plateau and Lake Nyasa, generally called the Matengo highlands. These highlands may be said to be a southern extension of the Livingstone mountains from which they are cut off by the deep valley of the Ruhuhu river. These highlands vary in width from about twenty miles to about forty in their widest part and their altitude varies between four thousand and seven thousand feet. They are inhabited by the Wamatengo, a small dark people, hard working and unwarlike but intelligent, who must have made ideal slaves in bygone days.

The road from Songea to Mbamba Bay on Lake Nyasa cuts right through the middle of these highlands, climbing up to Kigonsera Pass from the Ngoni Plateau and winding through Watengo hills and valleys until it turns down the Luhekehe valley to Lake Nyasa along an escarpment road that drops two thousand feet and contains nearly seventy bridges in ten miles. After Mbinga, some fourteen miles west of Kigonsera, the traveller cannot but help notice how the sides of the steepest hills are cultivated, the abundance of water everywhere and the lack of trees save for a few patches of rain forest on the higher mountains. Early in the year the peculiar appearance of the hillside cultivation will strike even the most casual observer as strange.

These industrious cultivators have evolved a system with a technique both methodical and simple by which they can cultivate incredibly steep hill-sides and yet erosion is almost non-existent. The original necessity has long since passed away but such is the conservatism of the older members of the tribe, the system still continues. But unfortunately education and changes of the last decade tend to make the younger generation careless of their valuable heritage.

The underlying principle of the system is if a large volume of water can be broken into sufficiently small parts, it is controllable and accordingly as the rate of flow of each of these parts is reduced, erosion is eliminated. The

final point is reached when the water can be kept standing a sufficiently long time then it will sink into the ground gradually and instead of erosion there will be conservation of the water, a most desirable end. When carried out with care the Matengo pit system gains this desirable end.

As has already been mentioned the technique employed is simple and almost fool-proof; no instruments of modern science are required, only some kind of a billhook to cut the grass and the usual African hoe. When a certain site has been chosen for cultivation the grass is cut as close to the ground as possible, then this grass is gathered up into lines about two feet wide, roughly in the form of a grid of six feet squares. The cultivator, always a woman, now starts with her hoe on the bare ground in the middle of the squares, hoes the earth out and puts it on top of the lines of grass. The hoer works round the square following the usual practice of putting the hoed ground behind her and using her hoe as a shovel, the result being a round pit about three feet in diameter. One square finished, the next one is started and the same method is followed and the whole process is continued until all the grass lines are covered up and the field is finished. The final result is a series of pits each one separated from the next by a bed on which the crops are planted. Naturally nothing is planted in the pit itself which generally reaches the subsoil.

The garden that has been properly cultivated in this manner can stand the heaviest downpour and no signs of any erosion can be seen. The water may stand for some considerable time in the pit according to the nature of the soil but eventually it soaks away.

During the year, if at any time the garden is cleaned, the weeds and grass are thrown into the pits to rot, thus forming a compost for the following year.

The next year the whole process is reversed and what was a pit now becomes a ridge. This may go on for years and the Wamatengo say on favourable ground with a proper succession of crops, gardens thus cultivated may be kept in use for periods as long as ten years before the fertility begins to fail. Even when the garden is lying fallow, the old ridges and pits still function and prevent the surface water from rushing down the hillside, instead of which it sinks into the ground. This may be the reason why often little streams are found starting so high up the hills and why these little streams do not fail even at the end of the dry season. It may also be the reason so few washaways occur on the roads in the Matengo highlands.

So far it would appear as if the system were a cure for many of the ills that Africa has suffered from erosion due to cultivation but it has its doubtful features. The first and most doubtful of these features is that it is seldom employed where there is virgin bush as roots and stumps in the ground cause difficulties. Here the ordinary flat cultivation is undertaken for about the first two years with a result that much of the valuable top soil is lost before conservation is started. Another feature that mitigates against its present popularity is that the Matengo men may cut the grass but the women only hoe (*kulima ngolo*). Economic crops are being more and more planted

in this area and these are generally the concern of the men alone so this is causing a decay of the system.

Maize, millet, wheat and native crops generally flourish but some crops do not seem to thrive in this system. Root crops seem to suffer from an excess of moisture, especially cassava, while the root system of coffee trees appear to become too cramped. The system is generally not used for dwarf millet (eleusine) as it is said the crop so planted lacks flavour equal to that planted on the flat. Tobacco too seems to grow coarse hard "leaf" which is not readily saleable.

The origin of this system of cultivation may be found in the past history. As has been mentioned, they are hill people and up to one hundred and fifty or two hundred years ago, they seemed to have lived unmolested and followed the ordinary methods of cultivation, the results of this are seen in the eroded country around Langiro. Then came the slave raiding period and the Yao of the south and the Ngoni of the west and north ravaged the country. The people thus were forced into concentrations where some measure of protection existed. Two ideal places were at hand; the caves at Litembo and at Langiro but as the country around Langiro was infertile, the main concentration was at Litembo. Here was a rather narrow fertile valley close to the caves. The people could never move far away from their refuge so every available inch of the valley had to be cultivated and kept in cultivation almost indefinitely. The women too had to do the main work of hoeing while the men kept guard. As harvesting was always a rushed job when danger was generally near, men had to work as well and thus the division of labour arose which exists to this day, the women must do the main hoeing alone but the men may help at the harvesting and intermediate work. About 1890 when the Germans first reached the Matengo country they found a very large concentration of the tribe at Litembo, all practising this method of cultivation. Under the *Pax Britannica* these people have migrated since then to other fertile places in the highlands but it is unfortunate that the farther they go from Litembo, the less inclined are they to follow the system which the tribe evolved for its safety in the past. It is inevitable in the changes that are now taking place, customs good and bad are discarded without thought and the modern Matengo youth follows the youth of to-day in being sceptical of the wisdom of his fathers.

The vital question at the moment is how is it possible to preserve the system. The theoretical answer is easy—the adoption of the system to present day needs. But the answer, though easy in theory, is not so in practice; it means careful and thorough investigation of the whole system of Matengo agriculture and its rotation, data about the size of the pits, their depth and their distance apart, the reason for the continued dislike of the men to work the system while they are prepared to adopt almost any other method of cultivation. If this tribe reverts to the wasteful methods practised elsewhere, it will not take many years until a pleasant area is a barren wilderness.

The Making of an African Historical Film

By L. A. W. Vickers-Haviland

WHEN the Bantu Educational Kinema Experiment* came to an end Major Notcutt mentioned to me the possibilities of a film version of the story of Mbega, the founder of the reigning dynasty of the Wasambaa tribe. The Chief and his executive council were most enthusiastic over the project and readily agreed to the necessary expenditure from Native Treasury Funds.

The story, well known to the older people of the tribe, has been recorded in Swahili by Abdullah Hemedi and is often referred to as the "Wakilindi Saga". It records the rise of a half-caste Arab child to be the ruling Chief of the Wasambaa people and the founder of the ruling clan, the Wakilindi, which to this day holds the majority of the executive posts in the Sambiaa country. The film has enabled us to make a record of a matter which is of historical and patriotic value to the tribe before the memories of the older generation fade.

The filming of an epic in African tribal history is so far as I am aware an entirely new experiment and it will be of the greatest interest to watch the reactions of native audiences†.

Some description of our troubles in making the film, the pitfalls into which we fell, and those which more by good fortune than good guidance we avoided may be of interest. The final result, though perhaps I should not be the one to say so, has been not unsuccessful, and has, I venture to think, been up to the standard we hoped to achieve. The prime consideration was, of course, to keep down expenses—the money at our disposal being not more than £40. The bulk of this was required for the purchase of film and chemicals and processing. The scenarios had therefore to be written with particular care, and the details of field work arranged with meticulous precision. We could afford no wastage, no wholesale scrapping of film. At the same time the presentation had to be authentic. In spite of these difficulties the general standard of photography throughout the film is uniformly good. For this, great credit is due to Major Notcutt, who not only acted as cameraman and co-producer, but carried out all processing, editing and studio work. I worked in the role of Director though I fear my qualifications consisted of little more than some experience of theatrical production.

*An experiment in the making of films for Africans.

See "The African and the Cinema," by G. C. Latham and L. A. Notcutt, Edinburgh House. Price 3/6.

†The film has since been successfully shown to native audiences in Tanga and elsewhere.

To make the film more realistic it was decided that the actors must be the actual descendants of Mbega himself, of the Chief's own family. The son of the Chief played Mbega; the Mdoe, "chief minister", and the elders portrayed other necessary characters. Thus we found ourselves with the task first of training our actors. When I say that of them, only the Chief and one sub-Chief had once seen a film in Tanga, it will be realized that the material was raw.

The native is a natural mimic; it is often said a natural actor. His acting is unfortunately so natural that it is not easy to induce him to play a set part, in a set way. As an actor he is spontaneous, impulsive and individualistic; rehearsing is against all his instincts.

On the stage such acting has more scope than in the film. A scene on the film which when shown on the screen appears to be one continuous action, is actually a series of photographs taken from different angles and positions, close and long shots which have been cut and edited to produce the maximum of effect. Great care and attention is necessary in the matching of shots. One must not show an actor in a hat in one shot, and without a hat in the next, with a walking stick in a long shot, without in a close-up. To the African with no conception of cinema acting, and his happy-go-lucky ways, these points mean nothing; to the perspiring film director they become the features of a nightmare.

With none of the refinements of studio sets and arc lights, all shots must be taken in the open and here the sun is the crucial factor. It is not until one attempts film production that one realizes how often what is normally considered to be continuous sunshine is nothing more than a series of bursts of light and in between them spells of barely noticeable cloud. Because of the shadow thrown by the actors a scene started in one light must be concluded in a similar one. The best time for filming is before 10 a.m. and after 3 p.m. and it was during these periods that we endeavoured to do our work. But if the actors enter from the right in the morning and the scene is not completed care must be taken in the afternoon to reverse the action and entry must be from the left. Similarly the background must be chosen to conform. And so with all these considerations in mind it can well be understood that a scene which is perhaps shown on the screen for one minute may be the result of two hours' hard work. It will also be appreciated that these necessities when faced in company with a group of amateur native actors become matters of considerable difficulty. The Wakilindi, the ruling class among the Wasambaa are a particularly intelligent people, but it was not till we had prepared the first hundred feet of film and shown it to them, that they suddenly conceived some idea of what we were doing. In the first place the whole thing had been regarded, I have no doubt, as yet another manifestation of the eccentric mentality of the European.

Dress was another difficulty: Mbega's father was an Arab, and it is safe to presume that Arab dress has not changed much in two hundred years. But the Sambaa wore skins, and they are now unobtainable. To my regret

as a budding film director seeking truth in action I had to compromise with blankets and loin-cloths. But here another stumbling block lay in our path—a marked disinclination by people of social standing to disclose the bare chest or head to public view. The leading actor for whom we did succeed in getting a leopard skin could only be restrained with difficulty from showing a vest, which peeped out above, and a pair of khaki shorts which would keep disclosing their presence below his more primitive garb. Another actor who had done well in rehearsal, when asked to remove silk *kanzu* and brown shoes for the final “shot”, was horror-struck and dumbfounded when he realized that I was hinting that he should show his chest. I pointed out that it was in the interest of art and historical truth, to no avail; I offered to direct the scene stripped to the waist—two wrongs did not make a right. The women presented an equally difficult problem and all but essential persons had to be removed from the scene before a small girl of eight or nine could be induced to appear in a loin-cloth.

However if we accomplished our end with some loss of prestige in the matter of showing the bare chest, we at least sustained no loss of life in spite of having to throw a child over the cliffs. The child should according to the camera record have died; and the enthusiastic actor on the cliff did his best to attain realism by throwing the infant so wide that I, who was hoping to catch it below, had to make a dive towards it, and we ended by rolling over together. The infant’s screams however reassured me at once that the worst had not happened.

We had numerous disappointments. We were inordinately proud of the two old men who sat talking, smoking and at intervals lustily spitting, their racy conversation entertaining everyone. At the crucial moment the sun went in. This performance was so good that we had not the heart to stop them and they held forth for an hour and a half to an admiring and gleeful audience. When the sun came out again, alas! their tongues were tired and we had to dismiss the weary old men and hope that they would have recovered strength by the morrow. On the other hand spontaneous action, undirected, and unpremeditated can give a more realistic effect than anything rehearsed. In one scene where Mbega was just about to loose an arrow from his bow, an old man stopped him to adjust the head of the arrow. We were aghast for it was not included in the programme, and we feared that the whole shot would be ruined; in the end however we found that he had created a most realistic effect that harmonized with the other movement in the scene. The director has to be most careful how he interferes at such moments; he may prevent things going wrong, or he may eliminate a spontaneity that is invaluable.

Our pig was perhaps my greatest disappointment. He was domestic by birth, but by the time I had attached a pair of artistic wooden tusks to him I congratulated myself that he looked ferocious enough to play any part. He was even induced to trot through the bush in a determined way, and the warriors of Mbega played their part well, stealthily surrounding him, carefully

taking aim with their bows, stabbing him with all the cunning of the hunter. When we saw the picture however there was no doubt that his inherent domesticity had won the day. He looked like a tame pig that had by some freak of nature grown tusks; his gait was that of the farmyard and not the bush, and his indifference to danger all too obviously arose from the fact that he implicitly trusted humanity. He disappeared under the remorseless cut of the editorial scissors, to be replaced by a wilder creature that we had the fortune to find later. I regret his passing; a poor thing but my own creation.

If the actors enjoyed the war scenes, where the strategy of Mbega overcame his enemies, they were not undiluted pleasure for the producer. Groups of warriors in the excitement of the moment would indulge in a war dance when they were supposed to be hidden in stealthy ambush. Warriors preferred going to war in European trousers than with a spear. I had to dash from group to group removing waistcoats, trousers and hats. Bloodthirsty warriors were prone to advance with corks and maize stalks on the tips of their flaming spears. One indeed was so up to date that he would respond to instructions with a loud "O.K." in a very nasal twang. Unfortunately this budding recruit for Hollywood was never identified. Those that were to die in battle were instructed beforehand, but one gentleman who was intended to live would not be outdone. While a most bloodthirsty battle was in progress he stood in the foreground taking no part in the proceedings, then suddenly decided to die, whereupon he began to sink slowly towards the ground and finally ended reclining comfortably on the grass.

I learnt more about the Wasambaa and their customs in a few days on this work than I would have done in years in the ordinary routine of business. When first I went to Vuga, the traditional headquarters of the Chief of the Wasambaa, I asked where Mbega had lived. I was shown a very old disused hut close to the camp. I said nothing as the place was useless for our film, but I had my doubts as to the truth of the story. A few weeks later when we were at Vuga for another shot, the position was different. I learned that the *kitala* (homestead) of Mbega was situated on the summit of Vuga Hill, that it was a sacred spot and visited only by the reigning chief and six elders holding hereditary court positions. It was agreed that Major Notcutt and I should be personally conducted and shown the place by one of the seven, which was done, but no other people were allowed to accompany us.

It was at Bumbuli and not Vuga that Mbega's real career began, and his triumphal entry into the town was filmed there. He was in residence there when, the news of his medicine and hunting having spread far and wide, he was called to Vuga to be chief of the whole country. The present chief explained that he could not now enter Bumbuli—it was contrary to custom. As an elder explained, "A child does not return to its mother's womb."

We took a picture of the warriors receiving immunity medicine before battle, recording an interesting custom about which little is known and another of the G'aro initiation ceremonial dance, both of which were essential scenes in the sequence of events. On the top of Mlalo Hill there are some small

stones, known to be old *tambiko* (sacrificial) stones, and we witnessed a most interesting discussion as to whether Mbega should stand on them or not. These are only instances of the numerous occasions on which interesting customs came for the first time within our view, perhaps more interesting still was the fact that there was so little reticence in explaining these to us when we asked.

Among the people concerned and the elders of the tribe there is a great enthusiasm over the film. One old man said, "The picture of the Garo *ngoma* was so good that I felt myself putting my hand in my pocket to reward the performers." The point that seemed to have impressed them most was the fact that an interesting and vivid vehicle had been found by which to teach tribal history to the inattentive youth of the day. If it teaches that the history of their own tribe has lessons, that it is a history in which they can take pride, it will have accomplished its purpose. To dwell further on the uses of such films, their scope in influencing the native in the right way, is superfluous; they must be obvious to anyone who has had any experience of the African. I hope that those who judge the film will endeavour to do so not by European standards, but taking into consideration the difficulties which we encountered and the limits within which we were forced to work. It runs for about forty minutes. Considering the conditions under which it was made, I venture to think, it may be described as good, and probably for the audience it is intended long enough. What success it has achieved is due primarily to the immense amount of time which Major Notcutt has devoted to it, the meticulous care with which he has treated the smallest detail, and the not inconsiderable experience which he has brought to bear on the task.

The finished article cannot, I think, fail to appeal to and be understood by all. I confess, at one time, I had a moment of doubt. It was at Bumbuli, every villager was out and the name Mbega was on everyone's lips. I turned to one old man and asked him some question about Mbega. He replied: "Mbega? I don't know him. He does not live here."

Sukuma Salt Caravans to Lake Eyasi

By H. S. Senior

THESE caravans have been plying between all parts of Sukumaland and Lake Eyasi (or Nyaraja as the Wasukuma call it, and as it will be hereafter referred to in this note) every dry season from time immemorial. The salt season is between the months of May and October, when the shallow water which covers the bed of the lake in the rainy season has evaporated, leaving the salt deposits exposed to view.

The caravans, by which is meant a party of people on foot, come from all over Sukumaland, even from so far afield as the Mwanza District. The writer has seen them from Nera and Busmao in the Kwimba District, as well as from many areas in the Shinyanga District, and from all over the Maswa District. Some of the caravans cover distances of one hundred and fifty miles in each direction. Each caravan is a compact unit from one area; mixed caravans containing people from several areas are very rare. In each chiefdom there live well known "leaders" who have made the journey on many occasions. These men have the title of *Mundeba*, which can be rendered literally as "the caretaker". The *Mundeba* is, as it were, the manager of the caravan. He knows of, and has supplies of the medicine (*Bugota*) without which no caravan can go to Nyaraja. This medicine has the quality of many native medicines, that of enlisting the sympathy of the ancestral spirits with the object of the caravan, that is, in this case, the obtaining of salt (*Munu*) from Nyaraja. The duty of the *Mundeba* too, is to bring up the rear of the caravan, and to protect and keep the stragglers together. Each *Mundeba* has his lieutenant, or *Ntongeji* or *Kolongoji*. The duty of this man is to lead the caravan. No one may walk ahead of him. He carries a long horn, about nine feet long and about an inch in diameter, made out of a long hollow reed. This horn is called the *Nhaninga*. The *Ntongeji* is further distinguished by a head-dress of ostrich feathers, and wears bells on his ankles, which jingle as he walks. The rank and file of the caravan are just the ordinary citizens of the area from which the *Mundeba* comes. They consist of men and boys, and a very large proportion of unmarried girls, the percentage of unmarried girls to men being about seventy to thirty. Married women rarely make the journey for the obvious reason that they are minding their homes. In spite of the presence of so large a proportion of unmarried girls in the caravans, immorality is rare. By day there is no straggling on the march, every one walks in single file with the *Mundeba* in the rear; and by night the men and the women are segregated into camps, often sleeping quite a distance apart.

Caravans vary in size. The average appears to be about fifty including men and women, though the writer saw one containing a hundred and ninety-

one people, and heard of another containing three hundred and three. To give some idea of the numbers who make the journey, fourteen hundred people were seen, some going to, and some coming from the lake, in two days. It is estimated that at least thirty thousand people make the journey to Nyaraja annually from the various areas of the Shinyanga, Kwimba, Mwanza and Maswa districts.

When a *Mundeba* decides to take a caravan to Nyaraja, he sends the *Ntongaji* to proclaim the fact. This man goes to every small area (*Chalo*) in the neighbourhood, blowing his horn, and informing the people that so and so is about to take a caravan to the lake. Those people who intend to make the journey collect with their food and equipment for carrying the salt, and the party sets out, led by the *Ntongaji* blowing his horn, and brought up in the rear by the *Mundeba*.

There are two main routes to Nyaraja. The northern route lies through Kimali in Meatu. This is used by people living in north and central Maswa, Kwimba and Mwanza. The southern route runs through Imala Seko on the Sanga river, and is used by the people from south Maswa and Shinyanga. Approximately the last forty miles on each route lie through uninhabited bush. The camping sites are as well known as stations on a railway system, as the camps naturally coincide with the few rivers where sweet water is to be obtained. The caravans sleep out in the open (it being the dry season). On each route it is not possible to obtain sweet water nearer than twenty miles from the lake. On the northern route, the last place where sweet water is obtainable is the Nsayu river, and on the southern route it is at Sanga Sanga which is also on the Nsayu river but lower down on its course, and near its confluence with the Sibiti river. When the caravans reach these camps, all surplus equipment is left with one member of the party, who acts as caretaker. Water vessels are filled and food for a couple of days taken, and the caravan presses on to the lake as fast as it can, obtains salt and returns with all speed to the base camp where all the food for the return journey has been left (these base camps are called *Luwando*). This last dash to the lake and back from the base camp is extremely arduous, especially on the northern route where a steep escarpment has to be climbed on the return journey, with full loads of salt. Further there is no water to spare for washing on this last lap, and faces, hands and shoulders get covered with salt, which is dried by the fierce wind which blows perpetually over the lake in the dry season. The result is that the personal discomfort is considerable. When the *Luwando* is again reached, there is great rejoicing, and a good rest, wash and feed are had by all members of the party. The salt is finally arranged and packed for travelling, all food for the return journey which was left with the caretaker is collected and the party sets off for home. It is the custom for each member of the party to reward the caretaker with some salt for having looked after their property at the base camp. As may well be imagined, these base camps present a lively appearance at all times during the season. From a sanitary point of view their proximity is definitely "lively".

Certain ceremonies have to be performed by the caravans. At the first night's camp after entering the uninhabited bush, the *Mundeba* produces his medicine and all members have to be smeared on the right temple, elbow and foot with the medicine. Again, when the party reaches the actual bed of the lake, no one may gather salt until the *Mundeba* has performed the ceremony of spitting out (*kufuha*) a mouthful of gruel to placate the spirits. A stick is stuck into the ground and no member of the party may pass this mark to gather salt until the aforesaid ceremony has been performed and the *Mundeba* gives his sanction to gather salt.

The equipment of the party is as follows. Each male in the caravan, whatever his age, carries a pole called *Nindi*, from each end of which a kind of cradle or holder of sticks (*Mhangijo*) is suspended in which the actual vessel (*Iganana*, plural *Maganana*) is held in place. These *Maganana* are a kind of wickerwork basket, closely woven enough to hold the salt, while letting the water in the salt seep through.

The women never carry two loads of salt on a pole (though a boy of ten or so will do so). A woman or girl only carries one *Iganana* of salt, which is invariably carried on the head. As the *Iganana* is porous, the faces and shoulders of the women become covered by salty water, which dries leaving an encrustation of salt. As they have no chance to wash until the base camp is reached on the return journey, they often present a somewhat strange appearance!

The actual process of gathering the salt (*Kudaha munu*) is simple and takes only a short time. The salt has to be damp, it is swept up with the hands, each handful being squeezed to lighten it of surplus moisture, and it is then transferred to the *Iganana*. A pyramid, often quite high, is thus formed, as salt appears to have a high angle of declivity and considerable amounts can be put into a small container in consequence. A fair sized *Iganana* will hold about forty pounds of salt, so that the men are often carrying eighty pounds of salt in addition to their food and water.

A large portion of the bed of the lake has a covering of not very strong, coarse grained salt, which, when it dries, does so in a formation like small waves. The edges, or "breakers", of these dry waves are picked off in pieces about six inches square, a hole bored in the middle, and they are threaded on to a piece of string or stick, and carried home in addition to the salt in the baskets. These pieces are called *Magelegele*. As the salt to be carried in the *Maganana* is gathered moist, it follows that, as the dry season advances, and the moisture recedes further into the middle of the lake, greater distances into the middle have to be traversed in search of salt. The writer visited the lake in August (after a poor rainy season) and had to go six miles out into the centre to reach a spot where the salt was then being gathered. The whole of this six miles was over dry salt, which glistened like snow. The lake lies in a depression surrounded by hills save at the western end, where it is bounded by a large plain through which the Sibiti river flows into the lake. The Sibiti itself flows throughout the year, but in spite of this and the presence of many other smaller

streams, some permanent and others seasonal, the lake dries up almost completely in the dry season, a process which is accelerated by the strong wind which blows across the lake from the north-east. On the northern side an escarpment runs the length of the lake, rising steeply to two thousand feet above it in parts, and on the southern side is a similar scarp, but not so steep or so high. Oldeani Mountain dominates the eastern end of the lake, which is about fifty miles long and ten miles broad at its widest part.

From the foregoing notes it can be seen that the salt caravans to Nyaraja are an exceedingly well established feature in the tribal life of the Wasukuma. The salt is used partly at home as a seasoning, and partly as an asset for barter or sale. It is said among the people that "he who has salt never starves" He who has salt can always obtain grain or a goat or even cattle in exchange for suitable quantities of salt. Two *Maganana* of salt are worth, for purposes of barter, about ten shillings. Many people make the trip several times in a season, which illustrates the value attached to the salt, as, as has been shown, the journey is anything but easy and pleasant. The amount of salt which is obtained annually is estimated at about a thousand tons which, with the large numbers who go yearly, indicates the importance of "Nyaraja" to the Wasukuma.

Observations relating to some Tanganyika Millepedes

(Swahili : *Jongoo*)

By Eric Burt

THE long shiny-black males and dull-black females of the Jongoo millepedes are familiar to most residents in the Territory.

Whilst working at Sigi, fifteen hundred feet below the East African Agricultural Research Station of Amani, one evening in June I came across one of the giant black millepedes (*Julus* sp.?) which are fairly common in this humid area. This particular specimen was strikingly large even for this species, measuring fully twelve inches in length. Since I desired to preserve it for scientific examination and had no box on me capable of holding so large a specimen, I finally buttoned it up in my trouser hip-pocket to await such time as I should get back to the house and be able to attend to it. I carried on with my duties for another hour or so. I had felt the millepede moving about in my pocket and noticed I was getting rather sore there, but dismissed this as of no importance and merely due to the animal's movements. However, whilst bathing shortly afterwards, I was surprised to find that my skin had become completely blackened over an area of about nine square inches, with further red inflammation spreading rapidly down my thigh. Four days later all this blackened skin sloughed off, leaving a raw wound. As I write these notes it is fully three months since this incident occurred, but I still bear the mark of the injury.

Prior to this I had always regarded millepedes as quite harmless and handled them with impunity. It may be of significance that the natives look upon them with dread. Of course they adopt the same attitude to many harmless creatures like chameleons, but their dread of millepedes does seem to have some justification. Being interested, I have examined millepedes subsequently on several occasions. On molesting a millepede by turning it about in the fingers I noticed that small drops of liquid are exuded from laterally situated pores, one on the side of each segment. This liquid is rich yellow-brown in colour staining the fingers very much like iodine does. The exudation has a pungent, characteristic odour recalling to mind that of the gas nitrogen peroxide (N_2O_4). However it is neutral to litmus. The fumes in quantity also cause marked watering of the eyes. Mere contact of the fluid with the tough skin of the fingers produces no injurious symptoms, although I found on rubbing some of it on to the skin of the leg smarting was experienced and the skin eventually became hard and scaly in the upper layers. It would appear that fairly prolonged contact with the skin is needed for any real injury to be caused.

Such exudation of fluid laterally is a property common to all the myriapods of the *Julus* type that I have examined. The exudation seems to have similar properties and smells the same in every case and evidently serves as a repellent and as a protection against would-be predators.

A small scaly-looking species of a longer legged type, I find exudes a frothy liquid smelling strongly of almonds. This is emitted from lateral pores on the plates of the back, chiefly from those just behind the head. Possibly benzaldehyde or some allied substance serves the purpose of protection in this case.

Late in December 1935 I was waiting near the edge of a road which leads up the Rift Escarpment about thirty miles south-east of Singida. As I was sitting there, a black millipede of the *Jongoo* or *Julus* type, about six inches in length, emerged from the scanty herbage fringing the road edge. For a millipede it was doing good speed. I watched it idly. Suddenly my curiosity and interest were aroused by all at once seeing the millipede sprawl over on its back with its legs waving in the air and beat rapidly from side to side with the front and hind ends of its body. It was then that I noticed that there were two or three small flies in attendance on it. Having no net with me, I was unable to secure a specimen for examination. The millipede, having freed itself of the flies' attentions for a moment by its contortions, pursued its course across the road. Similar antics were performed and repeated two or three times before it gained the far side and the entire assemblage was lost to view. This observation is regrettably incomplete, but does suggest the possibility of a parasitic relationship.

My pretext in bringing these observations forward is in the hope that others may thereby be induced to record other observations which will serve to elucidate the subject further.

Three Swahili Fables

By R. C. Jerrard

I. The Four Most Powerful Things

SOME time ago there were four men sitting on a stoep, discussing current affairs, that is to say, how the world wags. Presently one of them said, "Well now! my friends, there is nothing in the world finer than physical strength." So the second one answered him and said, "I vote for lechery every time." Whereupon the third said, "No! no! intellect will win hands down, or at any rate intelligence." And the fourth said, "Humility before God (that is, to keep God's commandments) is the best thing that there is in this world."

When they had argued their four propositions, each one upholding his own, they fell to silence awhile. Then the one who had first spoken said to his companions, "Well, gentlemen, I make you a request concerning these propositions which we have mooted here; let us leave this town, I pray you, and go on a journey; and let us pray God to grant us to find out the truth of our words; that is to say, let us see if these four things are in fact powerful in the world." Whereunto they all agreed, and lifting up their hands they besought God to bless them with good fortune, and so with submission to the Divine Will they made ready for their journey and left the town.

As soon as they had been gone an hour from the town, the advocate of physical strength said, "See now, from the present moment it shall be my part to provide you with food and drink till the end of our journey." To this the other three agreed. So on the way it was his work to cut firewood, and when they arrived at a town he used to sell his firewood and in this way get money, with which he used to buy food and cigarettes and so forth, and then what was over formed their bank. This work he went on doing till the end of the journey without encountering any sort of difficulty, and they all agreed to his proposition; they said, "We agree that physical strength is one of the finest things in the world."

Now it was the turn of the advocate of lechery and he said, "From to-day it shall be my task to find you plenty of food, just take your ease." So they stayed there, and it was his work to wander round and look for fine ladies, rich inhabitants of the town. This went on until one day a rich lady in the town there was on her roof-top and saw that youth passing; at once her soul desired him exceedingly that she might converse with him. In her urgency she took some twenty pounds and gave them to her servant and said to him, "Run after that man"—indicating whereby he should distinguish him—"and give him this present, beg him to wait upon me here at my house to-morrow morning." The servant went on his errand and came up with the man and

accosted him, then he took out the present of twenty pounds and gave it to him together with all the solicitations of his lady; and the master of lechery gave that servant great thanks and said, "Tell your mistress that if all goes well to-morrow I am her guest." So the youth returned home with what he had gathered.

When he arrived he took out the money and divided it among his companions and they received it. So in the morning he went off at daybreak to go to that lady, and arriving at the door he was received into the house, and remained with the rich lady until six o'clock in the evening, being given a large sum of money. That man went on with his work until they had deposited in their bank a sufficiency of some £225; and his companions agreed, "We have seen that the power of lechery is indeed vast, now it is your turn to have a rest." So he rested.

Whereupon the advocate of intelligence intervened, in duty bound to take his turn. So every day saw him ledger in hand, and in the ledger were such and such accounts of money written. One day a ship arrived, and when he saw the ship he took his ledger and got into a boat and went aboard the ship. When he got aboard he said, "I wish to see the captain." So at once the captain came and they greeted each other. Then he asked him, "I want to know if your ship has a cargo of rice?" The captain said, "Yes, it has." So the merchant answered, "I will buy all your rice"; and the other agreed, and they signed up the papers. Then the merchant of wisdom returned to the town, and went to another merchant and said to him, "I want you to rent me a house to put my rice in."

Now in that town rice was scarce, one *pishi* for two shillings and unobtainable at that, so when that merchant heard mention of rice he welcomed him with great respect. Eventually he said, "Well now, sir, what about it, won't you sell this rice to me?" The master of wisdom said, "I will sell it to you. I have bought the rice for £2,256, now, what will you give for it?" The other said, "I will buy it from you for £3,287." So he agreed to this, and the cost of transport to be borne by the purchaser. And his companions agreed that knowledge was worth more than anything else in the world; moreover they had a fairly adequate bank balance by now.

Last came the turn of the saint, the keeper of God's commandments, and he was ready for it. His work was just to live in the mosque. One day as he was passing along the street he met some children carrying birds in a cage. So he stopped them and said to them, "I want you to sell me your birds." The children agreed and he gave them a shilling and they accepted it, then he released the birds and they flew off.

Those birds went and sat on a tree and gave thanks, and they said, "If that gentleman could understand our speech, we would show him very great wealth, there is a certain tree, and a certain stronghold, and a certain *geme*,* and a place where a certain house is built, in these places there is wealth." Now

**Geme* is unknown to me, perhaps "cave".—AUTHOR.

the man understood the words which the birds were saying, and he wrote it all down there and then while they were speaking.

After a short time the king of that country died, and the custom of their kingdom was that the birds chose the new king; after the funeral they used to stay there by the grave to wait for the birds to choose a new king. So when the birds came to the cemetery they flew round but could not see the man who had shown kindness to those birds who had been caged by the children. Then when he had finished praying he came to the cemetery and was chosen to be king, in other words, the birds settled on his head; then the cannon were fired, and he became the chief ruler of that country.

Whereupon he called his companions and informed them, "Now I am the ruler, the king of this country; God has heard our words, and now I give you your offices."

The advocate of physical strength became the Head of the Army.

The advocate of lechery was put on oath to give up lechery, and given the post of Chief Administrator.

The advocate of intelligence became Chief of Customs.

And they lived in peace and comfort till their decease.

Every time you speak your speech should be informed by knowledge, and conformed to law, which should proceed out of your mouth as is seemly. Perhaps one day you shall speak a word of peace, and that very peace may come to you. Or, shall we say, as you speak doubtfully doubts will possess you, and this is bitter. Well! at any rate here is the end of the tale. The good in it belongs to us all, only the bad is my own.

II. The Spear and the Ball (An Abunuwas story)

LONG long ago there was a man who had two daughters, and one of them was married to old Kenge, and the other was the wife of Abunuwas. Now these two had adjoining maize-fields, and at the time of guarding the crops they both left the village, and went and built a raised shelter on poles, and they slept together in the same camp, and their spears were stuck in the ground together outside in the same place.

Now one night the pigs got into the maize-fields to destroy the crops, and Abunuwas heard a pig breaking the maize-stalks; he woke up in a hurry and opened the door and taking a spear he crawled along bit by bit till he got close to the pig; then he speared the pig, and the pig went off hell-for-leather with the spear, and he himself went back to the shelter.

As soon as he got back he called his brother, old Kenge, "Wake up," he said, "I have hit a pig, and he has gone away with the spear." Kenge said, "I hope you did not throw my spear then." Abunuwas said, "I don't know till the morning." In the morning when they woke up he looked, and of course it was old Kenge's spear that was missing, and there and then he

said, "You have got to bring me back my very own spear, and as a substitute for it I won't take a single thing." So of course there was a big to-do about all this; the big chiefs, and all the animals, came together to beg old Kenge to be reasonable, and to accept something else as a substitute instead of his spear; but he would have none of it at all. Whereupon the chiefs of the council compelled Abunuwas to go and hunt for that spear.

Having got magic to enable him to find it quickly, Abunuwas set out on his journey. He went on for two days, and on the third day he found the pigs holding a great council meeting about the wounding of their fellow pig, because (it was alleged) he had gone to a rival firm for his protection magic! Stuck in the ground, right in the middle of the council, was the identical spear! So Abunuwas worked his spells, and all the pigs went fast asleep, and he just passed through them right to the middle and took that spear and off he went. After four hours the pigs woke up, and the spear wasn't there! They made an attempt to follow the thief, but without success, and so they all went home again.

Now Abunuwas, as he was on his way back, came across eight people playing catch-ball with the mouth; so he approached them about selling him that ball, and they agreed to sell it to him for four shillings. Abunuwas produced the four shillings, and he was given the ball and its magic also, that is to say, the means by which anyone who swallowed the ball should be able to void it forthwith and so to throw it to his companion.

Abunuwas reached his home, and in the morning he called the elders together that he might formally restore the spear to old Kenge. When the elders assembled, they took the spear and gave it to old Kenge; and he was pleased and received it without any more bother; and that was that.

Abunuwas, however, went and cleared an open space; then he collected his brothers and all his children to play the ball game, and when he had collected his relatives he administered to all of them the ball magic. So when they were ready they went to the open space to play ball, and the way they played it was to catch it in the mouth and to void it there and then and to throw it to someone else. The people sang the praises of this ball game, and the news of it spread far and wide till it reached old Kenge; by the time old Kenge had had enough of it he felt a longing to go and watch this ball game.

When old Kenge saw the ball game it was quite new to him, and he wanted to be a member of the club; so Abunuwas let him join, but he was *not* given the ball magic! So then it came about that when the relatives of Abunuwas gave the ball to each other it was catch it in the mouth, void it immediately, and give it to someone else; but when it came to old Kenge's turn he opened his mouth ever so wide, and the ball was thrown to him and he swallowed it, but when he tried to void it of course he couldn't, and that put an end to the game.

No one ever saw such a to-do as there was about that ball! Abunuwas said, "No! no! I have nothing to say! I want nothing else! but I have just got to have my very own ball again." The chiefs of the council said that he

must be given his ball, and not any substitute for it, just as old Kenge had said before. "This exactly illustrates the saying that 'One thing leads to another.' If he can't void this ball, then he must be split up the belly that Abunuwas may get his ball." Upon this decision old Kenge was seized in the council chamber, and slit up forcibly, the ball was recovered and given to Abunuwas, and old Kenge died.

So now the elders tell their children, "Take heed, children, and do not try to be ill-natured to a neighbour or a near relative, for if you fall out with such a one you must be done by as you did. It is not the bush near the village which brings us disaster or danger, and if one of your family wrongs you, it is best to come to a peaceable agreement with him; don't get mad with him, that is to say, if you fall out with him the loss will be yours."

III. Choosing a Wife (An Abunuwas story)

ONCE upon a time there was a man and his son, and when the father perceived that his health was failing he understood that death was now approaching. So he called his son that he might give him his inheritance. When his son arrived he gave him a bag of money and the son received it; furthermore the father said to him, "My son, I now bid you farewell, for now I am near to death; but after my death, when you wish to marry a wife, do not marry until you have asked forty people what sort of wife it is good to marry in this world. If the fortieth person gives you information about a suitable wife, then marry her." With this last dying admonition to his son straightway the father died.

Now after the death of his father, the time came when the son was ready to marry a wife, and he well remembered the instructions which his father had given him; so he felt bound to carry out his father's command, and to ask forty people for advice as he was told to do. Thus he proceeded with this quest as to what kind of wife it is good to marry in this world. When he had asked thirty-nine people, there was still left one person to ask; but of these thirty-nine people there was not a single one who had answered him to any purpose.

So it came about that one day he left his house in the morning, and said to himself, "To-day I shall meet with the fortieth person, and I will ask him, and whatever sort of answer he gives me I will follow it." So he walked on for about twenty-five minutes, and just ahead who should he see coming but Abunuwas! On meeting it was for the young man to put his question, and he said, "Excuse me, sir, but would you very kindly explain to me what sort of a wife it is good to marry in this world?" Abunuwas replied, "Well, if you are wanting to marry a wife, I will explain the matter to you, and then you shall choose yourself the wife you wish to marry; for indeed there are only four kinds, namely these:—

(1) *Laki*; the woman who has never been married since birth.

(2) *Wamalaki*; the woman who has been married, but has never borne children.

(3) *Walaki*; the woman who has been married and borne children, and you also may have children by her.

(4) *Waiyaka*; the woman who has been married and borne children and has ceased from childbearing.

“Now the first is the best, she will remember you all her life, because you have shown her the pleasure of the world. And the second is good, for when she comes to you she may bear children, and she is buxom for she is not yet worn out. And the third also is good, for she has experience and plenty of commonsense. But the fourth is no good to marry, for with her you have no hope of a child, and spoiled seed does not germinate. Let us say the first is gold, not a speck of rust on it; and the second is silver, not much rust on that; and the third is brass, rusted, yes! but still not too badly; and the fourth is iron, thoroughly rusty and distasteful.”

So the young man went home; and he went and married a wife of the first kind, pure gold, and he had children by her; he extended his family tree, and the line of his ancestors advanced another generation.

Masai Cattle Auction

By Mrs J. E. S. Griffiths

THE Masai are considered to be one of the most arrogant races in Africa. Forty years ago when travellers first passed through their country they were treated by the lordly Masai as objects of scornful curiosity. To-day, though they are still proudly exclusive, and though they still regard cattle-raiding as a national sport far superior to football, they are in some respects adapting themselves to their changing world, one sign of this being their annual payment of tax to the Government. This payment and the payment, too, of fines resulting from their national sport are factors in making the Masai wish to sell cattle, but as it is realized that their ignorance of money would soon make them the dupes of unscrupulous traders, regular supervised cattle auctions are conducted in various parts of Masailand.

Many auctions have been held at Munge, which is a site on the rim of the Ngorongoro Crater opposite to the government rest camp, and for a day or two before an auction a curious pilgrimage wends its way across the crater floor and climbs the grassy slopes to Munge. Here are a score of Somali cattle traders striding along in brightly striped *kanzus*, and just behind come bearded, turbaned Indians with pack donkeys carrying their wares for sale. And winding up the valley are large herds of cattle, with Masai women walking beside them, hoping to add still more beads to their many rings of necklaces. In single file come the porters of the Assistant District Officer and the Veterinary Officer who are attending the auction, while behind are five or six Wachagga coming to buy meat to supply the numerous butchers' shops on Kilimanjaro. On this occasion the fifteen little schoolboys from the new Masai school at Monduli, all dressed in neat khaki uniforms, form part of the large procession, as they have come in charge of their teacher on an "educational tour" to see the auction! It is hard to believe that they are the brothers of the fierce young moran (warriors) with smooth red-ochred pigtailed and long spears, who are bringing the cattle.

Suddenly along the path there is a feeling of excitement and small groups of moran come hurrying back. News has spread that a party of moran have been quarrelling about a lion hunt, and a Serengeti morani has speared one of another section. A prompt order disperses the excited young warriors who are on their way to the scene, and presently the wounded man is carried into camp on a rough litter. The old Masai advise that he be given blood to drink but as he lies on the ground needles are brought from an Indian store, and threads of wildebeest hair are prepared from the fly-switch of one of the Europeans. With twilight falling the wounds are stitched up; but though the patient is completely conscious, he shows no sign of pain at all. He would have been completely shamed in the eyes of his friends had he done so.

Next morning the auction is in full swing, and within an hour nearly a hundred beasts have been sold. Bidding is keen, as the buyers all sit perched close together on the fence of the ring, leaning forward with eager eyes as the beasts are brought in. Under the high perch of the auctioneer stand the Masai owners, and as his beast is knocked down to a buyer the owner shakes his head dubiously. "What a fine beast that was! Ought he to have let it go at the price?" he thinks. But already the next beast is being bid for. *Mara ya kwanza! Mara ya pili! Mara ya tatu!* chants the auctioneer over and over again, and each time a buyer jumps into the ring with his branding iron hot from a near-by fire, and then the beasts are passed into another pen. Here comes an extra fine beast—fat as butter. A fine price that will fetch on the Arusha market. Everyone comes crowding round to see; askaris and veterinary guards all watch with interest as the bidding soars, and even the auctioneer sounds shriller as he knocks it down for a hundred shillings.

Presently trouble starts. The buyers are forming rings. The Waarusha, the Wachagga and the Somali are bidding for alternate pens. Prices drop, and several times *Anakataa*, calls the auctioneer, as the Masai owner refuses to sell. After this fat beasts and thin are brought for sale alternately, to the growing exasperation of the ring getting the thin beasts, till finally bidding becomes general again.

Meantime as beasts are sold, a long queue of pigtailed warriors has formed, waiting to pay tax and clerks are kept busy early and late making out tax tickets. Then, with what remains of the price of his beast, the owner finds his way to the lines of Indian stalls, where in tents piles of blankets are for sale, and rings of beads are temptingly displayed on large bamboo frames. On the ground are mugs and pots of iron and brass, and steel swords and spearheads for the men. A busy scene indeed. The women stand inspecting the beads, while men squat on the ground fingering the spearheads. But woe betide a trader who is thought at some time to have given bad weight in his store in some distant part of the country. Word is passed to boycott his stall, and he has nothing to do but close it down.

At one end of the line of stalls are two rival restaurants. A motley array of about half-a-dozen cups is spread out on the ground, and tea is served at ten cents a cup, or a meal of meat and rice fritters for fifty cents. Among the throng of buyers blankets of all sorts are replacing the skins in which the men arrived. Some of the old men might be Highland shepherds in their warm blankets, closely imitating various Highland tartans—and all made in Italy. Here is a small group listening to an excited old man who has bought a four-shilling blanket, which he says was torn when he bought it. But strangest of all, are the venerable and dignified old men, and the ferocious looking warriors who now appear in pretty pink and white blankets, marked in large letters "Baby"!

The excitement lasts for three days, until about eight hundred beasts have been sold. Each day and all day the elders of the tribe hold one of their inter-

minable palavers—sitting in a ring on the grass. One after the other in the most orderly way they stand up to speak, emphasizing every point in their speeches by banging on the ground with long sticks.

On the fourth day, early in the morning, a frightened herdsman comes to tell the Wachagga buyers that their two prize beasts—the best of eight hundred—have disappeared during the night. Messengers go in all directions to look for them, but by great good fortune a small boy has seen four moran driving two large beasts up into the forest, so that by next day the four are caught, but not before one beast had been killed and eaten.

Now once again there is a scattered procession across the crater and along all the paths over the hills, the Masai are going home, fairings in hand, and, except for the elephants in the forest, Munge is left deserted.

NOTES

A Note on Native Power of Discernment

By Egon Fr. Kirschstein

IT is commonly known that several native tribes of Tanganyika Territory—for example the Wafipa—possess names not only for the four chief points of the compass, but also for the various stars and constellations. They have likewise in their own language words for the principal ores and minerals such as iron, copper, mica, lime, coal, etc. Yet it is believed that natives do not differentiate any rocks by name despite their ability to distinguish, say a sandstone from a basalt, or a granite from a slate. As a matter of fact, most natives when asked for the name of a rock will simply reply that it is a stone.

It may therefore interest the reader of these notes that the Warungu of the highlands on the Rhodesian border, in the Kasanga sub-district of Ufipa are using special names at least for quartz-diorite and quartz. The latter they call *amawe mbuzi* because the scattered boulders of quartz resemble grazing white goats; while the quartz-diorite forming the woody ranges on both sides of the Munza river, is distinguished as *mchenche* which is the name of a species of small parrots very common in the region. This bird has greenish feathers, and the rocks of quartz-diorite are of almost the same colour when weathered.

On the other hand the designation *itandala* for the large shields and flat humps of granite used by the Warungu as floors for drying or threshing crops, rather refers to the flatness than to the particular kind of rock. In any case it cannot, in my opinion, be considered as the specific word for granite, because the people do not apply it to granite rocks of any other shape; and they would probably call a similar slab of gneiss likewise *itandala*.

Still, it is surprising that this tribe in the south-western corner of Tanganyika Territory, unlike other native tribes, discerns quartz-diorite and quartz—rocks of a striking appearance, indeed, and also of wide occurrence in that hilly country on the Rhodesian border, though of no practical use to the Warungu.

Most of the diorite mountains in this area bear the names of local spirits (*Kito*, *Mbaa*, *Kipala*) as also do some strange looking granite rocks. One diorite hill, however, is called *tikanamukwi* by the Warungu. This means "I cannot descend in the company of my mother-in-law"; A somewhat

curious name if one knows that, according to native etiquette, the polite son-in-law descends first and should not look back upon the old lady, which would be extremely shocking in this particular case as the Warungu women wear no knickers as yet.

The terms *mchenche* and *amawe mbuzi* for quartz-diorite and quartz respectively are also used by the Wafipa living among the Warungu, but they have a separate name for the large granite shields mentioned, which they call *pampa*. They do not differentiate any other kind of rock by name.

EDITORIAL NOTE.—Milne and King, in a recent study of Sukuma names for a number of distinctive soils (Departmental Manuscript Report), state that in Usukuma at least two rocks are distinguished by special words: The banded ironstone of the upper Basement Complex as *inchanohe* and quartz rock as *magonoho meupe*. There does not seem to be a special name for greenstones of the diorite type.

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Stick-in-the-Mud

By T. M. Revington

IT had not rained for three days and a sky of cerulean blue unblemished by cloud tempted me from the office—I should have known better. Every day of April is All Fool's Day for the motorist and a blue sky in that month is a lure that the more wily will ignore, or, if in duty bound splash through his journey on foot. The car ran sweetly as well it might having been stabled for several weeks. The grass was green and the crops all that they should have been. The road was good if wet and the sun winked in the puddles, which returned the compliment, and at the chaste and brazen lady on the radiator who did not. I smiled, poor fool, at the standing crops and the laughing day and thought myself happy—fatal of course.

Now thirty miles an hour is as comfortable a speed on the bush road as in built up areas—one can look around without danger or allow oneself to be partially mesmerized by the beat of the engine or even dream, as I most greedily did—of hors d'oeuvre consumed in the quieter balcony of the Café Royal last leave. I had just filled myself to repletion with the hors d'oeuvre and was looking around for the wine waiter when it happened—when the car lurched like a bucking horse and sank to her haunches in mud. With marvellous self control I did not even gasp at the sudden translation from Regent Street to reality; I did not swear even at myself but struggled out to seek that greatest asset of Africa—the African. Only one house was in view. The greatest asset was away in the fields with his brothers and all the hoes of Sukumaland were, I knew, engaged in weeding cotton. The local assets were too few to move the car—they consisted of a greybeard—literally—a child and a precocious young goat that waltzed over the cushions—

I looked round for Pan. It was a lovely day. I walked home and left the car wallowing in the mud like the hog I thought her. She stayed in her sty for a week as the heavens opened that night and wept copiously at her sorry plight.

The hire of a lorry and labour to disinter her cost forty-four shillings and several hours of walking in a broiling sun—all because of a blue sky. Shall I make an ass of myself in a like manner again? I shall. Why? Because the man is not born who can resist the temptation to leave his office (typewriters obediently a-clicking at the will of their slaves and files everywhere, notwithstanding) in the very middle of a sunny morning in the very middle of the rains. Lucky is he whose duty and pleasure it is to do so for if he may not, he is, or soon will be, stick-in-the-mud.

