

larger and the brain-case more swollen. Male skull decidedly larger than that of the female.

Dimensions of the type (measured on the spirit-specimen):—

Forearm 64 mm.

Head and body 71; tail 23; ear 17; third finger, metacarpal 58; first phalanx 21.5; lower leg and hind foot (c. u.) 39; hind foot only 13.5.

Skull: greatest length to base of canine 20.2; condyle to front of canine 19.7; interorbital breadth 6.1; breadth of brain-case 10; palato-sinual length 6.5; maxillary tooth-row 8.8.

*Hab.* Upper Nile. Type from Mongalla, just north of Lado; other specimens from Khartoum (*Major H. N. Dunn*) and Lake No (*Willoughby Lowe*).

*Type.* Adult male. B.M. no. 2. 7. 4. 2. Collected and presented by W. L. S. Loat, Esq.

This species is distinguishable from *T. perforatus* by its larger feet, more swollen brain-case, and whitened wing-membranes; from *T. hildegardeæ* by its smaller size, the absence of any gular beard, and generally darker colour.

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L.—On the African Shrews belonging to the Genus  
*Crocidura*.—II. By GUY DOLLMAN.

[Continued from p. 527.]

Group 4 (*hedenborgiana* and *nyansæ*).

Size very large or large. Colour above deep chocolate-brown, reddish brown, or pale buffy drab; ventral surface dark brownish or grey, never very distinctly marked off from the brown-tinted flanks; tail not sharply bicolor, lower side generally only a little paler than upper. Second and third upper unicuspid about equal in size.

(10) *Crocidura anchietæ*, Boc.

*Crocidura anchietæ*, Bocage, Journ. Sc. Lisb. p. 26 (1889).

About equal to *occidentalis* in size, but with shorter, less tapering tail and lighter underparts.

Colour above (from spirit-specimens) dark reddish brown, rather paler and greyer on the flanks; the lighter underparts not distinctly marked off from the brownish tint of the dorsal surface. Belly slate-grey washed with silvery cream, lighter than in *occidentalis*, but not as pale as in



*flavescens*. Backs of hands and feet brownish or dirty buff. Tail rather shorter and not tapering so markedly as in *occidentalis*, rather more coarsely haired, brownish above, a shade paler below; bristle-hairs fairly numerous, but inconspicuous.

Skull larger than in *flavescens*, about equal in size to that of *occidentalis*; tooth-row about the same, second and third upper unicuspid nearly equal in size, the second slightly broader and with a rather longer cusp than third. Last upper molar fairly large.

Dimensions (as given by Bocage) :—

Head and body 116 mm.; tail 63; hind foot 17.

Dimensions of co-type and topotype in the Museum Collection (in spirit) :—

	Head and body. mm.	Tail. mm.	Hind foot. mm.	Ear. mm.
♀ (co-type) . . . . .	112	62	17	12
♀ (topotype) . . . . .	107	63	17	11.5

Skulls of co-type (broken) and topotype: condylo-incisive length —, 30; greatest breadth —, 12.1; least interorbital breadth 5.7, 5.7; length of palate 12.9, 13; postpalatal length —, 13; greatest maxillary breadth 10, 9.8; median depth of brain-case —, 6.7; length of upper tooth-row 13.3, 13.2.

*Hab.* Caconda, Angola.

The co-type in the British Museum is an adult female. B.M. no. 89.5.1.2.

This species would appear to be somewhat intermediate between the *occidentalis* and *nyansæ* groups; it is probably most nearly allied to the *nyansæ* group, but until more up-to-date material is at hand for examination it is impossible to decide the exact affinities of this Angolan shrew.

#### (11) *Crocidura hedenborgiana*, Sund.

*Sorex hedenborgianus*, Sundevall, Vet.-Ak. Handl. Stock. p. 174 (1842).

Size much larger than in *fuscosa*, about as in *manni*; general colour very dark.

General proportions about the same as in *manni*; tail not exceptionally long. Hairs of back about 5 mm. in length, much shorter than in the long-haired *giffardi*.

Colour dark blackish chocolate ("aniline-black" mixed with "vandyke-brown"), a faint shade lighter on the ventral surface. This is the darkest of all the allied East-African



species, the general colour even darker than in the western *giffardi*. Feet and tail dark blackish, very much as in *fuscosa*; caudal bristles longer and more conspicuous. Sundevall describes the general colour as follows:—"Totum animale uno colore tinctum; saturate castaneo fuscum vel chocoladium, vel colore seminis-coffeeae ustae. Venter non pallidior; cauda et pedes paullulum nigriores."

Skull long and rather narrow, smaller than that of *giffardi*, more as in *manni*, but maxillary region not so expanded. Teeth large, second and third unicuspid about equal in size.

Dimensions of the type:—

Head and body 140 mm.; tail 52; hind foot 21.

Skull: upper tooth-row 15·3; three lower molars 6·4.

In the Museum Collection is a specimen of *hedenborgiana* from Roseires, on the Blue Nile; the dimensions of this individual are as follows:—

Head and body 118 mm.; tail 64; hind foot 20·4.

Skull: condylo-incisive length 33; greatest breadth 13·7; least interorbital breadth 6·5; length of palate 14·8; post-palatal length 14; greatest maxillary breadth 10·5; length of upper tooth-row 15·3.

*Hab.* Sennaar.

The very dark-coloured pelage and general dimensions of this shrew render it easily distinguishable from the other large East-African species.

#### (12) *Crocidura martiensseni*, Neum.

*Crocidura martiensseni*, Neumann, Zool. Jahrb. Abth. Syst. vol. vi. p. 544 (1900).

A very large species, equal in size to *manni*, but considerably darker in colour.

Colour of dorsal surface rich chestnut-brown. Lönnberg describes it as between burnt umber no. 2 and no. 4 (Plate 304, 'Rep. de Couleurs'). Ventral surface dark greyish washed with brownish.

Skull about equal in size to that of *hedenborgiana*, slightly narrower, and with rather smaller teeth.

Dimensions of the type:—

Head and body 140 mm.; tail 88; hind foot (c. u.) 24; ear 9.

Skull (dimensions of type-skull, published by Lönnberg): condylo-incisive length 33·3; greatest breadth 13·2; interorbital breadth 5·9; length of upper tooth-row 15·1.

*Hab.* Kilimanjaro and Usambara.



This large East-African shrew is probably most nearly related to *hedenborgiana*.

(13) *Crocidura fuscosa*, Thos.

*Crocidura doriana fuscosa*, Thomas, Ann. & Mag. Nat. Hist. (8) vol. xii. p. 90 (1913).

A dark chocolate-coloured species with black feet and tail, most nearly related to *hedenborgiana*, but rather lighter in colour and smaller.

General dimensions distinctly less than in Sundevall's species.

Colour of dorsal surface very dark chocolate (between "bistre" and "vandyke-brown") above and below, the ventral surface very slightly paler; hairs all with slate-grey bases and dark brown tips. Backs of hands and feet black, much darker than in any of the *nyansæ* group. Tail black above and below, more hairy than in *nyansæ*, with the caudal bristles black in colour and conspicuous. The skull of the unique type is unfortunately badly broken, only the brain-case, interorbital region, a portion of the maxilla, and mandible remaining. In size it is evidently smaller than in *hedenborgiana*, having a narrower brain-case and smaller teeth.

Dimensions of the type (measured in the flesh) :--

Head and body 114 mm.; tail 60; hind foot 19; ear 12.

Skull (broken): greatest breadth of brain-case 12·7; combined length of three upper molars 4·8; of three lower molars 5·5.

*Hab.* Kaka, White Nile.

*Type.* Adult female. B.M. no. 1. 8. 8. 17.

This species was originally described by Thomas as a race of *doriana*; the great difference in general colour, the uni-coloured tail, and dark ventral surface seem to indicate that it must be considered as a form quite distinct from *doriana*. Its nearest relation would appear to be *hedenborgiana*, from which species *fuscosa* may be distinguished by its rather paler colour and smaller size.

(14) *Crocidura nyansæ*, Neum.

*Crocidura flavescens nyansæ*, Neumann, Zool. Jahrb. Abth. Syst. vol. vi. p. 544 (1900).

Considerably larger than the South African *flavescens*. Colour darker throughout.

General dimensions large, hind foot, in adult specimens, measuring 20 mm. in length.



Colour of dorsal surface browner than in *flavescens* (near "Saccardo's umber"), flanks rather paler; the brownish tint of the upper parts gradually passes into the dirty greyish brown of the belly, there being no sharp line of demarcation such as is found in the South-African species and *doriana*. Underparts slaty grey washed with either brown or dirty buff, the effect very conspicuously different from the cold grey-tinted belly of *flavescens*. Backs of hands and feet brown, usually about the same colour as the back or a little lighter. Tail brownish or brownish black above and below; in *flavescens* the tail is distinctly bicoloured, the ventral surface being markedly paler than the upperside.

Skull smaller than in *manni*, *odorata*, or *hedenborgiana*, about equal to that of *spurrelli*, but with a rather higher brain-case, the anterior portion not being depressed. Teeth a little larger; small upper unicuspid about equal in size.

Dimensions (as given by Neumann):—

Head and body 140 mm.; tail 66; hind foot 20.

Dimensions of a series of specimens in the Museum Collection (measured in the flesh):—

	Head and body. mm.	Tail. mm.	Hind foot. mm.	Ear. mm.
♂. Entebbe .....	140	80	20	..
♀. Mumias .....	120	..	18	11
♀. " .....	115	78	19	8
♀. " .....	120	80	20	9
♀. Elgon .....	129	79	21	11
♀. " .....	124	76	18	12
♀. " .....	120	77	18	8
♀. Toro .....	122	91	20	12

Skull-dimensions of six adults:—

	♀. Elgon. mm.	♀. Elgon. mm.	♀. Elgon. mm.	♂. Entebbe. mm.	♀. Entebbe. mm.	♀. Mumias. mm.
Condyle-incisive length .....	32·5	30·5	30·6	30	30·5	30·5
Greatest breadth .....	13·2	12·3	12·2	12·6	12·8	12·3
Least interorbital breadth ....	5·8	5·5	5·8	5·5	5·4	5·6
Length of palate .....	14	13·2	13·3	13·4	13·6	13·4
Postpalatal length .....	14·4	13·3	13·2	12·7	12·7	13
Greatest maxillary breadth ....	10	9·8	9·9	9·2	9·9	9·4
Median depth of brain-case ....	7	6·8	6·9	6·7	7	7
Length of upper tooth-row ....	14·4	13·9	13·8	13·5	13·8	13·5

Such variation as exists in these dimensions would appear to be individual rather than sexual.

*Hab.* Ussoga, near exit of Nile from the Victoria Nyanza.

This form was originally described by Neumann as a race of the South African *flavescens*; on account of the great



differences in size, general proportions, colour, and cranial characters it seems best to consider *nyansæ* as a distinct species. We are thus able to deal with the large Central African shrews as a group apart from *flavescens* and its allies. In this *nyansæ* group we find the tail always unicoloured and not, as in *flavescens*, very much paler below than above. Further, there is in this group no distinct line of demarcation between the dorsal and ventral surfaces of the body, the transition from the brown-coloured upper parts to the brownish-grey ventral surface being very gradual and indistinct. In the Museum Collection is a fairly large series of specimens which may be taken as representing true *nyansæ*; this form would seem to be restricted to the country around the north end of the Victoria Nyanza. Mr. Kemp collected it at Kirui on Mt. Elgon, at Kagambah, and Mbarara, Uganda; there are also specimens from Entebbe, Mumias, Toro, and Mengo, Uganda.

(15) *Crocidura nyansæ kijabæ*, Allen.

*Crocidura kijabæ*, Allen, Bull. American Mus. Nat. Hist. xxvi. p. 173 (1909).

Very similar to *nyansæ*, but rather darker throughout.

In the original description Allen writes: "smaller size, relatively much longer tail"; the examination of a considerable series, both of *nyansæ* and the central British East African form, seems to indicate that such differences are individual and not of systematic importance; thus, if the figures given below be compared with the dimensions given by Allen and with the dimensions tabulated above for Neumann's species, it will be seen that *nyansæ* and *kijabæ* are of about the same size.

The colour-difference is not very marked, but, seen in a series, the general colour of the central British East African specimens is decidedly darker than the average colour of the *nyansæ* series.

Skull very like that of true *nyansæ*, both in size and dental characters.

Dimensions of the type (as given by Allen):—

Head and body 123 mm.; tail 78; hind foot 19.

Skull: condylo-incisive length 30; greatest breadth 12; interorbital breadth 5·2; length of upper tooth-row 14.

The following are the flesh-dimensions of eight adult specimens in the Museum Collection:—



	Head and body. mm.	Tail. mm.	Hind foot. mm.
♂. Jombeni .....	130	82	22
♂. Aberdare Mts. ....	126	81	20
♂. Mweru .....	123	79	20
♂. L. Olbollossat.....	120	81	19
♀. Mt. Kenya .....	123	82	22
♀. Nyiri .....	124	80	19
♀. Mt. Kenya .....	112	70	19
♀. L. Olbollossat ....	120	81	19

The following skull-dimensions are taken from the oldest individuals of this series :—

	♂. L. Olbollossat. mm.	♀. L. Olbollossat. mm.	♂. Mweru. mm.	♂. Jombeni. mm.	♀. Nyiri. mm.
Condyllo-incisive length ....	31·6	30	31·4	31·5	30·5
Greatest breadth .....	12·5	12	13	13	12·5
Least interorbital breadth ..	5·8	5·6	5·7	5·8	5·7
Length of palate .....	13·5	13·3	13·4	13·4	13·3
Postpalatal length.....	13·4	13·2	13·3	13·6	13·5
Greatest maxillary breadth ..	10	9·2	10·1	9·8	9·8
Median depth of brain-case ..	6·9	6·7	7·3	7·2	6·7
Length of upper tooth-row ..	14·1	13·7	14·1	14·1	13·6

From these dimensions it is evident that these specimens are of much the same size as Allen's type.

*Hab.* Kijabe, British East Africa.

*Type.* Adult female. American Museum of Natural History, No. 27890.

In the British Museum Collection there are specimens from the Aberdare Mountains, Kenya, Jombeni Range, Mweru, Nyeri, Lake Olbollossat, and Mianzini, which I have accepted as representing the Kijabe race.

#### (16) *Crocidura nyansæ kivu*, Osg.

*Crocidula flavescens kivu*, Osgood, Ann. & Mag. Nat. Hist. (8) vol. v. p. 370 (1910).

A very richly coloured race of *nyansæ*.

General proportions rather smaller, but not to any marked extent.

Dorsal surface a rich chocolate-colour ("light seal-brown" mixed with "vandyke-brown"), the general effect considerably darker than in both *nyansæ* and *kijabæ* and decidedly more glossy; flanks scarcely lighter than back. Underparts slate-grey strongly suffused with russet, there being no sharp transition between the brown-coloured belly and chocolate flanks. Backs of hands and feet as dark as rest of dorsal surface. Tail blackish, above and below, rather



darker than in *nyansæ*; caudal hairs as in the other members of this group.

The skulls of the series in the Museum Collection average rather smaller than in *nyansæ*, with smaller brain-case.

Dimensions of the type (measured in the flesh):—

Head and body 110 mm.; tail 88; hind foot 19; ear 12.

The following are the average, maximum, and minimum flesh-measurements of thirty adult specimens in the Collection:—

	Head and body.	Tail.	Hind foot.
	mm.	mm.	mm.
Average .....	110·7	78	18·3
Maximum .....	119	88	20
Minimum .....	104	70	17

Skull: dimensions of type and six other adult specimens:—

	♂.	♂.	♂.	♂.	♀.	♀.	♀.
	Type.	Kivu.	Kivu.	Ruwen- zori.	Kivu.	Kivu.	Kivu.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Condyllo-incisive length ..	30·8	29·7	30·6	29	29	28·9	29·3
Greatest breadth .....	12·3	12·2	11·9	11·8	11·5	11·7	11·6
Least interorbital breadth .	5·5	5·5	5·3	5·5	5·4	5·4	5·6
Length of palate .....	13·5	13·2	13·5	13	12·9	12·9	13·3
Postpalatal length .....	13	12·5	12·7	12·1	12·6	12·2	12·2
Greatest maxillary breadth .	9·2	9	9·3	9·2	9	9·2	9·1
Median depth of brain-case .	6·8	6·6	6·6	6·7	6·6	6·7	6·8
Length of upper tooth-row .	14·1	13·6	13·8	13·3	13	13·5	13

There is a considerable amount of individual variation in the skull-dimensions of this Kivu shrew; the typical specimen possesses a skull rather larger than any of the others, equalling in length some specimens of *nyansæ*.

*Hab.* Lake Kivu. Altitude 4900 feet.

*Type.* Adult male. B.M. no. 7. 6. 14. 24.

In the Museum Collection there are some thirty-five specimens of this Kivu shrew, all of which possess the same glossy, chocolate-coloured pelage and russet-tinted underparts. The localities where these specimens have been collected are for the most part quite close to the type-locality; Mr. Kemp obtained it at Buhamba, Mukanda, Kisenyi, Lake Mutanda, Kumba, and Chaya (Congo Belge), all districts fairly close to Lake Kivu. It has also been found on Ruwenzori (at altitudes of 5000–7000 feet) and at Ingezi and Nalasanji, Uganda.

*C. nyansæ kivu* may be at once recognized by its dark chocolate-coloured glossy coat, both *nyansæ* and *kijabæ* being lighter and exhibiting none of the glossy sheen so characteristic of this Kivu race.



(17) *Crocidura nyansæ tatiana*, subsp. n.

Smaller than *nyansæ*, with considerably smaller and shorter skull.

Size of body less than in the other members of this group; tail fairly long.

In colour very much as in *nyansæ*, dorsal surface liver-brown (near "Prout's brown"); flanks slightly paler, the brown tint gradually passing into the greyish buff of the ventral surface. Backs of hands and feet brownish buff. Tail blackish brown above and below, quite as in *nyansæ*, but rather shorter.

Skull considerably smaller, with much narrower cranium and smaller teeth.

Dimensions of the type (measured in the flesh):—

Head and body 100 mm.; tail 67; hind foot 18; ear 12.

Skull: condylo-incisive length 26.9; greatest breadth 11; least interorbital breadth 5.8; length of palate 11.5; postpalatal length 12.1; greatest maxillary breadth 8.7; length of upper tooth-row 12.3.

*Hab.* Mt. Gargues (sometimes spelt "Urguess"), north of the Mweru District, British East Africa. Altitude 7000 feet.

*Type.* Old female. B.M. no. 12.7.1.55. Original number 606. Collected on July 31st, 1911, by A. Blayney Percival, Esq., and presented by him to the British Museum.

This Guargues race of *nyansæ* is easily distinguished from the allied forms by its smaller size, a feature very evident when the skulls are examined.

(18) *Crocidura nyansæ zuleika*, subsp. n.

Allied to *nyansæ*, but with larger teeth and darker in colour.

General proportions of body about as in *nyansæ*; tail longer.

Colour of dorsal surface dull chocolate-brown ("warm sepia" mixed with "blackish brown (1)"), rather darker than in *n. kivu*. Flanks as dark as back. Ventral surface slate-grey washed with brownish buff; hairs of belly with pale slaty bases and long brownish-buff tips. Backs of hands and feet brownish. Tail very long, covered with short dark hairs above and below.

Skull (occipital region broken) large and heavy, with large teeth and broad maxillary region.



Dimensions of the type :—

Head and body 120 mm.; tail 80; hind foot 21·5.

Skull: length of palate 14; least interorbital breadth 6·3; greatest maxillary breadth 10·5; length of upper tooth-row 14·8.

*Hab.* Chirinda Forest, Melsetter District, S. Rhodesia.

*Type.* Adult. B.M. no. 8.7.19.20. Original number 26. Collected and presented by C. F. M. Swynnerton, Esq.

In general colour this form most resembles *kivu*, from which it is at once distinguished by its larger teeth.

(19) *Crocidura nyansæ hera*, subsp. n.

Closely allied to the foregoing form, but smaller in size, rather paler on the ventral surface, and with considerably smaller teeth.

Size of body, hind foot, and tail less than in *zuleika*.

General colour of dorsal surface dark chocolate-brown, rather less russet in tint than in the Rhodesian race, between "clove-brown" and "Prout's brown." Ventral surface pale slate-grey washed with pinkish buff, the effect lighter and less brown than in *zuleika*. Backs of hands and feet dirty white. Tail shorter and a trifle paler in colour.

Skull considerably smaller and narrower, more approaching that of *flavescens* in size. Brain-case and maxillary region narrow. Teeth small, especially the second and third upper unicuspid.

Dimensions of the type (measured in the flesh) :—

Head and body 105 mm.; tail 65; hind foot 18; ear 11.

Skull: condylo-incisive length 28·8; greatest breadth 11·7; least interorbital breadth 5·8; length of palate 12·5; post-palatal length 12·5; greatest maxillary breadth 8·8; length of upper tooth-row 13·1.

*Hab.* Shire Highlands, Blantyre District, Southern Nyasaland. Altitude 3000 feet.

*Type.* Adult female. B.M. no. 10.3.26.4. Original number 4. Collected and presented by R. L. Harger, Esq.

The general colour of this race is very near that of *zuleika*; the chief distinguishing difference is in size, especially of the skull and teeth, *hera* possessing a much smaller skull, with smaller teeth.

(20) *Crocidura sururæ*, Hell.

*Crocidura sururæ*, Heller, Smith. Misc. Coll. vol. lvi. no. 15, p. 2 (1910).

Colour very much paler than in *nyansæ*.



General proportions rather less than in the Uganda species.

Colour of dorsal surface pale drab-buff ("hair-brown" or "drab" mixed with "wood-brown"); flanks paler and greyer, the tint gradually fading into the pale greyish silvery-buff of the ventral surface; the entire underparts very much lighter than in *nyansæ*. Backs of hands and feet dirty buff. Tail rather short and hairy, brownish above, paler below; caudal bristles lighter in colour than in *nyansæ*. Lateral glands conspicuously marked by a growth of short white hairs.

Skull of the same general form as that of *nyansæ*, but smaller throughout, with narrower brain-case and smaller teeth.

Dimensions of the type (hind foot measured when dry, and therefore slightly shrunken):—

Head and body 111 mm.; tail 64; hind foot 17.

Skull: condylo-incisive length 28·5; greatest breadth 12; length of upper tooth-row 13.

In the Museum Collection are two specimens collected by Emin Pasha at Wadelai, and a further one from Mongalla collected by A. L. Butler, Esq., which I take to represent this species. In general colour they agree well with Heller's description; the hind feet (18 mm. dried) are slightly larger and the skulls a trifle longer, but I think there can be no doubt that these specimens represent the Lado species.

The following are the skull-dimensions of one of the Wadelai shrews and of the specimen from Mongalla:—

	Wadelai. mm.	Mongalla. mm.
Condylo-incisive length.....	30	33
Greatest breadth.....	12·3	12·3
Least interorbital breadth.....	6	5·7
Postpalatal length.....	13	12·9
Greatest maxillary breadth.....	9·8	9·4
Length of upper tooth-row.....	13·3	13·3

The exact relationship of this species is not very clear; there seems little doubt that it is closely allied to the *nyansæ* group, as is shown by the general form of the skull; but the light grey underparts and bicoloured tail show that it is also closely related to *doriana*. On this account it is here placed between *nyansæ* and *doriana*.

*Hab.* Rhino Camp, Lado Enclave.

*Type.* Adult male. U.S. Nat. Mus. no. 164637.

In the Museum Collection there is a very pale-coloured shrew, of the *nyansæ* group, from Unyoro; it seems to be in



some ways intermediate between *nyansæ* and *sururæ*. There is not, however, sufficient evidence to hand to show that *nyansæ* gradually becomes paler as it gets farther north, and, taking into consideration the *doriana*-like characters of *sururæ*, it seems best to regard this latter form as a distinct species.

Group 5 (*doriana* and *flavescens*).

Size large. Colour above dull brownish red, bright rufous brown, or yellowish brown; ventral surface pale grey, distinctly marked off from brown-tinted flanks; tail whitish below. Second and third upper unicuspid about equal in size.

(21) *Crocidura doriana*, Dobs.

*Crocidura doriana*, Dobson, Ann. Mus. St. Nat. Genova, iv. p. 564 (1887).

Size about as in *nyansæ*, but richer coloured, with much paler and greyer underparts more distinctly marked off from the dorsal surface; tail bicoloured.

General proportions much as in the *nyansæ* group. Colour of dorsal surface rich reddish brown (varies from "auburn" to "pale cinnamon-brown"); flanks scarcely paler, sharply marked off from the greyish-white belly; hairs of belly slate-grey, with long white tips, the general effect much paler than in any of the *nyansæ* group. Backs of hands and feet brownish white. Tail brown above, lighter below, where the hairs, especially in the basal region, are almost white. Spirit-specimens of *doriana* show that the tail is very much thicker, blunter, and more hairy than in *nyansæ*, in this respect agreeing with *flavescens*.

Skull larger than in *flavescens*, averaging slightly smaller than in *nyansæ*. Tooth-row a trifle shorter; teeth similar in shape.

Dimensions (as given by Dobson):—

	♂.	♀.
Head and body .....	102	95
Tail .....	73	57
Hind foot .....	18.5	18

In the Museum Collection is a series from Adis Abeba in which the hind foot is given by the collector as from 17 to 20 mm. in length. A spirit-specimen from the same locality has the following body-measurements:—Head and body 112 mm.; tail 65.5; hind foot 18.5; ear 11.



Skull-dimensions taken from the Adis Abeba specimens :—

	mm.	mm.	mm.	mm.
Condyllo-incisive length . . . .	30	28·6	28·4	29
Greatest breadth . . . . .	12·5	11·6	12	12·2
Length of palate . . . . .	12·1	12·6	12·3	11·9
Postpalatal length . . . . .	12·5	11·8	11·9	12·9
Greatest maxillary breadth..	10	9·2	9·1	9·3
Length of upper tooth-row..	13·6	13	12·7	13·3

*Hab.* Shoa, Abyssinia.

This species is evidently more nearly related to *flavescens* than to the *nyansæ* group, possessing the thick bicoloured tail, distinct definition between the dorsal and ventral surfaces of the body, and cold light grey underparts of the South-African species; only in its general dimensions is *doriana* at all like *nyansæ* and the allied forms. *C. sururæ*, from Lado, would seem to be rather intermediate between *doriana* and the *nyansæ* group.

(22) *Crocidura flavescens*, Is. Geoff.

*Sorex flavescens*, Is. Geoff. Dict. Class. xi. p. 324 (1827); Mém. Mus. xv. p. 126 (1827).

*Sorex cinnamomeus*, Licht. Verhandl. Ges. Natur. Fr. Berlin, ii. p. 381 (1829).

*Sorex capensis*, Smith (nec Smuts, nec Geoff.), S. Afr. Quart. Journ. vol. ii. p. 62 (1833); Ill. Zool. S. Afr. i. pl. xlv. fig. 1 (1849).

*Sorex rutilus*, Sund. Ofv. Vet.-Akad. Förhandl. p. 119 (1846).

Smaller than *nyansæ*, with much lighter-coloured underparts more distinctly marked off from the brownish tint of the dorsal surface; tail whitish underneath.

Size of body, hind foot, and tail less than in *nyansæ*.

General colour of upper parts, in new pelage, "Prout's brown" mixed with "cinnamon-brown." In the worn state the fur is very much lighter and more brilliant in colour, about as in "Dresden brown." Flanks a trifle paler than back, the brownish tint passing fairly abruptly into the light greyish white of the belly; entire underparts much lighter and colder in colour than in *nyansæ*, "pale smoke-grey" or "pale neutral grey" in the new pelage, "deep olive-buff" in the worn state. Backs of hands and feet dirty white or buff. Tail rather shorter and more hairy, brownish above, white or pale buff below; bristle-hairs whitish, sparingly distributed over proximal two-thirds.

Skull considerably smaller than that of *nyansæ*, with narrower brain-case and muzzle; teeth markedly smaller, second and third upper unicuspid about equal in size.



Dimensions (as given by Geoffroy) :—

Head and body  $4\frac{1}{2}$ " ; tail  $1\frac{1}{2}$ ".

Dimensions of a series of specimens in the Museum Collection :—

	Head and body. mm.	Tail. mm.	Hind foot. mm.	Condyl- incisive length. mm.	Greatest breadth. mm.	Length of upper tooth-row. mm.
♂. Transvaal....	120	59	17	28·6	11·5	12·8
♂. " ....	110	63	17	28·6	11·3	12·5
♀. " ....	106	54	15	27	11	12
♀. " ....	113	54	16	28	11	12·8
♀. " ....	108	62	15	27·3	10·4	12·5
♂. Cape .....	108	59	16	..	11·7	12·6
♀. " .....	113	51	16	27	11·3	12
♀. Pondoland ..	113	56	16·5	26·5	10·9	11·9
♂. Natal .....	108	60	15	26	10·5	11·5
♀. " .....	102	52	16	26	10·5	11·5
♂. Zululand ....	106	57	15	27	11	12
♀. " ....	106	62	15	26	10·5	11·6
East Griqualand..	110	60	17	27·7	10·9	12·7

A co-type of *utilus*, preserved in the Museum Collection, shows that the animal is apparently identical with what has here been accepted as *flavescens*, the skull-dimensions being :—Condyl-*o*-incisive length 26·8 mm. ; greatest breadth 11 ; length of upper tooth-row 12. The only really large specimen is one from Sir Andrew Smith's collection, which is considerably larger than any of the specimens mentioned above, the tail and hind foot measuring in the dried state 67 and 20 mm. in length respectively ; the tooth-row of this individual is proportionally greater, measuring 13·2 mm. in length. The only locality given is "S. Africa." Until further material comes to hand, I think it best to ignore this large specimen, there being no means of ascertaining where it really came from.

For the present I am placing *cinnamomea* as a synonym of *flavescens* ; there would appear to be very little difference in the descriptions of the two forms except as regards the general dimensions, which are certainly not reliable.

*Hab.* "... la Cafrerie et le pays des Hottentots."

The smaller size, much lighter-coloured belly, more distinct differentiation between the dorsal and ventral surfaces, and light underside of the tail distinguish this South-African shrew from *nyansæ* and its allies.

[To be continued.]





Dollman, J. G. 1915. "L.—On the African shrews belonging to the genus *Crocidura*—II." *The Annals and magazine of natural history; zoology, botany, and geology* 15, 562–575. <https://doi.org/10.1080/00222931508693672>.

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