

NEW FORMS OF SOUTH AFRICAN  
MAMMALS

BY AUSTIN ROBERTS

(With 6 Plates)

THE following new forms of mammals have been brought to light by recent acquisitions from various contributors, whose names will be mentioned hereafter, and as a result of special explorations of Ubombo and Ingwavuma Districts, Northern Zululand, by the author under two special grants from the Union Research Grant Board. A report upon this special exploration will be published at a later date, as a final exploration may be carried out to clear up dubious points and complete the survey of this most interesting corner of the Union.

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**CERCOPITHECUS LEUCAMPYX<sup>1</sup> SCHWARZI** subsp. nov.  
(Pls. III, IV, V, figs. 14 a, 14 b, 14 c)

*Colour.* Speckled olive-greenish in general effect above, the superficial colouring of the hairs being banded black and yellow, darker on the head, yellower on the rump and greyer on the sides. The hairs on the back are white (broadly so on the sides) at the base, merging into grey, and the exposed terminal half banded yellow and black; but on the top of the head the hairs are either white or grey at the extreme base, followed broadly by very dark grey—almost black. The ears are marked off from the surrounding colour by buffy white; the long hairs of the cheeks are like the sides of body, but the sides of the neck are paler, the whitish of the throat extending in a line upwards well behind the ears. Face on the almost naked parts blackish, but lips and chin greyish white; throat white, towards and on the chest greyish white, owing to the presence of the black-banded hairs; middle of belly darker, owing to the greater quantity of black-banded hairs extending from the sides: flanks with long hairs, greyish white at the base, externally banded black and buffy, in general effect greyer than the back. Hands and arms black, slightly ticked with whitish bars on the forearms, and more ticked on the shoulders externally; a whitish band extends from the chest to elbow and thence less distinctly to the wrists, inside the arms. Hind limbs blackish and grey, but darker at the knees and calcaneum externally; the toes and adjacent part of foot black, but base of foot speckled white and merging into the colour of the thighs externally. Inside of hind limbs whitish grey, merging into the buffy white of the inguinal region. Long hairs of scrotal area and base of tail below uniform buffy externally, but dark at the base. Tail uniform black for at least two-thirds, but the basal third ticked with some yellowish bands, increasing above and below towards the root of tail, but darker above than below.

Type: T.M. No. 4484, adult male, from Mariepskop, Pilgrimsrest District of Transvaal, taken by the late G. van Dam, 20th November, 1925. Length of head and body 530, tail 711, hind foot 146, ear 39 mm., measured in the flesh.

*Skull.* Greatest length 113, basilar length 84, condylo-incisive length 97, zygomatic breadth 75.5, width of brain case 59.5, width at mastoid 63, least interorbital width 7.3, intertemporal constriction 43.5, width across outside of orbits in the middle 62, length of palate 43.5, length of c-m<sup>3</sup> series 38, of upper premolar and molar series 27, of c-m<sub>3</sub> series 40, of lower premolar and molar series 34.2, length of mandible 82, height of mandible posteriorly 39 mm.

This form would seem to be most closely related to the Samango (*C. labiatus*) in respect of colour at the base of the tail; but the buffy extends for from 4 to 6 inches only along the underside, leaving a broad dark dorsal area in three specimens (including the type) from Mariepskop; in the Samango the buffy extends for from 8 to 10 inches along the under surface and sides as well, so that the dark dorsal patch extends only in a narrow line along the top. In seven specimens of *schwarzi* from Leydsdorp and Woodbush, to the north of the Olifants River, this buffy at the root of the tail is absent in four and less conspicuous in the remaining three, irrespective of locality.

We have been unfortunate in the methods employed in the systematics of our Primates, and it is not easy to see what exactly is meant by authors. Many of the forms have been described from live specimens whose origin was dubious, and even when preserved specimens from definite localities were used

<sup>1</sup> Cf. Schwarz, *Ann. and Mag. N.H.* (10) 1, 1928, pp. 649-663. *C. leucampyx* is used now for this species, comprising eighteen subspecies.

as types, the descriptions have been based mainly, often entirely, upon the external characters and skulls have been ignored.

*Cercopithecus albogularis* Sykes (*P.Z.S.* 1831, p. 106). Under this name it has been recorded from various localities on the continent opposite Zanzibar Island, from Eastern Transvaal northwards to Nyasaland and Taveta in Kenya Colony (True, *Proc. U.S. Nat. Mus.* xv, p. 448). No adequate description has as yet been made of the typical *albogularis*, authors having persistently described as such specimens from far inland, as for example Elliott (*l.c.*). Schwarz's observation (*Ann. and Mag. N.H.* (9) xix, 1927, p. 51), that Zanzibar and Tumbutu Island specimens agree with the type, is in accord with its probable origin, since it was purchased in India and said to have come from Madagascar (where it does not occur) and it is well known that India was commercially in constant touch with Zanzibar. Since *C. l. rufilatus* Pocock (*P.Z.S.* 1907, p. 702) from the Rofigi River and *C. l. erythrarchus* Ptrs. (*Reise n. Moz.* 1853, p. 1, pl. 1), of which Pocock's *C. l. beirensis* is certainly a synonym, from Mozambique southwards to the coast of North Zululand, are recognised as distinct, it is extremely unlikely that the inland form of the Transvaal highland forests will be the same as those from Zanzibar. It is more likely to be a link with *C. labiatus* of Kaffraria and Natal, evidence of which is seen in the colour at the base of the tail and less reddish rump. Comparison of material from intervening forests is likely to prove this.

The original description of *C. albogularis* is as follows: "Whole of the upper surface mingled black and yellow ochre colour. each hair being banded black and ochre; the black prevailing on the shoulders, the ochre on the back and flanks. Under surface grizzled white and black. Anterior limbs uniform black; posterior black with a little of the dorsal colour. Chin and throat pure white. Tail black, half as large again as the body."

#### **CERCOPITHECUS AETHIOPS<sup>1</sup> CLOETEI** subsp. nov.

(Pls. III, IV, V, figs. 15a, 15b, 15c)

Differs from *C. aethiops pygerythrus* Geoffroy of the Eastern Cape Province in respect of its average smaller skull but larger teeth; in colour apparently not different and therefore distinguishable from the Mozambique form to which the name of *C. p. rufoviridis* is applied.

Recently a large collection of skulls of medium-sized mammals accumulated by the late W. M. G. Cloete during his lifetime was very kindly donated by his widow to the Transvaal Museum. Amongst these are forty-five of the Vervet Monkey, all procured near Fort Beaufort, mainly on his farm "Waterfall." They range from young adults to seniles, all but three being males. For comparison forty of the older males were chosen and carefully measured, with the result that it is clear these are not identical with northern specimens from North Zululand to the Limpopo River. For comparison nine adult male skulls of the northern form have been used, two being from the Umfolosi River, one from Mkuzi River, two from Mariepskop, near Pilgrimsrest, two from Masiene on the coast near the mouth of the Limpopo River and two from the Crocodile River north of Rustenburg District. Eight are accompanied by skins.

Type: T.M. No. 4479, skin and skull, adult male, Mariepskop, Pilgrimsrest District, Transvaal, collected by the late G. van Dam.

Study of this material goes to show that while the oldest specimens

<sup>1</sup> Cf. Schwarz, *Ann. and Mag. N.H.* (10) 1, 1928, pp. 649-663.

average the largest, this is not the case with the teeth, which vary fairly widely but naturally remain the same size throughout life.

Thus the two oldest skulls in the Cape Province series measure respectively: greatest length, from front of premaxilla to back of occiput, 115 and 117; basilar length, from foramen magnum to back of incisors, 78.5, 79; maximum width across the zygomatic arches, 75, 73.3; length of upper tooth row from front of canine to back of  $m^3$ , 32.5, 33.5 mm. In the eleven fairly old ones the same measurements are 106–114.5, 69–78, 58–66, 30.2–33.8 mm.; of these, two are abnormally small, respectively 106 and 106.5, 68.8 and 71.8, 67.5 and 71.8 and 32.2 and 31.5 mm. in the same dimensions. The next ten in respect of age as judged by the condition of wear of the teeth average less, namely 103.5–111, 67.3–74, 65.5–72.9, 30.8–33.8 mm.; and the remaining seventeen youngest adults in the series are naturally least: 100–109.5, 64–72, 65–69.3 and 30.2–34 mm. The average for the forty is 107.3, 73.7, 70.7 and 32.3 mm.

Of the northern form the oldest is a senile male skull picked up on the banks of the White Umfolosi opposite the Game Reserve, and the smallest is from the same place and accompanied by a skin. Comparison of the figures given below will serve to show the average differences:

	<i>C. ae. pygerythrus</i> (40 specimens)			<i>C. ae. cloetei</i> (9 specimens)		
	Min.	Max.	Average	Min.	Max.	Average
Greatest length ...	100	117	107.3	102.5	112	105.6
Basilar length ...	64	78.5	73.7	68	76	71.6
Zygomatic width ...	65	75	70.7	62.5	72.5	68
Mastoid width ...	55	65	60.4	55	61.3	59.5
Width of brain case ...	55	63.5	58.5	55.6	61.8	57.4
Length of $c-m^3$ series	30.2	34	32.3	31.8	35.5	34
" $p^2-m^3$ series	22	26	24.7	23	27.3	26
" $m^3$ ...	4.2	6	5.3	5.2	6	5.7
" $m^2$ ...	5.7	7	6.4	5.7	7.3	6.6
" $m^1$ ...	4.8	6.8	5.7	5.7	7	6.3
" mandible ...	68	81.2	74.3	70.5	77.7	72.32
" $c-m_3$ series	33.8	39.3	36.6	35.5	40.3	37.9
" $m_3$ ...	5.5	7.1	6.2	5.7	7.7	6.5
" $m_2$ ...	5.9	7.3	6.6	6	7.1	6.5
" $m_1$ ...	5	6.3	5.7	5.5	6.5	6
" $p_3$ ...	8.5	11.6	9.8	9.2	11	10.5

#### GALAGO MOHOLI BRADFIELDI subsp. nov.

In respect of colour very similar to *G. m. moholi* A. Smith, from "banks of the Marikwa and Limpopo Rivers," but less yellowish tinged above and white below. Although *G. m. moholi* is variable in respect of the amount of yellowish

	<i>G. m.</i> <i>bradfieldi</i> ad. ♂, type	<i>G. m. moholi</i> (15 specimens)	<i>G. m. granti</i> (3 specimens)
Length of head and body	140	145–195	169–173
" tail ...	210	205–245	223–226
" skull ...	40	40.5–44.3	43.5–44.8
Basilar length of skull ...	26.2	27.7–31.5	31.3–31.5
Length of palate ...	12.8	13.5–15	15–16
" mandible ...	22	23.5–25	24.6–26.5
" $c-m^3$ series ...	14	14.1–14.8	15.3–15.5
" $p^2-m^3$ series ...	12	11.8–12.4	13–13
" $p_3-m_3$ series ...	10.8	10.5–11.3	11.8–12.1
Zygomatic width ...	26	26.5–30	27.3–29.3
Mastoid width ...	22	22–24.7	22–23
Interorbital constriction	18.5	17.8–19.5	17.5–17.5

below, the throat at least shows it. The tail is also thinner, on account of the shorter hair, but of about the same colour as *G. m. moholi*. In respect of the skull the muzzle shorter and general dimensions on the average smaller, as the above figures will show.

#### AMBLYSOMUS MARLEYI sp. nov.

Smaller than any other form of the genus previously described and characterised as well by its broad white muzzle. In the skull similar to the rest of the members of the genus, though much smaller and relatively more delicately built. In colour somewhat variable—like *hottentotus*—but with the white at the sides of face, which is usually a sign of immaturity in others, very pronounced in adults. The colour of the type, a fully adult male, may be described as dark rufous on the flanks, hind quarters, and sides of neck, reddish brown on the under parts, with the whole of the upper parts from forehead to rump dark brown with a green iridescence, with a broad white band across the snout around and behind the nose pad containing only a trace of dark tips to a few of the hairs. Hind feet speckled brown with whitish toes; inside of manus whitish and throat rather lighter reddish than the flanks. (A yellow—albinistic—patch lies on the left side of throat and a similar line extends on the left side of the thorax to the belly; a dark brown line is also indicated faintly along the centre of the chest, a feature also seen in another specimen and one of the characters of *A. h. garneri* Rbts.—*Ann. Trans. Mus.* v, 278—of Swaziland.) Base of hair on all but the white muzzle and the throat dark grey, at the roots yellow as in other members of the genus.

Type: T.M. No. 5578, adult male, taken at Ubombo, Zululand, 17th December, 1928. Also seven more specimens with skulls, taken about the same time and place.

The form which approaches it most closely is *A. h. iris* Thomas and Schwann (*P.Z.S.* 1905, p. 259) of the Umfolosi Valley. The type of that form is a dark animal like *A. corriac* (*P.Z.S.* 1905, p. 57) in some respects. There are specimens of this dark form in the Transvaal Museum collection from Matubatuba and Hluhluwe, and the difference between them and the Lebombo form is seen at a glance in colour and the narrowness interorbitally and small size of the skull. The following comparison of dimensions of the type of *iris* (taken from the description) and of the present form will make the difference clear. The type is the largest in the series.

	<i>A. iris</i> ♂	<i>A. marleyi</i> ♂
Length of head and body	116	105
„ hind foot (s.u.)	13	12.5
„ skull ... ..	25.4	24.5
Width of skull ... ..	15.6	14.7
Height of skull ... ..	12.3	12
Interorbital width ... ..	8	7
Length of upper tooth row	10	9.2
Width across outside of m <sup>1</sup>	8.7	7.8

#### CROCIDURA HOLOBRUNNEUS sp. nov.

A dark brown species of about the same size and colour as *Crocidura pilosa* Dobson (*Ann. and Mag. N.H.* (6) vi, 1890, p. 496) of Transvaal highveld, but differing therefrom in having shorter hair, less hairy ears and tail. The hairs on the tail of *pilosa* are lengthened at the tip so as to form a short pencil, whereas in this species they do not. Whereas *pilosa* resembles *Myosorex* in its crisp hair, the present species does not. As compared with *C. sylvia* Thomas

and Schwann (*P.Z.S.* 1906, p. 587) of Woodbush, the only other dark brown species found in South Africa, the tail is more bristled and dimensions are less.

Colour above and below dark brown, as also the ears, limbs and tail, but slightly lighter coloured below and hind feet decidedly lighter coloured. Skull and teeth with no outstanding characters; the second and third upper unispid about equal in size.

Head and body 72 (67-70), tail 49 (50), hind foot (s.u.) 12 (13), ear 7 (8) mm. Total length of skull 20, greatest width 8.7, least interorbital width 3.7 (4.3), width of maxilla at the molars 6 (6.2), palate length 8.5 (9), post-palatal length 9, length of upper tooth row 8.3 (8.9), length of upper premolar and molars 4.8 (5), length of mandible and incisors 12.7 (13), length of lower teeth, including incisors, 7.8 (8.2), sagittal posterior height of skull 4.3 (4.5) mm. Figures in brackets are taken from others which differ most.

Type: T.M. No. 4494, Mariepskop, Pilgrimsrest District, Transvaal, 7th December, 1925. Also another specimen from the same locality, and two (with incomplete skulls), rather paler below, from Maputa, North Zululand.

#### POECILOGALE ALBINUCHA LEBOMBO subsp. nov.

In colour similar to *P. a. albinucha* of the Eastern Cape Province, but in size intermediate between that form and the darker yellow *P. a. transvaalensis* of the North-eastern Transvaal.

Type: T.M. No. 5601, adult male, Ubombo, North Zululand, killed by a native together with two more members of the same party on the top of the Lebombo Mountains, 10th December, 1928. Unfortunately the skulls were smashed in the case of the adult male and female, and the other is partly smashed and immature; but the dimensions of the parts available and the external dimensions serve to show that the form is smaller, as will be seen on comparison of the figures given hereunder.

#### POECILOGALE ALBINUCHA BECHUANAE subsp. nov.

Differing in colour from previously described forms in having a tinge of green in the fore part of the yellowish white dorsal stripes and in size larger than *P. a. albinucha*.

Type: T.M. No. 5311, adult female, killed, together with a young one, by Mr J. H. Uys in Vryburg and donated to the Museum, July 1928. A young specimen taken by Mr Chivers at Randfontein, west of Krugersdorp, is of the same colour.

The following are dimensions so far as it is possible to give them from the fragmentary skulls. Female skulls are smaller than those of males, and allowance must be made for this.

	Surbiton	Vryburg	Lebombo		Tzaneen
			♂	♀	
Head and body ...	279	300	270	240	—
Tail ... ..	177	215	155	158	—
Hind foot ... ..	33	38	35.5	32	—
Ear ... ..	—	17	12.5	14	—
Length of mandible ...	29.8	30	28	25	26.8
Zygomatic width ...	27.9	—	—	23.2	—
Interorbital width ...	11.9	12.5	—	10.2	—
Palate length ... ..	22	—	—	19	—
Length of c-m <sup>1</sup> series	14	14.5	13.3	12.5	13
„ c-p <sub>4</sub> series...	16	16	15.5	14.3	15
„ p <sup>4</sup> ... ..	6	5.7	6	5.5	5.3
„ P <sub>4</sub> ... ..	5.8	5.9	6.2	5.5	5.5

Gyldenstolpe (*Arkiv f. Zool.* xxA, No. 4, 1928, p. 39) has given dimensions of specimens from the Birunga Volcanoes to show that *P. a. doggetti* Thomas and Schwann (Abstract *P.Z.S. London*, 1904, No. 6, p. 22) is not separable from the typical *albinucha*; but his figures only show that the race is tenable, *albinucha* being smaller.

**LEPTAILURUS SERVAL HAMILTONI** subsp. nov.

A form intermediate between *L. s. beirae* Pocock (*Ann. and Mag. N.H.* (9) I, 1910, p. 206) of the north-east, *L. s. limpopoensis* Rbts (*Ann. Trans. Mus.* XI, 1926, p. 248) of the west, and *L. s. serval* (Schreber, cf. *Bull. Amer. Mus. N.H.* XLVII, 1924, p. 266) of the south. Hair dense and fairly long, but not as long nor so soft in texture as in *serval*, but longer than in *limpopoensis*. The spots are intermediate in size, less broken up in the lines than in *beirae*, the spots outside the three median lines more elongated, oblong and not rounded as in *beirae* and *limpopoensis*. In colour the upper parts are shaded with rusty yellowish, which extends as well over the shoulders, neck and head, while the flanks and thighs are more pinky buffish; in *limpopoensis* only the top of the back is suffused with rusty yellowish, the remaining upper parts being pale buffy. The ears at the base and top of muzzle are even more rusty yellowish; whereas in *limpopoensis* the base of the ears is buffy, but the top of the muzzle nearly white. The under parts are more buffy white than in *limpopoensis* and *beirae*, though this is variable, one in the series being white. In the type of *limpopoensis* from Rustenburg and another specimen from Krugersdorp District there is a black line along the soles of the hind feet; in the present form this is faintly indicated by a brownish mark obscured by white-tipped hairs. *L. s. serval* is an altogether yellower long-haired animal with heavier lines and spots.

The skull and teeth are rather of the *beirae* than the *limpopoensis* type,  $p^4$  measuring (in five males) 13.8 to 15.3, the lowest figure being abnormally small, the other four measuring 14.8–15.3 mm.; the width of  $p^4$  varies, in one being 5.8, but in the other four 6.7–7 mm.; the  $p^3$  measures 9.5 mm. in length in all five.

Type: T.M. No. 4682, adult male, Kruger National Park, taken by Captain Coetzer on the 'Mabbaat River, 29th June, 1926.

An adult female and one of its kittens taken by me recently at Ubombo, in the low country east of the magistracy of that name, appear to me to be referable to *L. s. beirae*, which is not surprising, as a large number of birds and mammals typical of the Zambesi Valley are distributed as far south as this. It can be picked out at a glance from the series from the Sabi area, which lies to the west of the Lebombo Mountains farther north.

**PARACYNICTIS SENGAANI** sp. nov. (Pls. VI, VII, VIII, figs. a)

Similar to *P. selousi* (de Winton, *Ann. and Mag. N.H.* (6) XVIII, 1896, p. 469; see also *P.Z.S.* 1901, 2, pl. 1) in respect of general characters, but differing markedly therefrom in its less bushy and whiter tail, and proportions.

*Colour.* Fore part of head greyish (except the bare areas of the nose and orbits, which are blackish), hinder part of head and upper parts of body to the base of tail and the limbs buffy with sprinkling of brown and grey-tipped hairs, hands and feet black in marked contrast, major portion of tail white; under parts buffy. The grey effect on the face is produced by the abundance of white annulations to the hairs about the cheeks and to the top of the face; mixed with this are buffy and brown to dark brown annulations which increase pos-

teriorly over the face to between the ears and thence over the whole upper parts. The underfur of these upper parts is dark brown at the roots and the rest yellowish, except on the feet and tail, thus giving the appearance of a grizzled yellowish animal; over the whole upper parts of the body the longer hairs are annulated brown to dark brown at the base, centre and tip, and white to buffy between the bands; but these do not form regular bands across the back as one would suppose from the illustration given in the *P.Z.S.* in 1901 of *selousi*. Tuft of long hairs in front of and short hairs covering anterior surface of the ears uniform yellowish, hinder surface of ears with short brown hairs. Hands black, thence the black extending up the fore arms and thinning out to a narrow brownish mark towards the elbow; feet black, but with the yellowish on the inside of the legs extending nearly to the plantar pads; the black extends in a line which thins out upwards to the top of the thighs; the tail is for the greater part white but at the base is buffy, with a mixture of

	<i>P. selousi</i>	<i>P. sengaani</i>	
		♂	♀
Head and body ... ..	400	420	395
Tail ... ..	230	320	310
Hind foot ... ..	90	101	103
Ear ... ..	30	33	33
Skull:			
Basal length ... ..	76	81.2	81
Greatest breadth ... ..	43	43.8	43.7
Length of nasals ... ..	16	16	19
Breadth of nasals ... ..	8	8	7.6
Interorbital constriction ...	18.5	17.2	17.8
Intertemporal constriction	16.5	16.8	17.5
Palate length ... ..	44	45	45.5
Breadth across outside of p <sup>4</sup>	25	27	26
Length of p <sup>2</sup> ... ..	4.1	4.3	4
„ p <sup>3</sup> ... ..	4.5	4.5	4.5
„ p <sup>4</sup> ... ..	6.1	6.5	6.2
Width of p <sup>4</sup> ... ..	5.5	5.6	5.5
Greatest diameter of p <sup>4</sup> ...	8.5	7.8	7.6
Length of m <sup>1</sup> ... ..	4.5	4	4.2
Breadth of m <sup>1</sup> ... ..	7.5	7.8	7.7
Length of m <sup>2</sup> ... ..	3.5	3.3	2.5
Width of m <sup>2</sup> ... ..	6	5.7	5.8
Length of p <sub>3</sub> ... ..	4.1	4.8	4.5
„ p <sub>4</sub> ... ..	6	5.8	5.4
„ m <sub>1</sub> ... ..	6	6.2	6.2
„ m <sub>2</sub> ... ..	5.5	5.5	5.5

black bristles for a short distance along the top amongst the white bristles. These caudal hairs are coarse and comparatively short (30 mm. at the tip, only about half the length of those of *selousi*), not forming the bushy condition seen in other species. There are only four fingers, but the hypothenar pad is prominent and projects from the hairy surroundings. The toes below and interdigital pads are nude, behind which the hair is dense and shows no sign of naked area to connect them with the hypothenar, as Pocock (*Ann. and Mag. N.H.* (8) xvii, p. 178) has suggested might be the case in *selousi*. The hind toes below and interdigital pads are nude, but the soles are hairy. The claws are straighter than in *Cynictis*.

The skull in *P. selousi* is said to have the ascending process of the malar very slight, running to a fine point and barely meeting the postorbital process, whereas in *sengaani* it definitely fuses and forms a complete circle. The pterygoids are said to "bow inwards ending in small knobs," which is also cha-



racteristic of *Cynictis*, whereas in *sengaani* they are straight and parallel with the tips turned outwards. Nothing is said in the description of *selousi* as to the teeth and their position. In *sengaani* the cheek teeth are not in contact, well separated in most cases; in their relative dimensions they would seem also to differ slightly, as the above figures will show.

Type: T.M. No. 6081, adult male, Maputa, North Zululand, 6th November, 1929. Paratype: T.M. No. 6082, adult female from the same place.

**PARAXERUS SPONSUS TONGENSIS** subsp. nov.

Differs from *P. sponsus auriventris* Rbts (*P. cepapi auriventris* Rbts, *Ann. Trans. Mus.* xi, 1926, p. 250) from Magudi, north-east of Lourenço Marques, in being more reddish coloured in place of orange about the hind quarters and tail, and on the average larger. Differing from *P. sponsus* of Coguno, Inhambane (*P.Z.S.* 1907, p. 292), in its less brilliant red face, under parts and tail, and smaller size. *P. ornatus* Gray, of Ngoye Forest, Zululand, would seem to be quite a distinct species. About the face and under parts the yellow of *auriventris* becomes orange and intensifies to orange reddish about the hind limbs and tail; the centre of the throat is whitish. The dorsal general coloration from the forehead to root of tail is freckled brown and yellowish, owing to the admixture of annulations of dark brown or blackish and pale yellowish on all the hairs; the orange-yellow of the face embraces the snout and area around and behind the eyes to the base of the ears; the hands and feet are yellowish above and below, the fore arms with an external brighter patch as an extension from below, and similarly on the hind limbs there is a brighter red patch. The edges and end of the tail are decidedly redder than the under parts of the body.

Type: T.M. No. 6084, adult male, Mangusi Forest, North Zululand, 14th November, 1929. Also four more specimens from the same place. Head and body 185, tail 175, hind foot 45, ear 16 mm. Skull: length 45.5, basilar length 34.8, zygomatic width 26.2, width of brain case 20.5, interorbital constriction 13.8, nasals 12.8 × 6, length of upper premolar—molar series 8.2, greatest diameter of bullae 9.5 mm.

**CLAVIGLIS ZULUENSIS** sp. nov.

A small thick-tailed form, dark speckled grey above, with a broad dark brown mark from the nose on each side to the eyes, which it encircles, and thence to near the ears. Ears brown. Barest tip of tail white. Under parts paler than upper, obscured by a pinky stain, which is massed mainly around the lips to the chest and fore limbs, decreasing over the abdomen, but increasing again on the back feet. The hind feet have a dark mark above the ankle. Cranially somewhat like that of *C. littoralis* Roberts (*Ann. Trans. Mus.* XIII, 1929, p. 105), of the thick-tailed group from the coast near the Limpopo River, but differing therefrom in its shorter muzzle and smaller bullae, the palate in the former case measuring 8 as compared with 8.4 mm. and the bullae 8.8 as compared with 9.2 mm., while, on the other hand, the nasals are longer, 10.2 as compared with 9.5 mm.; while the height of the skull itself is about the same, the coronoid is higher, the length of mandible and incisors being about 16, but the height 7.8, as compared with only 7 mm. in *littoralis*. In colour these two forms are markedly different. *C. alticola* belongs to the thin-tailed group, but cranially is much like this eastern form from a lower altitude.

Type: T.M. No. 5605, old female, Ubombo Bush, altitude about 1500

feet, North Zululand, 14th December, 1928. Length of head and body 85, tail 75, hind foot 16.5, ear 15 mm.

*Skull.* Greatest length 26.5, basilar length 20, zygomatic width 15, width of brain case 12.2, interorbital constriction 4.2, length of upper molar series 3, diastema 5.5, palate length 8, length of bullae molar 8.8, palate width across outside of molar 4, nasals  $10.2 \times 3.3$ , height behind incisors 4.5, at and including molars 6.8, at bullae 10, length of palatal foramina 3.2 mm.

#### TATERA RUDDI TONGENSIS subsp. nov.

Very similar to *T. ruddi* (Wroughton, *Ann. and Mag. N.H.* (7) xvii, 1906, p. 478) of Umfolosi, Zululand; but with a decidedly shorter tail and larger bullae, the tail being given in three paratypes of *ruddi*, in the British Museum as 203 to 208, and the bullae in two paratypes 10.5, whereas in six adult to old specimens of *tongensis* from Maputa and Manaba the tail varies between 165 and 192 and the bullae 10.5 to 11.5 (average 11) mm. The under parts are suffused with buffy, which extends also to the feet; the postauricular white mark is very conspicuous. The tail is pale, usually white tipped. The mammae are: one pair pectoral and two pairs inguinal, as in other species (*brantsi* and *c.*) characterised by usually having some buffy on the chest.

Type: T.M. No. 6092, adult female, Maputa, North Zululand, 14th November, 1929. Head and body 137 (140-150), tail 175 (165-192), hind foot (s.u.) 40 (37-40), ear 23 (20-24) mm. Skull: greatest length 40.5 (39.7-41), basilar length 31.8 (30.2-32.5), zygomatic width 21.7 (20.7-21.2), interorbital constriction 6.5 (6-6.3), width across zygomatic plates 17.4 (16.5-17.2), length of upper molar series 6.5 (6.3-6.7), diastema 11.1 (10.8-11.8), palatal foramina 8 (7.3-8.4), nasals  $16.5 (16.3-17.3) \times 4.5 (3.7-4.3)$ , greatest diameter of bullae 11.5 (10.5-11.5) mm. The figures in brackets refer to five other specimens from Maputa and Manaba.

One specimen in the series is abnormal in that the under fur below is grey instead of white, a feature I have not seen before in a Gerbille. It is to be noted that the following species occurs in the same veld, though this species occurs mainly around "pans."

#### TATERA LOBENGULAE ZULUENSIS subsp. nov.

Most closely approaching the coastal form *T. l. littoralis* Rbts (*Ann. Trans. Mus.* xiii, 1929, p. 105), found at the mouth of the Limpopo River, but differing in having the face whiter, feet slightly longer and skull decidedly larger.

Colour similar to *littoralis*, the upper parts slightly blackish owing to the smaller quantity of black-tipped hairs, sides of face rather whiter; top of tail in a narrow line to the tip brown, below whitish; hands and feet white above; ears brown; top of nose black, thinning out towards forehead.

Skull large and bullae also large. Mammae with two pairs pectoral and two pairs inguinal.

Type: T.M. No. 6100, adult female, Manaba (30 miles from Kosi Bay), North Zululand, 4th December, 1929. Head and body 140 (126-148), tail 163 (150-163), hind foot (s.u.) 35 (33-35), ear 22 (20-23) mm. Skull: greatest length 40.7 (38.2-39.4), basilar length 31.2 (29-29.3), zygomatic width 20.4 (19.4-20.7), width of brain case 16.7 (16.2-17.3), interorbital constriction 6.5 (6-6.3), width across zygomatic plates 16.3 (15.9-16.3), length of molar series 6.2 (6-6.3), diastema 10.3 (9.5-10), palatal foramina 7.5 (7.2-7.8), nasals  $17.3$

(16-17.4)  $\times$  3.8 (3.7-4), greatest diameter of bullae 11.3 (10.9-11) mm. Figures in brackets refer to three specimens collected at Manaba and Maputa.

This is the most southerly record for the species and its occurrence in the same districts as *ruddi tongensis* is of considerable importance. It was found in the open sand dunes and more or less open Malala palm country, whereas the other was more partial to the "pans" (marshy hollows).

**OTOMYS KAROENSIS** sp. nov. (Pls. VI, VII, VIII, figs. b)

Differing from all known species of *Otomys* in having the general colour and cranial characters of *Myotomys* (*unisulcatus*, etc.) but the dentition of an *Otomys*. It is a distinct link between these two genera, thus reducing *Myotomys* to subgeneric rank.

Colour above light buffy speckled with dark brown-tipped hairs, so that the flanks become pale buffy on a grey ground, the base of all the hairs being dark ashy. Tip of muzzle, ring round the eye and tuft of long hair in front of ears buffy yellow; hair immediately behind the ears buffy to white. Ears like the back. Below very pale buffy to white on a grey ground, like the flanks, but throat whiter. Hands and fore arms dull white; feet dull buffy white. Tail buffy white, slightly darker above. In general coloration it resembles *M. turneri*, except for its greater pallor.

*Skull.* In general like that of *Myotomy* spp., but with the nasals sharply expanded (the line of the suture at the expansion lying in a plane which cuts across the incisors near their tips); the zygomatic arches are very broad in the middle; beading of the interorbital edges sharply ridged, extending backwards to the angle formed by the fronto-parietal suture; palatal foramina long and narrow, extending nearly to the incisors and therefore more advanced than in other species. Incisors above and below deeply grooved, as in *Otomys*; molars with the same formulae of laminae as in *Otomys*, but the posterior laminae of  $m^3$  and anterior laminae of  $m_1$  more curved, as in *Myotomys*.

In general dimensions smaller than *Myotomys unisulcatus*. Length of head and body 140, tail 80, hind foot (s.u.) 23 (c.u. 24), ear 22 mm. Skull: greatest length 36.5, condylo-basal length 34.6, basilar length 29.2, zygomatic width 18.5, width of brain case 14.5, interorbital constriction 4.3, nasals  $15 \times 6.2$ , height posteriorly 8.8, including the bullae 12.5, at the  $m^3$  14, length of upper molar series 8.2, greatest diameter of bullae 7.8, diastema 8.5, palatal foramina  $7 \times 1.5$ , width of upper incisors at the tips 3.5, greatest width of zygomatic arch 3 (only equalled by much larger specimens in *Myotomys*, but exceeded in *Otomys*) mm.

Type: T.M. No. 5901, fairly old male, Wolseley, C.P., 22nd October, 1928.

**DENDROMUS MELANOTIS THORNTONI** subsp. nov.

In general greyer and darker than *D. m. melanotis* A. Smith of the Eastern Cape Province. Where *melanotis* is described as "ashy grey, with a distinct rufous or rusty tint, the latter colour not so deep upon the hinder parts of the body as upon the head, neck and anterior parts," *thorntoni* has the upper parts grey throughout with only the barest trace of rusty; below also the grey is whiter, owing to the greater extent of the white tips, though the base of the hair is grey everywhere. A dark frontal spot is visible, though ill-defined, and not anything like the definite black mark seen in *nigrifrons*; and a dark ocular ring extends 5 mm. forwards; dorsal black stripe present as in *melanotis*; ears very dark brown, showing up clearly against the grey background; grey of the

under parts extending to the fore arms, but not the hands, which like the top of the hind feet are white; tail light grey-brown, rather paler below. No complete skulls of *melanotis* being available, it is impossible at present to state whether they differ, though in respect of small teeth they are alike.

Type: T.M. No. 5834, Port Elizabeth, presented to the collection by the Director of Medical Services, Dr (Sir Edward) Thornton.

#### DENDROMUS MELANOTIS CAPENSIS subsp. nov.

In the main most closely related to *D. m. thorn-toni* from Port Elizabeth, but lighter grey throughout and averaging smaller. Colour of the type buffy grey, lighter than *thorn-toni*; black stripe dorsally from behind the withers, but the face with only an indistinct ocular and no frontal dark markings, and paler than the back; ears dark brown, contrasting with general dorsal coloration, and with the usual white patch at the base; chin, lips and lower cheeks uniform white, like the remaining under parts, all hairs dark grey for the basal two-thirds; hands and feet white, tail pale greyish, whiter below.

Type: T.M. No. 5825, adult female, Wolseley, C.P. Also one from Ceres and three from Tulbagh.

#### DENDROMUS MELANOTIS PRETORIAE subsp. nov.

In colour above most like *D. arenarius* (*Ann. Trans. Mus. x*, 1924, p. 71) from Bothaville, but less pallid below, the area covered by completely white hairs being confined to the throat, the rest grey basally with white tips, as in *D. m. chiversi*. An indistinct dark frontal spot and dark ocular ring extending forwards are perceptible as in *chiversi*, but dorsally more buffy as in *arenarius*. Size small, as the dimensions given below will show.

Type: T.M. No. 5253, adult male, Rietondale, Pretoria, 19th April, 1928.

#### Dimensions of related forms of *Dendromus melanotis*

	<i>D. melanotis</i> (3)	<i>thorn-toni</i> (1)	<i>capensis</i> (5)	<i>arenarius</i> (15)	<i>pretoriae</i> (1)	<i>chiversi</i> (2)	<i>basuticus</i> (1)
Length of head and body	72-76	61	60-64	52-64	53	64-68	70
„ tail ...	69-77	67	76-85	66-89	65	71-77	75
„ hind foot (s.u.)	16-18	17	16-18	15-16	15	16-18	16.5
„ ear ...	15-18	15	14	15-17.5	15	16-18	—
Skull:							
Greatest length ...	—	21	19.8-20.2	19-20.8	19.7	19.9-20.5	—
Basilar length ...	—	16	14.5-15	14-15	14.2	—15	—
Zygomatic width ...	—	10.8	9.6-10.5	10-10.3	10.3	10.5-10.8	11.2
Width of brain case ...	—	9.5	9.1-9.6	9.2-9.7	8.9	9.2-9.7	10
Interorbital constriction	2.7	3	2.8-3	2.4-2.9	2.7	2.8-2.9	2.8
Length of nasals ...	7.8-8	8	7.1-7.5	7-7.9	7.3	7.5-7.7	8
Length of upper molars	2.7-2.8	3	2.7-3	2.8-3.1	2.9	3.3-3.3	3.3
Diastema ...	4.7-5.2	4.8	4.3-5	4.1-4.5	4.3	4.3-4.5	4.5
Bullae ...	—	4.7	4.3-4.8	4.1-4.6	4	4.2-4.6	—

#### DENDROMUS JAMESONI PONGOLENSIS subsp. nov.

A form of *D. jamesoni* Wroughton (*Ann. and Mag. N.H.* (8) III, p. 247) described from Tzaneen, Eastern Transvaal, with a broad dorsal stripe, broader if anything than in the typical form, but larger and with longer nasals. In colour practically identical, though the type has a buffy patch on the chest,

which is probably due to staining. Tzaneen and Ubombo adult specimens are as follows:

	Tzaneen		Ubombo District	
	♂	♀ (type)	♂ (type)	♀
Length of head and body ...	55	60	65	63
"    tail ... ..	75	78	81	88
"    hind foot ... ..	16	16	16.5	16
"    ear ... ..	13	13	13	13
Skull:				
Greatest length ... ..	20	20.5	21.6	20.4
Basilar length ... ..	14	15	16	15.5
Zygomatic width ... ..	10.3	11	11.3	10.7
Width of brain case ... ..	9.8	10	9.7	9.5
Interorbital constriction ... ..	2.7	—	2.8	3.1
Length of nasals ... ..	7.2	7.2	8.7	8.5
"    upper molars series	3.1	3.1	3.3	3.1

Type: T.M. No. 6103, adult male, Pongola River, 15 miles west of Manaba, North Zululand, 11th December, 1929. The paratype is from Ubombo.

#### STEATOMYS CHIVERSI sp. nov.

In colour above like *S. k. orangiae* Rbts (*Ann. Trans. Mus.* XIII, 1929, p. 116) from Bothaville, O.F.S., but below pure white throughout, even to the roots of the hair, the white area embracing the abdomen and the fore arms and feet as well, and the skull decidedly smaller, as the accompanying tables will show. Skull smaller than that of *S. pentonyx* (W. L. Sclater, *Ann. S. African Mus.* 1899, p. 202, *Malacothrix pentonyx*), from the Cape Flats. Hair on lower back 8 mm.

Type: T.M. No. 5428, adult male, Blood River, Natal, U.B. Chivers, 17th June, 1928. Also another from the same place and one each from Buffalo River and Newcastle, Natal. The discovery of this minute species so near the localities (Bergville and Winterton) where the much larger *S. natalensis* was procured recently (cf. *Ann. Trans. Mus.* XIII, 1929, p. 117) is remarkable. Its affinity would seem to be with the small species found commonly in the sand veld of the Southern Cape Province, which also has pure white under parts of body.

#### STEATOMYS CHIVERSI TONGENSIS subsp. nov.

Lighter coloured about the face, shorter haired and with rather longer nasals than *S. chiversi chiversi* of Natal. Colour above buffy brown, the base

	<i>S. natalensis</i> (2 sp.)	<i>S. k. orangiae</i> (24 sp.)	<i>S. pentonyx</i> (2 sp.)	<i>S. chiversi</i> (4 sp.)	<i>S. tongensis</i> (2 sp.)
Length of head and body	97-102	70-80	70-80	70-76	76-80
"    tail ... ..	49-53	45-52	48-54	36-41	43-48
"    hind foot (s.u.)	17-18	15-16.5	16-17	14-15	14-16
"    ear ... ..	17-18	15-17.5	16-18	14-16	14-15.5
Skull:					
Greatest length ... ..	26-26.8	23.2-25.8	22.7-23.7	21-21.5	22.1-22.5
Basilar length ... ..	21-21.6	18-20	17.8-18	16-16.6	17-17.5
Zygomatic width ... ..	13.7-13.8	11.9-12.6	11.5-12.5	10.8-11.5	?-11.4
Width of brain case ... ..	11.3-12.2	10.5-11.6	10.5	10-10.5	10.3-10.5
Interorbital constriction	4.1-4.2	3.8-4.2	3.9-4	3.8-3.9	3.8-3.8
Length of nasals ... ..	10.3-10.7	8.7-10.2	9.4-9.5	7.8-8	8.7-9.4
Width of nasals ... ..	2.8-3.2	2.3-2.4	2.5	2.5-2.6	2.5-2.7
Upper molar series ... ..	3.9-4.1	3.4-3.7	3.5-3.7	3.2-3.5	3.5-3.5
Palatal foramina ... ..	6	4.8-5.6	4.9-5.3	3.8-4.6	4.2-4.8
Length of bullae ... ..	6.3-6.5	5.5-6.2	5.5.3	4.7-4.9	5.2-5.4

of hair dark grey with buffy tips, but an admixture of brownish tips; face lighter coloured than the back; under parts pure white, extending upwards and terminating in a well-defined line from the upper lips, sides of nose, lower cheeks, lower side of neck embracing the whole fore limbs, lower part of flanks and lower part of thighs; tail pale brownish above, white below; ears rather darker than the back. Hair on lower back 6-7 mm.

Type: T.M. 6104, old male, Manaba, North Zululand, 7th December, 1929. Head and body 80, tail 43 and 14 mm.

#### GRAMMOMYS TONGENSIS sp. nov.

A small species allied to *G. dolichurus* Smuts of the Eastern Cape Province forests, but with the head, shoulders and flanks greyer, feet whiter and tail averaging longer; in the skull rather shorter in the muzzle.

Colour above tawny over the back, becoming greyer on the flanks, shoulders, neck and face, with some tawny extending indistinctly along the middle of foreback to between the ears, and thence more buffy to the nose; but this tawny to buffy is subdued by the grey from the back to the nose. Fore arms buffy grey, wrists buffy to the centre of hands, sides of hands and fingers white; hind legs above like the flanks, buffy greyish at the ankles and in the centre of the feet above buffy, sides of feet and toes white; tail brown above, buffy brown below; under parts from upper lips and lower part of cheeks to vent and inside of thighs pure white, in a clearly defined line, without the usual buffy line separating the dorsal and ventral colours.

Type: T.M. No. 6111, old female, Manaba, North Zululand, 4th December, 1929. Length of head and body 110, tail 193, hind foot (s.u.) 22, ear 18.5 mm. Skull: greatest length 30.6, basilar length 23.3, zygomatic width 14.5, width of brain case 12.7, interorbital constriction 4.7, nasals 12.2 x 3.5, palatal foramina 6.8, length of upper molar series 4.2, greatest diameter of bullae 5.2 mm. Four more adults from Manaba and one from the eastern foot of the Lebombo Mountain near Ubombo comprise the series. They were procured from grass nests placed in dense bushes, between the leaves of Malala palms and (near Ubombo) in the head of very prickly *Euphorbia*.

*Grammomys cometes* (Thomas and Wroughton, *P.Z.S.* 1908, p. 550) from Coguna, Inhambane, was procured at Maputa, in the Mangusi Forest.

#### THALLOMYS MOGGI LEBOMBOENSIS subsp. nov.

In most respects like *T. m. acaciae* of Woodbush in the Northern Transvaal, but differing in having rather larger molars and bullae, narrower and shorter nasals, and smaller palatal foramina.

Colour, dorsally tawny buffish from forehead to root of tail, paling on nose, upper part of limbs and sides to whitish, all this area with a few long dark brown-tipped hairs, which tone down the general tawny buffish colour, the base of hair dark slate; below pure white to the base of the hair, in a well-defined line from the upper lips, throat, inside of limbs, edge of flanks to below the tail; hands and feet above pure white; tail dark brown, paler at the base below; ears like the back.

In colour there is seen to be a considerable amount of variation in series *T. m. moggi*, but the skulls of adults are not so variable and the sexes are of about the same size, the usual difference, if there is one, being in the greater breadth across the zygomatic arches or the brain case in the males. The following is a table of dimensions of the three forms:

	<i>T. m. moggi</i> (12 sp.)	<i>T. m. acaciae</i> (4 sp.)	<i>T. m. leboomboensis</i> (6 sp.)
Length of head and body	118-140	132-139	125-143
"    tail ...	130-149	153-170	145-158
"    hind foot (s.u.)	20-24	24-24	23-25
"    ear ...	18-21	19-21	18-20.5
Skull:			
Greatest length ...	31.3-34.2	31.5-34.2	31.2-32.3
Zygomatic width ...	16-18	16.3-17.5	15.5-16.5
Width of brain case ...	13-14	12.8-13.5	13.1-13.5
Interorbital width ...	4.3-5.1	4.5-4.8	4.3-4.8
Length of nasals ...	11.2-14	12-12.8	11.2-12
Width of nasals ...	3.3-3.8	3.7-3.9	3.2-3.5
Bullae ...	6.8-7.2	7-7.2	7.3-7.6
Upper molar series ...	4-4.6	4-4.5	4.5-4.8
Diastema ...	8.1-9.2	8.8-9.5	8-9
Palatal foramina ...	7.2-8.2	8-8.3	7.2-7.6

Type: T.M. No. 5629, adult male, Mkuzi River, Ubombo, North Zululand, represented by specimens from Mkuzi River, Ubombo and Manaba. A specimen from Magude, north-east of Delagoa Bay, also has large teeth, but the bullae small.

#### AETHOMYS CHRYSOPHILUS TONGENSIS subsp. nov.

In respect of colour not quite like any previously described, the tips of the hairs of the under parts purer white (though dark grey at the base as in other forms), upper parts of body less reddish than *A. c. tsaneenensis* Jameson (*Ann. and Mag. N.H.* (8) IV, 1909, p. 460) and the face much darker than the back. In dimensions large and long footed, in that respect, only, resembling the north of Limpopo form (*acticola* Thomas and Wroughton, *P.Z.S.* 1908, p. 547, from Beira). In *tsaneenensis* the under parts are buffy white, the base of the hair grey like the sides of the back; in *acticola* the under parts are also white, but base of hair on the throat pure white, elsewhere below light grey only at the extreme base. The face is remarkably dark, owing to the presence of numerous glossy black hairs on the nose to forehead and around the eyes; the ears and tail are also dark brown, nearly black, the latter with a greyish suffusion above, and lighter below for basal four-fifths; hands and feet white above; lips white like under parts of body, sides of nose and cheeks more or less buffy.

Type: T.M. No. 6128, old male, Mangusi Forest, North Zululand, 9th November, 1929. Head and body 150, tail 190, hind foot (s.u.) 32, ear 22 mm. Skull: greatest length 38.2, basilar length 29.5, zygomatic width 18, width of brain case 14.6, interorbital constriction 5.5, nasals 16.2 × 4, length of upper molar series 5.8, greatest diameter of bullae 6.5, height at bullae 12.5 mm.

Specimens procured at Manaba are tentatively referred to this form, as also others from Ubombo, although not fully in agreement.

#### LEMNISCOMYS GRISELDA ZULUENSIS subsp. nov.

In dimensions similar to *L. g. calidior* (Thomas and Wroughton, *P.Z.S.* 1908, p. 545) from Tambarara, Gorongoza, but less chestnut in general effect, the head and fore part of body paler, owing to the "vinaceous cinnamon" bands of the hairs of *calidior* being buffy or clay colour in this southern form. Thomas and Wroughton, when describing *calidior*, associated all Zululand and Transvaal specimens under the name of *dorsalis* Smith (*spinalis* Thomas, *Ann. and Mag. N.H.* (8) XVIII, 1916, p. 69), but I have pointed out in these

*Annals* (v, 1917, p. 271) that the typical *dorsalis* (*spinalis*) of Western Transvaal was smaller and rather lighter coloured than specimens from Eastern Transvaal. There is a shade of difference between these Eastern Transvaal specimens, but for the present I propose placing them with this Zululand form.

Type: T.M. No. 6141, adult female, Manaba, North Zululand, 27th November, 1929. The following figures will serve to show the difference in dimensions:

	<i>L. g. spinalis</i> (3 adult to old)	<i>L. g. zuluensis</i> (3 adult to old)	<i>L. g. calidior</i> (type old)
Length of head and body	101-108	120-130	135
" tail ... ..	122-?	128-145	146
" hind foot (s.u.)	25-26	27-30	27
" ear ... ..	15-16	17-17.5	17
Skull:			
Greatest length ...	30.5-31.4	33.1-35.5	34
Basilar length ...	24-25.5	25.5-28.3	27
Zygomatic breadth ...	14.7-15.2	15.5-?	16
Diastema ... ..	7.3-7.5	7.8-9.3	8.5
Upper molar series ...	5.6-5.7	5.8-6.2	6