

greater size, and this is much in evidence with at least one of my buff specimens (No. 81.291) which measures 190 mm. in total length.

Miller (Cat. Mammals West. Europe, p. 811) mentions some specimens from Turin, Italy, which approached *A. s. sylvaticus* in colour, but the dates of the skins were not given and the approximation might well have been due to intermediation, as far north as Turin.

I can detect no such seasonal colour change in my series of *A. s. sylvaticus* from Britain.

A similar examination was made of a series of 58 skins of field-living *Mus musculus* from the same heathland. With four exceptions these were all white ventrally and these four were excluded from the present consideration, as being vagrant examples of the parasitic *Mus musculus azoricus* or intermediates between that and the wild *Mus musculus spicilegus*.

When the series of *M. m. spicilegus* was considered a similar colour change to that in the *Apodemus* series was evident. The range of the *Mus musculus* series is from March 22, 1944, to September 22, 1944. The extremes of colour were, in the earlier animals, a light uniform grey, and in the later animals a light golden brown. A mouse trapped on February 20, 1944, on the same heath, is very dark grey, but unfortunately had no skull and cannot definitely be said to be *Mus musculus*. Here again there is only one transitional specimen (No. 40.301), trapped on May 14, 1944, which has clearly defined strips of golden brown along both sides between the light grey above and white below. The patches on both sides commence on the elbow and terminate at the knee. (The only *Apodemus* transition specimen was commencing its change on the top of the head.)

The transition in this series did not appear so suddenly as in the *Apodemus* series, but there was a high preponderance of grey animals in the "middle left" of the line and a high preponderance of golden brown ones in the "middle right" of the line. In the *Apodemus* series there was no intermingling of two extremes.

The colour change, which can only be seasonal, must, in some way be connected with Mediterranean climatic or environmental conditions, since no such change is detectable in *A. s. sylvaticus* in Britain.

The area from which the skins were collected is one of open heathland, varying from 200 ft. to 1500 ft. above sea-level. It is very dry in summer, with no standing water and little grass, but many aromatic short shrubs. (Mr. Clancey sent me four cuttings of these, and I am indebted to Miss C. I. Dickinson for having them identified by botanical authorities at Kew. They were a species of *Fumana*, a species of *Thymus*, *Pistacia lentiscus* and *Cistus monspeliensis*.) There are large areas of exposed fossiliferous rock, and the soil, very red in colour, is shallow and sparse.

It was suggested to me that the change of colour might be due to long exposure to hot Mediterranean sun, but these creatures are largely nocturnal, and in any case such a change would be gradual and general, whereas such little transition material as I have shows evidence of localised change of colour, which must have been relatively rapid, and this seems to me to indicate clearly a change of pelage by a "moulting" process.

The seasonal change of colour observed in these rodents may accordingly be an evolutionary tendency occasioned by other environmental factors; but seasonal change may certainly in part explain the wide variability in colour of these rodents (such a seasonal change is well demonstrated by the insectivore *Sorex araneus castaneus*), and this wide variability in colour makes research into the subspecies of rodents most confusing. Investigation of this is in progress and it is hoped to produce a further communication in due course.

A Revision of the Type-localities of Mammals occurring in the Tanganyika Territory. By G. H. SWYNNERTON, F.Z.S., Game Preservation Department, Tanganyika Territory.

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Whilst assisting in the preparation of a Checklist of Tanganyika Mammals I was struck by the fact that most, if not all, of the type-localities were badly in need of revision. I turned for help to Allen's (1939) 'Checklist,' which is the most up-to-date and comprehensive work on the subject, but was surprised to see that little attempt had been made to correct any errors in or to modernize the spelling of place-names and, to make confusion worse confounded, many places lying right outside its boundaries were attributed to Tanganyika. Further, it was noticed that some species had more than one type-locality, others had none at all, and others again were given a type-locality so vague as to be almost untraceable.

Those places wrongly attributed to Tanganyika Territory and those species whose type-localities require to be restricted or fixed have been dealt with by Moreau, Hopkins and Hayman in their paper (in press) on "The Type-localities of some African Mammals." The present paper, which makes no pretence at dealing with the ecology nor the systematics of the various animals mentioned, merely revises the type-localities which do occur in Tanganyika. I have had the opportunity of reading the manuscript of Moreau, Hopkins and Hayman's paper, and I am grateful to the authors for permission to incorporate here certain of their conclusions.

The area covered includes the Tanganyika Territory (excluding Ruanda and Urundi, which are now governed by the Congo Belge) together with the islands of Pemba and Zanzibar, which, together with several smaller islands lying close to them, comprise the Zanzibar Protectorate. For the spelling of place-names I have followed where possible the 'Gazetteer' (1942) to the latest maps of Tanganyika (1/1,000,000, Africa, 1940-1, various sheets). For names which are not included in the above 'Gazetteer' I have referred to various other official maps which I have mentioned at the end of the list of references quoted later. Besides these official maps I have made use of the route-maps accompanying many of the works of travel mentioned below.

Before the Great War (1914-8), while Tanganyika was under German rule and called "Deutsch-Ost-Afrika," several places were given German names which are shown on many of the older maps of the country. These names are no longer used, the places being referred to now by their correct native names. Thus, to mention only a few, Bismarckburg has reverted to Kasanga, Wilhelmstal to Lushoto, Lake Hohenlohe to the Yaida Swamp, and so on. On the other hand, certain names, which were in current use prior to the coming of the Germans, are still retained. Such names are: Lake Victoria, Speke Gulf, Emin Pasha Gulf and Smith Sound.

To avoid unnecessary repetition I have given below the subdivisions of Tanganyika into Provinces and Districts (sub-districts or Divisions are shown in parentheses after the District in which they occur). No mention will be made again of Provinces, and in future Tanganyika Territory will be referred to as Tanganyika, Kenya Colony as Kenya, and Portuguese East Africa as P.E.A. Tanganyika has been divided into Provinces and Districts for administrative purposes; it is also divided into tribal areas and chiefdoms by the natives themselves but, except in a few instances, the boundaries of tribal areas and chiefdoms do not correspond with those of Provinces and Districts.

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ADMINISTRATIVE SUBDIVISIONS OF TANGANYIKA.

1. TANGA PROVINCE : Korogwe (Korogwe, Handeni and Lushoto), Pangani, Pare and Tanga Districts.
2. EASTERN PROVINCE : Bagamoyo, Kilosa, Morogoro, Rufiji (Rufiji and Mafia Island), Temeke and Ulanga Districts.
3. SOUTHERN PROVINCE : Kilwa, Lindi, Liwale, Masasi, Mikindani, Newala, Songea and Tunduru Districts.
4. SOUTHERN HIGHLANDS PROVINCE : Iringa, Mbeya (Mbeya and Chunya), Njombe and Rungwe Districts.
5. WESTERN PROVINCE : Kahama (Kahama and Nzega), Kigoma (Kigoma, Kasulu and Kibondo), Tabora and Ufipa Districts.
6. LAKE PROVINCE : Biharamulo, Bukoba, Kwimba, Maswa, Musoma, Mwanza and Shinyanga Districts.
7. NORTHERN PROVINCE : Arusha, Masai, Mbulu and Moshi Districts.
8. CENTRAL PROVINCE : Dodoma (Dodoma, Manyoni and Mpwapwa), Kondoā and Singida Districts.
9. ZANZIBAR PROTECTORATE : Pemba Island and Zanzibar Island, together with smaller adjacent islands.

Reference is frequently made to three features which require a word of explanation :—

- (1) The *Gregory Rift Valley* is the main rift valley of East Africa. It is sometimes referred to as the Central Rift Valley in Tanganyika since it more correctly describes its position and relation to other rift valleys in the Territory. It is a continuation of the Eastern Rift Valley of Kenya, entering Tanganyika at Lake Natron and running in a southerly direction, eventually disappearing in southern Dodoma District in the region of the Kisigo River. A few subsidiary rift valleys are also mentioned.
- (2) The *Great North Road*, also known as the *Cape-to-Cairo Road*, bisects the country from north to south. Entering Tanganyika at Namanga on the Kenya border and passing Arusha, Kondoā, Dodoma, Manyoni (junction for a branch-line to Singida), Tabora (junction for a branch-line through Shinyanga to Mwanza on Lake Victoria), and reaches its western terminus at Kigoma on Lake Tanganyika. The only other railway in Tanganyika is the Tanga Railway, which runs from Tanga inland via Korogwe, Same, Kahe (junction with the Kenya railways) and Moshi to Arusha.
- (3) The *Central Railway* bisects the Territory from east to west. With its eastern terminus at Dar es Salaam on the shores of the Indian Ocean, the line runs westwards past Morogoro, Kilosa, Dodoma, Manyoni (junction for a branch-line to Singida), Tabora (junction for a branch-line through Shinyanga to Mwanza on Lake Victoria), and reaches its western terminus at Kigoma on Lake Tanganyika. The only other railway in Tanganyika is the Tanga Railway, which runs from Tanga inland via Korogwe, Same, Kahe (junction with the Kenya railways) and Moshi to Arusha.

In the following pages I have endeavoured to clear up any existing confusion with regard to type-localities. I have made use of what local knowledge I possess and have freely picked the brains of others where my own knowledge fails. Many place-names have completely disappeared from modern maps, due in certain instances to the migration of the local inhabitants in search of more favourable pastures, or because of the encroachment of tsetse-fly, or on account of water shortages, or for various other reasons incomprehensible to the European mind. With the coming of the white man and the resultant improvement in communications some places have increased in importance while others, lying far from the beaten track, have dwindled and have occasionally been lost entirely.

Other difficulties which have been encountered in tracing type-localities are due as often as not to collectors giving insufficient details concerning the whereabouts of their collecting stations. As an example we may take *Georchus*

albifrons Gray. The type-specimen, which is in the British Museum, is labelled "East Africa" and was collected by Captain J. H. Speke, but, according to Selater (Proc. zool. Soc. Lond. 1864, 100), Speke himself did not remember the place of origin of his specimen. Until the distribution of this species is known it seems impossible to allocate to it a definite type-locality. Again, differences between the German (and it must be remembered that the Germans did much of the early collecting in Tanganyika) and the accepted modern method of spelling and pronouncing East African place-names has caused a certain amount of confusion, the chief difficulties occurring where the letters "z," "s," "j," and "y" are employed.

Further, political boundaries rather than latitude and longitude have been cited by many collectors. The former are by no means stable and the alteration of a political boundary may cause a discrepancy of over a hundred miles. Before the Great War Ruanda and Urundi formed part of Deutsch-Ost-Afrika. Now they belong to the Congo Belge and have done so for many years past, yet Allen (1939) has placed practically every type-locality lying in either Ruanda or Urundi in Tanganyika. The type-locality for *Anthropopithecus pурсchei* Matschie is the Chingogo Forest, which lies between Lakes Kivu and Luhondo. Allen (1939, 175) places this locality on the "western border of Tanganyika Territory," whereas, in reality, it is in Belgian Ruanda nearly one hundred miles from the nearest point in Tanganyika. And this is not an extreme example. Within Tanganyika, it is not long since Liwale was included in Kilwa District, and Masai District was one with Arusha District. It is, therefore, safer when dealing with the more obscure type-localities which are not shown on modern maps to rely on latitude and longitude positions as well as on political boundaries (as has been done throughout the present paper).

Below, distances are given in miles and are measured as the crow flies; altitudes in feet above mean sea-level. Where a mountain is given as a type-locality and not a particular place or altitude on the mountain, the altitudes of the base and of the summit are recorded. If a place lying on the slopes of a mountain is named as type-locality, the name of the mountain is given before the direction of the locality from the mountain. Thus "Kibongoto, Kilimanjaro Southwest" indicates that Kibongoto lies on the south-western slopes of Kilimanjaro. This method is extended to localities occurring on islands, and islands in lakes. For example, "Ukerewe Island, Lake Victoria South," signifies that Ukerewe Island lies towards the south end of Lake Victoria.

The lay-out employed is as follows: localities are listed alphabetically, together with alternate or obsolete renderings, followed by the tribal area in which the locality occurs. Then comes a colon, dividing the locality and tribal area from the District and altitude. All this is in the form of a heading, and the following may be taken as an example :— "*Tabora, in Unyamwezi : Tabora District, 3957 ft.*" Tabora here is the type-locality, lying in the tribal area of Unyamwezi, in the Tabora District, at an altitude of 3957 feet above-sea-level. Following on this is a description in greater detail of the locality and its latitude and longitude. For the tribal areas of Tanganyika I have referred to Jerrard (1936) and to the 'Atlas of the Tanganyika Territory' (1942: 11). In certain instances I have added notes of more general interest, and where my conclusions differ from those of previous workers I have given my reasons. And, lastly, under each locality will be found a list of the species or subspecies which have been described from that locality. If the altitude at which a type-specimen was collected was included in the original description of a species, this is given in parentheses after the author's name. If the type-locality of a species has been re-defined, restricted, fixed or in any way altered by a previous author, a remark to this effect is also included.

Finally, I must express my gratitude to those who have helped me. They are too many to be included individually here, but reference is made in the

Nyanza." Matschie, in his original diagnosis of the species, definitely states that the name he uses, *jimela*, is the native name used by the Wanyamwezi, and since Unyamwezi is the first locality he gives in the account of its distribution it seems pretty evident that that must be regarded as the type-locality. Juba River is mentioned later as the northern limit of distribution (R. W. H.).

191. *Urowi*, in *Usangu*: *Mbeya (Mbeya District)*, 4000 ft.
Urowi (sometimes spelt Urori) is a chiefdom in Usangu lying between the Kimbi and Malangali Rivers in S. Lat. 8° 05' and E. Long. 34° 10'.
Type-locality for *Cephalophus lugens* Thomas.
192. *Usambara*: *Korogwe (Korogwe and Lushoto District)*, 2000 to 7500 ft.
Usambara is a tribal area occupying the Usambara Mountains in north-eastern Tanganyika, lying between S. Lat. 4° 24' and 5° 16', and between E. Long. 38° 10' and 38° 48'. For a detailed description of Usambara, readers are referred to Moreau's (1935) work on the area.
Type-locality for:—
Rhynchocyon petersi usambaræ Neumann.
Crocidura velutina Thomas.
193. *Usamiro*, in *Uzinza*: *Mwanza District*, 3720 to 5000 ft.
Usamiro is a chiefdom lying west of the south end of Smith Sound, Lake Victoria, in S. Lat. 2° 52' and E. Long. 32° 25'.
Type-locality for:—
Macrosclides pulcher Thomas.
Nyctinomus emini de Winton.
194. *Usangire North*, in *Ungoni*: *Songea District*, 3248 ft.
Usangire North is a village two miles south of Old Gumbiro, and 50 miles north-north-west of Songea on the Songea-Njombe road, in S. Lat. 10° 02' and E. Long. 35° 23'.
Type-locality for *Orycteropus afer observandus* Grote.
195. *Usangire South*, in *Ungoni*: *Songea District*, ca. 3500 ft.
Usangire South is a village eight miles south-west of Songea on the Mkurumusi River near its junction with the Ruvuma River, in S. Lat. 10° 46' and E. Long. 35° 33'.
Type-locality for *Lycyon ssongæ* Matschie.
196. *Usangu*: *Mbeya (Mbeya), Iringa and Dodoma (Dodoma and Manyoni Districts)*, 2500 to 5000 ft.
The Usangu is a large tribal area lying in the valley of the Upper Ruaha River, between S. Lat. 6° 50' and 8° 50' and between E. Long. 33° 35' and 35° 25'.
Type-locality for *Bubalus ussanguensis* Matschie.
197. *Useri, Kilimanjaro East*, in *Uchagga*: *Moshi District*, 3000 to 7000 ft.
Useri is a small chiefdom on the eastern slopes of Kilimanjaro, north of Rombo and Marangu, in S. Lat. 3° 06' and E. Long. 37° 37'.
Type-locality for *Colobus quereza caudatus* Thomas (3000 ft.).
198. *Ushingu*: *Kigoma (Kasulu) District*, 3700 to 8000 ft.
Ushingu is a small tribal area north-west of Uha, lying between the Malagarasi River and the Tanganyika-Belgian Urundi border, in S. Lat. 4° 12' and E. Long. 30° 27'.
Type-locality for *Sigmoceros gudowiusi* Matschie and Zukowsky.
199. *Ussuwi*=*Rusubi* (q. v.).

200. *Usukuma*: *Mwanza, Kwimba, Maswa and Shinyanga Districts*, 3717 to 4600 ft.
Usukuma is a large tribal area lying between Lake Victoria and Unyamwezi, between S. Lat. 2° 23' and 4° 00' and between E. Long. 32° 53' and 34° 30'.
Type-locality for:—
Eudorcas langheldi Knottnerus-Meyer.
Rhinoceros holmuwoodi P. L. Sclater (collected from the "north-east point of Usukuma, 50 miles south of Speke Gulf").
201. *Uzigua*: *Korogwe (Handeni) and Pangani Districts*, sea-level to 3000 ft.
Uzigua (also formerly Usegua) is a tribal area occupying much of the country between the lower Pangani River, the Nguru Mountains, the Uluguru Mountains and the sea.
The type-locality for *Rhynchocyon petersi fischeri* Neumann has been defined by Moreau, Hopkins and Hayman (in press) as "between S. Lat. 5° 20' and 5° 30' and between E. Long. 37° 50' and 38° 40'."
202. *Uzinza*: *Mwanza District*, 3717 to 4000 ft.
Uzinza is a tribal area lying between Smith Sound and Emin Pasha Gulf, south of Lake Victoria.
The type of *Lycyon dieseneri* Matschie was collected in the "miombo" (a type of woodland, not a place-name) forest between Uzinza and "East Ussuwi" (i. e., eastern Rusubi), and so probably near the head of Bukome Bay, Emin Pasha Gulf, within 10 miles of S. Lat. 2° 50' and E. Long. 31° 47'.
203. *Uzungwa Mountains*, in *Uhehe*: *Iringa District*, 5000 to 7000 ft.
Mountainous country in south-east Uhehe, lying between S. Lat. 7° 45' and 8° 35', and between E. Long. 35° 45' and 36° 12'.
Type-locality for *Poliocolobus gordonorum* Matschie.
204. *Vihingo*, in *Uzaramo*: *Temeke District*, ca. 450 ft.
Vihingo is a small village eight miles south-south-east of Ruvu Station (Central Railway) on the Ruvu-Mzenga road, in S. Lat. 6° 54' and E. Long. 38° 47' (Chief Surveyor, and D. C., Kiserawe).
Type-locality for *Taterona cosensi* Kershaw.
205. *Vikindu*, in *Uzaramo*: *Temeke District*, 360 ft.
Vikindu is a village 11 miles south of Dar es Salaam, in S. Lat. 6° 58' and E. Long. 39° 17'.
Type-locality for *Epomophorus stuhlmanni* Matschie.
206. *Vitongoji*: *Pemba Island East*, sea-level.
Vitongoji is an area (or "shehia") on the east coast of Pemba Island four miles due east of Chake Chake, in S. Lat. 5° 13' and E. Long. 39° 49' (Chief Surveyor, and D. C., Pemba Island).
Type-locality for *Cephalophus melanorheus pembæ* Kershaw.
207. *Wadi Natron*=*Natron Lake* (q. v.).
Allen's (1939, 162) "Wadi Natron" is stupidly misleading. It is not the Wadi Natron of Egypt, but the Lake Natron of northern Tanganyika.
208. *Wassi*, in *Irangi*: *Kondoa District*, 5000 to 6000 ft.
Wassi, which is the ruling clan of Irangi, is situated astride the Great North Road in S. Lat. 4° 30' and E. Long. 35° 45', and is given as type-locality for *Orycteropus afer lademanni* Grote. Allen (1939, 271), in his description of the type-locality, adds "Masai Plains," which is incorrect. Wassi is high country at the north end of the Irangi Plateau on top of an escarpment over 1000 ft. above and overlooking the Masai Plains to the east. Ecologically there is no connection between Wassi and Masailand and all reference to the latter should be omitted from this type-locality.