

Family GEKKONIDAE.

- Ascalabotes* Cuvier, 1817, *Regne Anim.*, II, p. 44.
Ascalabotae Merrem, 1820, *Syst. Amph.*, p. 39.
Ascalabotoidea Fitzinger, 1826, *Neue Classif. Rept.*, p. 13.
Geckotidae Gray, 1825, *Ann. Phil.* (2) X, p. 198.
Geckonidae Boulenger, 1884, *A.M.N.H.* (5) XIV, p. 119 and 1885, *Cat. Liz.*, I, p. 3.
Gekkota Camp, 1923, *Bull. Amer. Mus. N.H.*, XLVIII, p. 304.
Gekkonidae Smith, 1935, *Fauna Brit. Ind.*, II, p. 21.
PlatyGLOSSAE Wagler, 1830, *Syst. Amph.*, p. 141.
Eublepharidae Boulenger, 1883, *A.M.N.H.* (5) XII, p. 308 and 1885, *Cat. Liz.*, I, p. 229.
Eublepharinae, Gadow, 1907, *Amph. & Rept.*, p. 512.
Uroplatidae Boulenger, 1884, *A.M.N.H.* (5) XIV, p. 119.
 (Note: For full list of references see Boulenger, 1885, and Smith, 1935).

In the Geckos or Geitjies there are no large shields on the head, which is covered with granules, scales or tubercles; the skull is generally more or less depressed with a slender bony frame and bones all thin; bony temporal and postorbital arches absent; pterygoids widely separated and toothless; a columella crania present; mandible composed of only five bones owing to the coalescing of the angular and articular; parietal bones separate; usually no parietal foramen; frontal either single or with a distinct suture; nasals usually distinct, exceptionally fused into a single bone.

Dentition pleurodont, the teeth being small, numerous, closely set, cylindrical and obtusely pointed; the new teeth hollow out the bases of the old. Tongue fleshy, broad and moderately elongate, covered with villose papillae, slightly nicked anteriorly and capable of protusion out of the mouth. Eye usually large, covered with a transparent skin or membrane under which it moves freely, and, with a few exceptions (cf. *Ptenopus*) devoid of movable eyelids, which are reduced to minute non-functional folds above and below; the pupil is usually vertical (smaller and circular in some diurnal forms) and contracts in the light to a narrow vertical denticulated slit. Tympanum usually exposed.

Vertebrae biconcave or amphicoelous, except in *Eublepharis* (Asia & America), where they are procoelus; clavicle usually dilated, thinned and perforated near the ventral or sternal end (except in *Uroplates* (Madagascar) and some species of *Cnemaspis* (N. Africa & Asia); interclavicle large and cruciform (small in *Uroplates* only); ribs single-headed, long and slender, forming more or less ossified hoops across the whole of the abdominal region; both pairs of limbs present, well-developed and pentadactyle (sometimes inner digits much reduced and inconspicuous); digits show considerable range of variation, being free or sometimes united by membranes, sub-cylindrical or feebly depressed, frequently keeled below and denticulated laterally, but most often with the whole or part dilated into symmetrical adhesive plates or lamellae of variable arrangement, below: claws usually present, often either retractile between the distal lamellae or plates, or into a special sheath.

Body generally more or less depressed, covered with granules and tubercles above and small imbricated cycloid or hexagonal scales

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- A. *Pachydactylus bibronii* (*Gekkonidae*). ×5.
 B. *Agama atra* (*Agamidae*). ×5.
 C. *Microsaura ventralis ventralis* (*Chamaeleontidae*). ×2. Side view of tip at full extension.
 D. *Mabuya striata* (*Scincidae*). ×6.5.
 E. *Gerrhosaurus flavigularis flavigularis* (*Gerrhosauridae*). ×6.
 F. *Ichnotropis squamulosa* (*Lacertidae*). ×10
 G. *Monopeltis capensis capensis* (*Amphisbaenidae*). ×10.
 H. *Varanus niloticus* (*Varanidae*). ×5.
 I. *Cordylus cordylus cordylus*, (*Cordylidae*). ×5.

below, or sometimes with flat imbricated scales above and below (*Homopholis*); skin soft, with no regular osteoderms present. The tail is usually cylindrical and tapering, sometimes flattened basally, very fragile and brittle, readily shed, with the break occurring across the middle of a vertebra; regeneration of the tail takes place very quickly with replacement of the vertebrae by a continuous rod; reproduced tails are usually abnormal in shape and lepidosis, bifid and even trifold tails being not uncommon. Femoral and preanal pores often present in males, while in most females there are enlarged (sometimes pitted) scales corresponding to the position of the pores in males. A peculiarity of the family is the presence of postanal bones and sacs, which are paired structures lying on each side of the base of tail just behind the vent; the sac is usually present in both sexes but the bone only in the male; by inserting the point of a needle into the opening of the sac, the bone, which is small and curved and lies just under the skin, may be lifted upwards, serving thus as a method of determining the sex without dissection.

Geckos are for the most part nocturnal, though often nothing loth to basking in the sun or going abroad on dull days or in shady places. They are mistakenly regarded as being highly poisonous by many Europeans and natives, who fear them even more than the deadliest of snakes; in actual fact they are quite harmless, even the largest forms being seldom capable of inflicting a painful bite, and if unmolested become very tame and confiding. Their food consists mainly of animals, chiefly insects, although the larger forms will take anything they can master, including their own kind; the skin, even over the eye, is shed periodically and comes off usually in patches, which are eaten. Many forms are capable of emitting noises, from sharp squeals or squawks of protest to fairly soft clicking, chirruping or clucking calling sounds, from which the family name is derived. A certain range of colour change is manifested, but this is usually restricted to the adoption of darker or lighter hues. With the exception of the New Zealand *Nautilinus*, Geckos are oviparous; the eggs, which are usually deposited in pairs in any suitable nook or cranny, are white, round or slightly oval and covered with a thin calcareous shell, which, when first laid, is soft and sticky but on exposure to the air quickly hardens to a brittle shell.

Geckos are found in practically every kind of habitat from sea level to mountain top, and include arboreal, rupicolous and terrestrial forms; to a large extent the arboreal forms are confined to the tropics, while the terrestrial and rupicolous forms predominate in the more temperate regions. There are thirteen genera represented in South Africa.

Distribution: Practically cosmopolitan throughout the warmer parts of the world, occurring in abundance in all intertropical countries and islands, including New Zealand.

Key to the South African Genera of GEKKONIDAE.

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| 1 | Digits not dilated, without adhesive lamellae or plates below distally | 2 |
| | Digits more or less dilated, with enlarged adhesive lamellae or plates below distally | 3 |
| 2 | Digits short, cylindrical, clawless, covered above and below with uniformly small, spinose scales; head and body not depressed | |

CHONDRODACTYLUS, p. 10

Digits moderately long, with narrow transverse scales below, strongly clawed; toes depressed, with a well-developed lateral fringe of long pointed scales; head and body not depressed

PTENOPUS, p. 12

Digits long and slender, strongly clawed, feebly denticulated laterally, with a series of smooth transverse scales below (often somewhat enlarged and swollen into minute pads basally); head and body depressed

NARUDASIA, p. 14

Digits slender, webbed almost to their tips; fingers clawless, but toes each with a minute claw; head and body more or less depressed

PALMATOGECKO, p. 16

3 Digits each with a strongly developed claw 4

Digits either clawless or with a minute inconspicuous claw 7

4 Digits dilated apically and furnished below with paired adhesive plates, which are separated by a longitudinal groove 5

Digits cylindrical or compressed apically, more or less dilated a little short of the apex and bearing series of slightly oblique paired adhesive lamellae below 6

Digits entirely dilated, with a single long series of undivided transverse adhesive lamellae below; body covered above and below with more or less uniform small imbricate scales

HOMOPHOLIS, p. 18

5 Digits with a single pair of apical adhesive plates below

PHYLLODACTYLUS, p. 20

Digits with one or two pairs of adhesive plates below, in addition to the apical pair

OEDURA, p. 29

6 Inner digit well-developed; pupil vertical

HEMIDACTYLUS, p. 45

Inner digit small and rudimentary; pupil rounded

LYGODACTYLUS, p. 49

7 Digits more or less dilated, with undivided transverse adhesive lamellae below (except for distalmost lamella which is usually divided), clawless or with a minute claw; subdigital scales on basal portion of digits may or may not be enlarged; preanal and femoral pores absent

PACHYDACTYLUS, p. 59

Digits each with two transversely enlarged, undivided apical adhesive plates below; fingers slightly dilated apically, clawless; toes somewhat narrowed apically, with minute claws; subdigital scales small and similar to scales above; preanal and femoral pores absent

COLOPUS, p. 111

Digits very unequal, more or less slender but distinctly dilated apically, with well-developed, transverse, adhesive lamellae below; clawless or with a minute claw; subdigital scales on basal portion of digits strongly enlarged transversely; preanal and femoral pores present or absent 8

- 8 Digits with minute claws; inner digit reduced but not rudimentary; distalmost adhesive lamella divided; nostril tubular, pierced between 3 nasals; preanal pores present or absent; no femoral pores

RHOTROPUS, p. 113

Digits clawless; inner digit rudimentary; distalmost adhesive lamella undivided; nostril not tubular, pierced in the 1st. upper labial and bounded behind by a small postnasal; femoral pores present, in a long continuous series across preanal region

RHOTROPELLA, p. 121

CHONDRODACTYLUS Peters.

Chondrodactylus Peters, 1870, Monatsb. Ak. Wiss. Berlin, p. 110 (type: *angulifer*). Boulenger, 1885, Cat. Liz., I, p. 10. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39 and 1910, p. 77. Boulenger, 1910, Ann. S. Afr. Mus., V, p. 455. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 10.

Digits very short, cylindrical, clawless, obtusely tipped, covered below with small spinose scales and above with more flattened and slightly larger scales; palmar surfaces and underside of the articulations of the digits swollen and pad-like. Body stout, rounded, not depressed, covered above with flattened granules intermixed with enlarged keeled tubercles, and below with smooth imbricate scales. Pupil vertical. No preanal nor femoral pores.

Endemic to South Africa and represented by a single species.

Distribution: Throughout the sandy regions of the western and north-western Cape Province and Great Namaqualand.

CHONDRODACTYLUS ANGULIFER Peters.

(Plates I, figs. 1 & 2; IV, figs. 1 & 2 and XII, fig. 1).

Sand or Ground Gecko. Grondgeitjie.

Chondrodactylus angulifer Peters, 1870, Monatsb. Ak. Wiss. Berlin, p. 111, pl. . . , fig. 1 (Type locality: Hantam, Oorlogsrivier, C.P.). Boulenger, 1885, Cat. Liz., I, p. 11, pl. II, fig. 5 (Karoo). Boettger, 1887, Ber. Senck. Naturf. Ges., p. 140 (Malmesbury, C.P.). Fischer, 1888, Jahrb. Hamb. Wiss. Anst., V, p. 12 (btwn. Aus & Bethany, S.W.Afr.). Boulenger, 1910, Ann. S. Afr. Mus. V, p. 456 (Little Namaqualand; Kenhardt; Touwsriver; Beaufort West). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 82 & 85 (Carnarvon). Werner, 1910, Jena. Denkschr., XVI, p. 306 (Angra Pequena; Kubub; Sinclair Mine). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 10, figs. 5 & 6, and Mitt. Zool. Mus. Berlin, V, p. 396 (Warmbad, G.N.). Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 149 (Gordonia; Victoria West). Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 124 (Great Karas Mtns. & neighbourhood). FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 523 (Askham; Konkiep; btwn. Nochaben & Kanus; Verloor). Parker, 1936, Novit. Zool., XL, p. 131 (Bullspoot, G.N.). Mertens, 1937/38, Veröff. Deutsch. Kolon.- u. Übersee Mus. Bremen, II, hft. 1, p. 10 (Luderitzbucht). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 160 (Gt. Fish Riv., nr. Berseba).

Chondrodactylus weiri Boulenger, 1887, P.Z.S. Lond., P. 339 (Kalahari). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 11.

Description: Head large and swollen. Snout very short and convex, subequal in length to diameter of eye or distance from latter to ear-opening. Interorbital space narrow and concave, with two to three rows of scales between the supraorbital ridges. Ear-opening an oblique slit, in length about half the diameter of eye. Rostral small, pentagonal, as broad as deep. Nostril pierced between three nasals, of which the anterior is the largest and in good contact with

its fellow mesially. Upper labials 8—11, lower 10—12. Mental narrow, but slightly broader and longer than adjacent labials. Body short, stout and rounded. Limbs somewhat slender; digits very short, cylindrical, with undersides swollen and pad-like and covered with small spinose scales. Snout and top of head covered with polygonal scales, subequal in size to the enlarged tubercles on back. Upper surface of body and limbs covered with irregular flat granules, intermixed with moderately enlarged, rounded, smooth or keeled tubercles. Scales on throat small and granular, except immediately behind the mental and anterior labials, where they are enlarged and polygonal. Scales over abdominal region large, flat, smooth, sub-hexagonal and imbricate. Tail cylindrical and tapering, unsegmented, covered above with irregular flattened granules and regular transverse series of enlarged conical tubercles; below, the scales are flat, smooth, four-sided and subimbricate. Two enlarged conical tubercles on either side base of tail near vent.

Colour: Above, yellowish-olive to light brown, with four angular (apices directed posteriorly), darker brown cross-bands over back, each edged behind with dark brown and ochraceous orange; a series of conspicuous pale spots along each side, placed just behind the lateral extremities of the dorsal bands; a dark band from second upper labial to anterior corner of eye; another band from posterior corner of eye passing round back of head, but not meeting its fellow; a median dark brown streak on the nape, bifurcating on occiput and terminating over posterior supraorbital region of head. Tail banded with dark brown to blackish. Under parts white. In juveniles the colour markings are very conspicuous but usually become somewhat indistinct with age.

Dimensions: Male (T.M. No. 15631—nr. Kanus), H. & B. 94, tail 71, length head 29, breadth head 26 mm.

Field notes: These large ground geckos are essentially sand-dwellers and are especially partial to dry sandy river beds and their immediate neighbourhood. They live for the most part in burrows, which may be anything up to three feet in length and are as often as not old scorpion holes which have been taken over and enlarged. In these burrows they spend the daylight hours, emerging only after dark to hunt for food, which consists mainly of termites (of the grass-cutting varieties) and small ground-living beetles. In movement they are sluggish and ungainly, the body and tail being held well off the ground on the long, somewhat slender legs. When molested they often assume a most aggressive attitude, and hissing loudly, will sometimes lunge themselves right off the ground at an offending object; in spite of this forbidding behaviour, they are of course quite harmless, but nevertheless are still regarded as being deadly poisonous and thus greatly feared by both the European and native inhabitants of the areas where they occur.

Distribution: Throughout the sandy regions of the western and north-western Cape Province, south-western Kalahari and Great Namaqualand. Recorded localities: Carnarvon; Kakamas; Bethany, S.W. Afr. (A.M.). Gt. Karasberg Dist. (A.M., P.E.M. & T.M.). Niekerkshoop (B.M.). Btwn. Omaruru River & Otavi (D.M.). Rietfontein, Gordonia (K.M.). Touwsriver; Prince Albert Rd.; Beaufort West; Pofadder; Upington; Swartmodder, Henkries; Naramoep; Naroep; Jakhalswater; Port Nolloth; Aughrabies Falls & Krantzkop, N. bank Orange Riv.; Kalkfontein south; Luderitzbucht (S.A.M.). Abrahamskraal; Askham; Keetmanshoop; Konkiep; Nochaben—Kanus; Verloor; Gt. Fish Riv., nr. Berseba (T.M.).

Remarks: Type in Berlin Museum. *Ch. weiri* Boul., as suggested by Boulenger himself (1910, p. 456) and shown in detail by Methuën & Hewitt (1914, Ann. Tvl. Mus., IV, p. 125), is not separable from *Ch. angulifer* Pet.

PTENOPUS Gray.

Ptenopus Gray, 1865, P.Z.S. Lond., p. 640 (type: *maculatus*). Cope, 1868, Proc. Ac. Philad., p. 321. Boulenger, 1885, Cat. Liz., I, p. 15. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39 and 1910, p. 78. Boulenger, 1910, Ann. S. Afr. Mus., V, p. 455. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 11.

Digits neither dilated nor swollen, each terminating in a long slender claw and bearing below a series of narrow transverse plates; fingers laterally compressed; toes depressed, and furnished with a lateral fringe of long-pointed scales. Head and body moderately depressed, covered with granular scales. Pupil vertical; upper eyelid movable, well developed and almost meeting the lower, which is distinct. No preanal nor femoral pores.

Endemic to South Africa, and represented by a single species.

Distribution: From Little Namaqualand and the northern Cape Province, northwards into Great Namaqualand, Damaraland, Kalahari and north-western Transvaal.

PTENOPUS GARRULUS GARRULUS (A. Smith).

(Plate IV, fig. 1).

Whistling Gecko; Orange-coloured Gecko. Klein Grondgeitjie.

Stenodactylus garrulus A. Smith, 1849, Ill. Zool. S. Afr. Rept., App., p. 6 (Type locality: 'Sandy Districts in the Interior of South Africa'). A. Dumeril, 1851, Cat. Meth. Rept., p. 47 & 1857, Arch. Mus., VIII, p. 488.

Ptenopus garrulus part., Boulenger, 1885, Cat. Liz., I, p. 15, pl. II, fig. 2 (South Africa). & 1910, Ann. S. Afr. Mus., V, p. 456 (Zwart Modder; Kenhardt). Hewitt, 1910, Ann. Tvl. Mus., II, p. 85 (Modder River, nr. Kimberley; Gräaff-Reinet). Werner, 1910, Jena. Denkschr., XVI, p. 306 (South Africa). Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 126 (Narudas Süd).

Ptenopus garrulus Hewitt, 1911, Ann. Tvl. Mus., III, p. 43 (Rietfontein. Gordonia). Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 149 (Ky Ky & Nosob). Power, 1933, Trans. Roy. Soc. S. Afr., XXI, p. 214 (Orange River Stn.; Prieska; Marydale; Kenhardt; Kakamas; Upington). Hewitt, 1935, Rec. Alb. Mus., IV, p. 305 (Okahandja). FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 264.

Ptenopus garrulus garrulus FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 524 (Oup River; Askham, on Kuruman River), and XVI, p. 331 (Kuke; Gomodimo, Kaotwe & Damara Pans, Kalahari).

Description: Head short and swollen, especially in the upper temporal region, almost as broad as long. Snout convex and rounded, a little longer than diameter of eye, but less than distance between the latter and the ear-opening. Upper eyelid well-developed and almost meeting the lower, which is rudimentary; diameter of eye less than its distance from nostril. Ear-opening oblique and slit-like. Rostral small, six-sided, slightly deeper than broad. Nostril pierced between two nasals, of which the anterior is the larger and usually separated from its fellow by one or two granules. Upper labials 7-10, lower 6-10. Mental small, longer but slightly narrower than adjacent lower labials. No chin-shields. Body moderately elongate and slightly depressed. A more or less marked transverse gular fold present. Limbs moderate; digits slender, each armed distally with a long pointed claw; fingers laterally compressed; toes depressed,

fringed laterally with long lanceolate scales. Head and body covered, above and below, with small uniform granular scales; those on the belly being slightly larger and more angular than on back. Tail short, cylindrical, tapering and covered with uniform, flat, squarish, juxtaposed to subimbricate scales, arranged in more or less regular transverse series and distinctly larger than those on back; in reproduced tails scales irregular in shape and arrangement. From one to three enlarged flattened tubercles, obtusely pointed above, on either side of base of tail in males, much reduced or absent in females.

Colour: Above, yellowish to pale chestnut brown, variegated with irregular vermiculations and blotches of orange-brown and pale yellow, together with occasional flecking of purplish; irregular and often indistinct bands on tail. Under parts white, with throat usually bright ochre to golden yellow in males.

Dimensions: Male (T.M. No. 15601—Askham), H. & B. 52, tail 33, length head 12, breadth head 11.2 mm.

Field Notes: These little geckos are restricted to the sandveld, often occurring in large numbers in suitable localities, where they live in small burrows; these latter vary from a foot to eighteen inches in depth and are usually set at a steep winding angle, under the lee of small bushes, shrubs or tufts of grass. In the late afternoon, just about sunset, they come to the entrances of their holes, and with their heads just about or below ground level, set up a continuous chirping in the form of a piercingly sharp and penetrating 'whick whick.' This noise, in such areas where these creatures are numerous, proves almost deafening, and is kept up throughout the twilight hours, usually ceasing abruptly however as soon as darkness falls. Occasionally individuals are encountered, which keep up their calling intermittently throughout the day. They are comparatively slow of movement and may be easily captured at night with the aid of a lamp, especially after rain, when they venture forth in search of food, consisting largely of termites. Mistakenly thought to be poisonous by the Bushmen and Hottentots, though actually quite harmless and inoffensive. Stomach contents made up of the remains of termites, ants, small beetles and hymenoptera, together usually with a considerable amount of sand which is taken in with the food.

Distribution: From the northern and north-central Cape Province through the Kalahari into the north-western Transvaal and Damara-land. Recorded localities: Douglas; Louisvale; Witdraai-Middelputs; Rietfontein, Gordonia (A.M.). Vaalpoort, Postmasburg Dist.; Niekerkshoop; Lower Molopo (K.M.). Ky Ky (K.M. & T.M.). Adendorp, Graaff-Reinet Dist. (P.E.M.). Upington; Kakamas (S.A.M.). Narudas Süd, Gt. Karasberg Dist. (S.A.M. & T.M.). Modder River. nr. Kimberley; Vryburg District; Oup River; Askham; Kuke, Gomodimo, Käotwe & Damara Pans, Kalahari; Gt. Saltpan, N. Tvl.; Waterberg & Okahandja, S.W. Afr. (T.M.).

Remarks: Types in the British Museum of Natural History. The Adendorp record (P.E.M.) is extremely doubtful.

PTENOPUS GARRULUS MACULATUS Gray.

(Plates I, fig. 3; IV, fig. 4 and XII, fig. 2).

Ptenopus maculatus Gray, 1865. P.Z.S. Lond., p. 640, pl. XXXVIII, fig. 1 (Damara-land). Cope, 1868, Proc. Ac. Philad. Nat. Sci., p. 321 ('Cape of Good Hope'; Note: probably from Little Namaqualand).

Ptenopus garrulus part., Boulenger, 1885, Cat. Liz., I, p. 15 (Damaraland). and 1910, Ann. S. Afr. Mus., V, p. 456 (Little Namaqualand). Hewitt, 1910, Ann. Tvl. Mus., II, p. 85. Werner, 1910, Jena. Denkschr., XVI, p. 306 (Prince of Wales Bay; Luderitzbucht). Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 126 (Alt Wasserfal, and Dassiefontein—Noakabib, Gt. Karasberg Dist.).

Ptenopus garrulus Boettger, 1886, Ber. Senck. Naturf. Ges., p. 10 (Angra Pequena). Fischer, 1888, Jahrb. Hamb. Wiss. Anst., V, p. 12 (Aus—Bethany). Boettger, 1894, Ber. Senck. Naturf. Ges., p. 88 (Rehoboth Dist.). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 11, fig. 7. Lampe, 1911, Jahrb. Nassau, Ver. Naturk., 64, p. 151 (Luderitzbucht). Gilchrist, 1911, South Afr. Zoology, p. 230. Nieden, 1913/14, Sitzber. Ges. Naturf. Freunde, Berlin, No. 10, p. 450 (Rehoboth & Kuibis). Rose, 1928, Nature Notes, No. 57, p. 1, text fig., and 1929, Veld and Vlei, p. 115, text fig. 74. Parker, 1936, Novit. Zool., XL, p. 131 (Mariental—Rehoboth).

Ptenopus garrulus maculatus FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 525 (Kanus; Haalenberg; Luderitzbucht; Soebatsfontein, L.N.). Hewitt, 1935, Rec. Albany Mus., IV, p. 306 (Rossing). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 5 (Damaraland), and 1937/38, Veröff. Deutsch. Kolon.—u. Uebersee Mus. Bremen, II, hft. 1, p. 10 (Luderitzbucht). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 160 (Gt. Fish Riv., nr. Berseba; nr. Port Nolloth; Port Nolloth-Klipfontein; nr. Kamaggas).

Description: Similar to typical *garrulus*, but distinguishable on the more obtuse snout; dorsal and ventral scales distinctly larger and more flattened; gular scales though small, are flattened and not granular.

Colour: Above, honey-yellow to pale brown, with five irregular orange to dark brown or blackish bands across the back, often broken up along the vertebral line forming two series of large irregular blotches; head and sides of body with irregular mottlings of brown. Tail with six to seven dark bands. Under parts creamy white.

Dimensions: Female (T.M.17823—nr. Berseba); H. & B. 55, tail 32.5, length head 12.8, breadth head 12.5 mm.

Distribution: From Little Namaqualand, northwards into Great Namaqualand and southern Damaraland. Recorded localities: Okahandja; Omataka River; Rossing (A.M.). Keetmanshoop (A.M., S.A.M. & T.M.). Luderitzbucht (A.M. & T.M.). Kuboos; Ababas Nauzerus; Marienthal (K.M.). Aus (K.M. & S.A.M.). Kraaiwater; Naroep; Henkries; Wolferton; Sandhochte; Steinkopf-Ramansdrift; Goodhouse; Jakhalswater-Violsdrift; Swart Modder; Kalkfontein south; Otjitambe (S.A.M.). Soebatsfontein; Kamaggas; Port Nolloth-Klipfontein; Orangemund; Klein Karasberg; Kanus; Haalenberg; nr. Berseba; Karibib; Rooibank (T.M.).

Remarks: Types in the British Museum of Natural History.

NARUDASIA Methuen & Hewitt.

Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 126 (type: *festiva*).

Digits long and slender, not dilated, strongly clawed terminally, feebly denticulated laterally but not fringed; inferiorly with a series of smooth transverse plates which, on basal half of digit, are somewhat enlarged and swollen into small pads; palmar surfaces covered with small smooth convex scales. Head and body depressed, covered above with small, smooth, slightly unequal, juxtaposed scales, polygonal on head and rounded on body; below, scales much larger and subimbricate. No distinct chin-shields, but median anterior gulars enlarged. Pupil vertical. No preanal nor femoral pores.

Endemic to South Africa, and represented by a single species.

Distribution: Great Namaqualand and southern Damaraland.

NARUDASIA FESTIVA Methuen & Hewitt.

(Text-fig. 1: Plates VI, fig. 1 and XII, fig. 3).

Festive Rock Gecko.

Narudasia festiva Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 127, pl. XIV, figs. 1 & 1a (Type locality: Narudas Süd, Great Karasberg District, S.W. Afr.). Barbour & Loveridge, 1929, Bul. M.C.Z., LXIX, No. 10, p. 307 (Gt. Karas Mtns.). Parker, 1936, Novit. Zool., XL, p. 131 (Satansplatz). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 161 (Farm 'Neudamm,' E. of Windhoek; Farm 'Barby,' W. of Helmeringshausen; Brukkaros Mtn., N. of Berseba).

Description: Head depressed, a little longer than broad, as broad as or a little narrower than neck. Snout rather pointed, almost twice diameter of eye. Ear-opening rounded, small, its distance from eye about equal to that between the latter and the nostril. Rostral twice

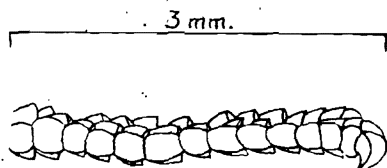


Fig. 1.

Fig. 1. *Narudasia festiva*, showing underside of 4th toe (after Methuen).

as broad as deep, with a short median cleft above. Nostril pierced between three nasal scales, rostral and 1st. upper labial; the enlarged anterior nasals (or naso-rostrals) usually in contact with one another behind rostral, sometimes separated; one or two pairs of scales, immediately behind nasorostrals, often somewhat enlarged and distinct from other scales on snout. Upper labials 7—9 (usually 7), lower 5—7 (usually 6). Mental elongate, at least twice as long as broad, subequal in length to, but much narrower than adjoining lower labials. Scales on snout polygonal, twice the size of those on back of head. Body depressed; scales on back small, rounded, juxtaposed, slightly unequal-sized, smaller than scales on snout; median anterior gular scales enlarged, polygonal or subhexagonal, much larger than those behind and on the sides, into which they graduate; scales on belly smooth, hexagonal, subimbricate and very much larger than dorsals. Limbs well-developed; digits long and slender, not dilated, strongly clawed, feebly denticulated laterally, covered above with small imbricate scales and below with a series of transverse plates, which are somewhat swollen into small pads basally; scales on soles of feet small, smooth and convex; on upper surface of tibia, scales large, imbricate and keeled. Tail depressed, longer than head and body, tapering, segmented and covered above with imbricate scales (much larger than on back), of which there are about 10 transverse rows to each segment; scales below much larger than above, strongly imbricate and arranged in irregular longitudinal series. No enlarged tubercles present on either side base of tail.

Colour: Above, greyish-, purplish-, reddish- to chestnut-brown (young usually olive brown), with a series of narrow, black, zigzag crossbars or stripes, which are pale-edged behind and bear white to cream spots in their angles. Tail coloured as on back or often olive yellow (particularly over distal half), barred with black, each bar edged behind with white; these cross-bars may continue to tip of tail or disappear over distal third, and are sometimes found completely encircling tail towards the tip; reproduced tails are

uniformly grey above and below. Lower surfaces of body dirty white to greyish, underside thighs and anal region dirty creamy yellow. Eye dark brown, with chestnut and golden brown tints.

Dimensions: Male (T.M. 17588—Farm 'Barby'), H. & B. 31, tail 38, length head 8, breadth head 7 mm.

Field notes: A rupicolous gecko, living in the cracks and crevices of rocks along mountain ravines or on open slopes. Very agile and quick of movement; seldom seen abroad during the day, except in the early morning or late afternoon. Stomach contents consist mainly of ants and small flies, together with a few other small rock-living insects. The eggs are oval and measure 7.6×6.0 mm.

Distribution: From the southern part of Great Namaqualand, northwards into Damaraland. Recorded localities: Gorob (A.M.), Narudas Süd, Gt. Karasberg Dist. (A.M., K.M. & T.M.), Barby, W. of Helmeringshausen; Brukkaros Mtn.; Neudamm, nr. Windhoek (T.M.).

Remarks: Types in the Transvaal Museum, Pretoria.

PALMATOGECKO Andersson.

Palmatogecko Andersson, 1908, Jahrb. Nassau, Ver. Wiesbaden, LXI, p. 299 (type: *rangei*). Hewitt, 1909, Ann. Tvl. Mus., II, p. 38, and 1910, p. 82. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 18.

Pelmatozecko Boulenger, 1910, Ann. S. Afr. Mus., V, p. 456.

Digits not dilated, with no trace of subdigital lamellae, but enveloped almost to the tips in a thick web of skin, which forms a broad palmar surface, uniformly granular above and below; fingers clawless, toes each with a minute claw terminally. Head and body uniformly granular above and below. Pupil vertical and eyelid distinct all round the eye. No preanal nor femoral pores.

Endemic to South Africa, and represented by a single species.

Distribution: The Namib Desert, from Great Namaqualand to Damaraland.

PALMATOGECKO RANGEI Andersson.

(Plates V, figs. I & 2 and XII, fig. 4).

Web-footed or Palmate Desert Gecko.

Palmatogecko rangei Andersson, 1908, Jahrb. Nassau, Ver. Naturk. Wiesbaden, LXI, p. 299, pl. III, figs. 1a, 1b & 1c (Type locality: Luderitzbucht). Hewitt, 1910, Ann. Tvl. Mus., II, p. 88, and 1911, III, p. 43. Lampe, 1911, Jahrb. Nassau, Ver. Naturk., 64, p. 152 (Luderitzbucht). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 18, text-figs. 15—17. Werner, 1915, in Michaelsen, Land- u. Süswasserfauna Deutsch-S.W. Afr., I, p. 331 (N. of Luderitzbucht). Barbour, 1926, Reptiles and Amphibians, p. 59, fig. 73. Proctor, 1928, P.Z.S. Lond., p. 917, text-fig. 1, pl. I (Luderitzbucht). Rose, 1929, Veld & Vlei, p. 115. Hewitt, 1935, Rec. Alb. Mus., IV, p. 309 (Swakopmund; Luderitzbucht; Pforte). FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 525 (Luderitzbucht). Loveridge, 1936, Field Mus. N.H. Zool. Ser., XXII, p. 48 (Namib Desert). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Swakopmund), and 1937/38, Veröff. Deutsch. Kolon.-u. Übersee Mus. Bremen, II, hft. 1, p. 10 (Luderitzbucht).

Pelmatozecko rangei Boulenger, 1910, Ann. S. Afr. Mus., V, p. 457.

Syndactylosaura schultzei Werner, 1910, Jena. Denkschr., XVI, p. 316, text-figs. 12a and 12b, pl. VI, figs. 3a—c (Luderitzbucht; Prince of Wales Bay).

Palmatogecko rangi Werner, 1910, Mittl. Naturh. Mus. Hamburg, XXVII, p. 3.

Description: Head triangular; orbital lobes very prominent and elevated; interorbital region narrow, from a third to half the length of upper eye-lid. Snout pointed, its length from $1\frac{1}{2}$ to $1\frac{3}{4}$ times diameter of eye. Nostrils widely separated, tubular and directed upwards, each pierced between a large anterior and two smaller posterior nasals, none of which touch either the rostral or upper labials. Rostral four-sided, similar in form to adjacent upper labials, but almost twice as broad, followed behind by a relatively large flattened scale separating the nasals anteriorly. Mental large, broader than adjacent lower labials, extending considerably behind, where it is rounded and lobular. Upper labials 10–12, lower 12–14. Ear-opening small, oblique and semi-circular. Eyes very large and protuberant, their diameter only slightly less than their distance from ear-opening. Habit slender; digits of fore- and hind limbs enveloped in a thick web of granular skin, obscuring from below the contours and giving a wax-like appearance; tips of fingers and toes protruding and free of web, 3rd and 4th fingers with whole of distal phalange free; all digits above with soft depressed nails terminally; fingers clawless, toes each with a minute claw terminally; fifth toe opposable, though normally directed backwards, while the other four toes are arranged fanwise forwards. Tail long, slender, smooth and rounded, somewhat compressed laterally towards the tip. 7–11 Enlarged scallop-like tubercles arranged longitudinally on each side of base of tail, large in males but small and inconspicuous in females. Upper surfaces covered with very small, rounded, homogeneous granular scales, which are so fine in texture as to give at first glance a naked appearance; below, scaling equally fine, but naked appearance is here not apparent, owing to heavy chalky-white pigmentation; scales on under surface of tail slightly larger than on body.

Colour: General appearance ghost-like, with vertebral column and internal organs visible through the semi-transparent skin of the back and sides. Above, flesh-pink to pale pinkish-brown, with irregular powderings of brown forming indistinct cross-bars or reticulations; a dark zig-zag band across snout behind nostrils reaching to anterior corners of eyes; a dark patch on cheek, usually linking up with a band from posterior corners of eyes and encircling occiput. Eyes remarkably beautiful; encircling eyelid lemon or sulphur yellow, with a blob-like projection anteriorly and a dark eyebrow streak above; the pupil is jet black, but during the daylight hours is marked only by a vertical chalky-white bar formed by the retracted iris edging the slit; the iris itself is also black, but is shot with gold and coppery tints, which appear to be more intense just above and below the vertical slit. Owing to the transparency of the skin, the eyes show up through the top of the head as large dull bluish shadows. Upper surfaces of limbs and outer surfaces of feet only, lightly stippled with brown. A lemon or sulphur yellow streak, dark-edged above, along each side from armpit to groin; a yellow blotch on each side of the neck just anterior to forelimb and another on each side behind the thighs. Under surfaces of head, body and limbs uniform chalky-white. Tail reticulately banded with brown above, uniform flesh pink below.

Dimensions: Male (T.M. 20767—Rooibank), H. & B. 60, tail 52, length head 17.2, breadth head 12.8 mm. Female (T.M. 15626—Luderitz-bucht), H. & B. 68, tail 50, length head 18.3, breadth head 14 mm.

Field notes: The habitat of this rare sand-living gecko appears to be localised to the dry areas of wind-blown sand found along the western parts of South West Africa. The webbed feet, acting in

snow-shoe fashion, enable it to move over the soft sand with the greatest ease, leaving little or no track behind. These geckos are fairly active and hold the body and tail well off the ground on their thin spindly legs. They are strictly nocturnal in habit, showing an active dislike to strong light of any kind. During the day they live in burrows, made usually under the lee of small bushes or shelving rock. When burrowing in the sand, first the hand and foot on the one side are used, the hand for digging and the foot for shovelling away the debris, then when the creature tires it changes over and the operation is continued with the other hand and foot. Termites appear to form their main source of food.

Distribution: Apparently restricted to the sandy wastes of the Namib Desert in S.W. Africa, ranging from Orange River Mouth in the south to Swakopmund in the north. Recorded localities: Swakopmund; Pforte (A.M.). Luderitzbucht (A.M., S.A.M. and T.M.). Charlottenthal Diamond Fields (K.M.). Conception Bay (S.A.M.). Orangemund; Rooibank (T.M.).

Remarks: Types in the Natural History Museum, Wiesbaden.

HOMOPHOLIS Boulenger.

Boulenger, 1885, Cat. Liz. Brit. Mus., I, p. 191 (type: *wahlbergii*).

Digits dilated, feebly webbed, with undivided transverse lamellae below and all but the inner digits armed with a well-developed retractile claw. Body covered above and below with small flat imbricate scales. Pupil vertical. Preanal and femoral pores absent.

Endemic to Southern Africa and represented by a single species.

Distribution: Portuguese E: Africa (south of the Zambesi), S. Rhodesia, Zululand, eastern and northern Transvaal to S.E. Bechuanaland.

HOMOPHOLIS WAHLBERGII (A. Smith).

(Text-fig. 2: Plates I, fig. 4; VII, fig. 1 and XII, fig. 5).

Wahlberg's Gecko.

Gecko *wahlbergii* A. Smith, 1849, Ill. Zool. S. Afr., Rept., Pl. LXXV, fig. 1 (Type locality: 'Country to the Eastward of Cape Colony', Kafferland; Note: Probably from Natal).

Homopholis wahlbergii Boulenger, 1885, Cat. Liz., I, p. 191 (Natal). Werner, 1896/98, Jahresb. Ver. Magdeburg, p. 140 (Transvaal). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 407 (Transvaal). Boulenger, 1907, P.Z.S. Lond., p. 592 (Coguna, Portu. E. Afr.), and 1908, Ann. Nat. Mus., I, p. 223 (Mseleni, Zululand). Chubb, 1909, P.Z.S. Lond., p. 592 (Matopos; Gwarda). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 459 (Delagoa Bay; Barberton; Salisbury). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 82 and 86 (Waterval Boven; Louws Creek; Krabbefontein; Shilowane; Woodbush; Palapye). Hewitt and Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 150 (Gaberones). Cott, 1934, P.Z.S. Lond., p. 148 (Amatongas). FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 264, and 1939, XX, p. 27 (Birchenough Bridge, S.R.).

Homopholis macrolepis Boulenger, 1885, Ann. Mag. Nat. Hist. (5) XVI, p. 474 (Delagoa Bay), and 1887, Cat. Liz., III, p. 489. Sclater, 1899, Ann. S. Afr. Mus., I, p. 102.

Description: Head broad, much broader than neck, not flattened. Snout very convex, short, equal to distance from eye to ear-opening, from $1\frac{1}{4}$ to $1\frac{1}{2}$ times diameter of eye. Ear-opening small and rounded. Rostral subquadrangular, twice as broad as deep. Nostril pierced between first upper labial and five or six nasal scales, the anterior-most of which is largest and separated from its fellow by from 1—5

four-sided granular scales, which are larger than adjoining scales on snout. Upper labials 11—13, lower 10—12. Mental trapezoidal, broader than, but subequal in length to, adjacent lower labials; bordering the mental and anterior labials behind is a row of enlarged chin scales, of which the median pair (in contact with mental) are largest and six-sided, passing behind abruptly or gradually into the minute granular scales on throat. Body and limbs moderate; digits short and thick-set, unequal, with a slight rudiment of a web present,

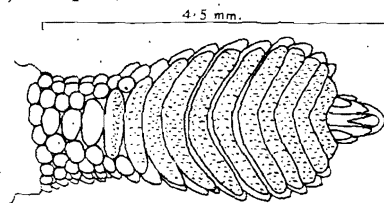


Fig. 2.

Fig. 2. *Homophotis wahlbergii* (T.M. No. 16015-Klaserie), showing underside of 4th toe.

except between the two outer toes; 10—12 transverse, slightly curved, undivided, adhesive lamellae below, narrowing proximally and passing into the transversely elongate scales under basal portion of digit. Scales on head minutely granular, slightly larger and more convex on snout. Body covered above and below with small, subequal, sub-hexagonal, imbricate scales; scales over back of thighs granular. Tail shorter than head and body, cylindrical, somewhat narrowed at base, tapering distally; covered above with scales similar to but smaller than those on back, below with larger scales.

Colour: Above, slate grey to greyish-brown or pale purplish-brown, uniform or with dark brown to black variegations forming a network, or 4—5 irregular wavy transverse bars or bands across occiput and back; usually a series of 6 pale spots down middle of back (first on nape and last on rump); often in males a conspicuous black band running dorsolaterally from behind eye over shoulder and there fading out, or continuing (but narrowing along back) to lumbar region. Below white, with or without small scattered dark brown spots. Tail usually indistinctly banded above, sometimes uniform and always so in reproduced tails. Iris bronze, with dark purplish venation.

Dimensions: Male (T.M. 16015—Klaserie), H. & B. 96, tail 90, length head 26, breadth head 22 mm.

Field notes: These large diurnal geckos are found living in holes of old tree-trunks or among rocks and boulders, and in the latter case seem to prefer those lying in river-beds near the water; here they lie in wait during the day to snap up unwary flying insects, particularly grasshoppers. The eggs, measuring on the average 15×11 mm., are laid two at a time, and deposited in rock cracks or in holes in trees. The original tails are very easily lost, and it is seldom that a specimen is obtained in which the tail is not reproduced. When handled roughly they often emit prolonged squeals and will bite furiously.

Distribution: From Portuguese East Africa (S. of the Zambesi) to Zululand in the East, extending westwards through Southern Rhodesia, eastern and northern Transvaal, and thence southwards along the eastern border of the Bechuanaland Protectorate to Gaborones. Recorded localities: Bikita, S.R. (A.M.). Matopo Hills

(A.M. & R.M.). Rikatla; Mochudi; Gaberones (K.M.). Barberton (K.M., S.A.M. & T.M.). Mseleni; Ubombo (N.M.). Nelspruit (N.M. & T.M.). Bulawayo (R.M., S.A.M. & T.M.). Masieni; Delagoa Bay; M'Fongosi; Hunyani River; nr. Salisbury (S.A.M.). Dhlebene; Mahlabatini; N'Gxwala Hill, nr. Ubombo; Manaba; Birchenough Bridge; Louws Creek; Hectorspruit; Machabezane; Waterval Boven; Punda Maria; Pretoriuskop; Klaserie; Farm 'Venice' on Brak Riv., E. Tvl.; Farms 'Skelm' and 'Malta,' nr. Leydsdorp; Shilowane; Woodbush; Medingen; Haenertsburg; Krabbefontein; Pietersburg; Munnik; Hookberg; Brak River, N. Tvl.; Geelhoutkop; Mahalapye (T.M.).

Remarks: Type in the British Museum of Natural History.

PHYLLODACTYLUS Gray.

- Phyllodactylus* Gray, 1830, Spicil. Zool., p. 3 (type: *pulcher*). Fitzinger, 1843, Syst. Rept., p. 94. Gray, 1845, Cat. Liz., p. 150. Boulenger, 1885, Cat. Liz., I, p. 76. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39, and 1910, p. 78. Boulenger, 1910, Ann. S. Afr. Mus., V, pp. 456 and 457. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 11.
- Sphaerodactylus* part., Wagler, 1830, Nat. Syst. Amph., p. 143.
- Phyllodactylus* part., Wiegmann, 1834, Herp. Mex., p. 20. Dumeril and Bibrion, 1836, Erp. Gen., III, p. 388.
- Diplodactylus* part., Wiegmann, 1834, Herp. Mex., p. 20. Fitzinger, 1843, Syst. Rept., p. 94. Gray, 1845, Cat. Liz., p. 148.
- Euleptes* Fitzinger, 1843, Syst. Rept., p. 95.
- Discodactylus* Fitzinger, 1843, Syst. Rept., p. 95.
- Paroedura* Gunther, 1879, A.M.N.H. (5) III, p. 218.

Digits slender, free, clawed, more or less dilated distally, with a single pair of large adhesive plates at extremity inferiorly, separated by a longitudinal groove into which the claw is retractile; scales on distal expansion above, larger than and well-differentiated from those on basal portion of digit, which below bears a median series of transversely enlarged scales or tubercles. Body covered above with small, granular or flattened, smooth or keeled, juxtaposed or subimbricate scales, which are uniform or intermixed with larger tubercles; below, scales smooth and imbricate. Pupil vertical. Femoral pores absent; preanal pores usually absent, exceptionally present (*P. lineatus*).

Represented in South Africa by three species (*P. peringueyi* probably not South African), and four subspecies.

Distribution: South and South West Africa. Recorded also from Tropical America, Islands of the Mediterranean, Madagascar and Australia.

Key to the South African Species and Subspecies of

PHYLLODACTYLUS.

- 1 Back covered with small granules, smaller than scales on snout; first upper labial not entering nostril; rostral without a median cleft above 2
- Back covered with small, flattened, subimbricate, scales, equal to or larger than scales on snout; first upper labial entering nostril; rostral with a median cleft above 4
- 2 Granules on back intermixed with large, keeled tubercles; nostril pierced between rostral and four nasal scales
P. peringueyi Boul., p. 21
- Granules on back uniform, no enlarged tubercles present; nostril pierced between rostral and three nasal scales 3

- 3 Snout rounded; rostral without a short mesial backward prolongation; usually a single rounded granular internasal; from 7—8 scales in a straight line from nostril to orbit; a more or less regular continuous row of transversely enlarged scales under basal portion of toes

P. porphyreus porphyreus (Daud.), p. 22

Snout a little longer and more pointed than in typical *porphyreus*; 2—3 small granular internasals; rostral as in typical *porphyreus*; scales on snout somewhat small, there being about 9 scales in a straight line from nostril to orbit; subdigital scales as in typical *porphyreus*

P. porphyreus cronwrighti Hwt., p. 24

Snout somewhat narrowed and pointed; rostral with a short mesial backward prolongation; a single granular internasal, a little longer than broad; scales on snout similar to those in typical *porphyreus*; no regular continuous median row of transversely enlarged scales under basal portion of toes

P. porphyreus namaquensis Hwt., p. 24

- 4 Chin shields absent; inferomedian row of scales on basal portion of digits distinctly enlarged

P. microlepidotus Fitz., p. 25

Chin shields present; inferomedian row of scales on basal portion of digits somewhat feebly enlarged 5

- 5 Head somewhat convex; snout rounded; the two median chin-shields much larger than remainder; mental equal to or a little broader behind than adjoining lower labials; usually with dark markings above forming a network design, transverse or longitudinal stripes

P. lineatus lineatus Gray., p. 26

Head elongate and flattened; snout somewhat pointed; the two median chin shields only a little larger than remainder; mental much narrower behind than adjoining lower labials; irregular dark transverse stripes above

P. lineatus essexi Hwt., p. 27

Head strongly depressed but not elongate; snout obtusely pointed; the two median chin shields a little larger or distinctly larger than remainder; mental narrowing to a point behind; short, semicircular, transversely arranged, dark markings above, each partly enclosing a pale spot

P. lineatus rupicolus Fitz., p. 28

PHYLLODACTYLUS PERINGUEYI Boulenger.

Peringuey's Gecko.

Phyllodactylus peringueyi Boulenger, 1910, Ann. S. Afr. Mus., V. pp. 457 and 493 (Type locality: Little Namaqualand and Chelsea Point, nr. Port Elizabeth). Hewitt, 1937, Ann. Nat. Mus., VIII, p. 206.

Description: Head flattened above and about $1\frac{1}{2}$ times as long as broad. Snout elongate, pointed, almost twice diameter of eye and a little longer than distance between eye and ear-opening; latter small and rounded. Nostril pierced between rostral and four small nasal scales. Rostral twice as broad as deep, without a median cleft.

Scales on snout granular and keeled, larger and more strongly keeled than scales on back of head. Upper and lower labials 6—7. No definite chin shields present. Upper head scales keeled, a little larger on snout than on back of head, where keeling is feeblar and scales are more granular. Body rather elongate; back covered with coarse, more or less keeled granules, intermixed with numerous enlarged, longitudinally oval, strongly keeled tubercles. Below, gulars small, rounded, and granular; belly scales smooth, flat, cycloid and imbricate. Limbs short; median row of subdigital scales well-developed and transversely enlarged; distal expansions rounded and moderately large.

Colour (in spirit): Above, pale brown with two more or less distinct dark brown longitudinal bands on each side; the upper (or dorsolateral) from back of head and extending on to tail, narrowed anteriorly but widening considerably behind; the lower (or lateral) narrow and extending from nostril, through eye and above ear-opening to groin. Lower surfaces whitish.

Dimensions: Male (S.A.M. 8628—Port Elizabeth), H. & B. 27.5, tail incomplete, length head 6.8, breadth head 4.4, forelimb 7.5, hindlimb 8 mm.

Distribution: A single specimen of this species has been recorded from each of two widely separated localities, viz. Little Namaqualand and Port Elizabeth respectively, and no further specimens have since been collected; as pointed out by Hewitt (1937, p. 206), they are very much alike and in such an identical state of preservation, that the probability is that they were taken at the same time from one locality. They are so far removed from our other local species of the genus, that it appears most unlikely that they are South African, and according to Hewitt agree best with the American group of species.

Remarks: Types in South African Museum, Cape Town.

PHYLLODACTYLUS PORPHYREUS PORPHYREUS (Daudin).

(Plates I, fig. 5, VI, fig. 2 & XII, fig. 6).

Marbled Gecko.

Gecko porphyreus Daudin, 1802, Hist. Rept., IV, p. 130 (Type locality:

Cape of Good Hope). Merrem, 1820, Tent. Syst. Amph., p. 43.

Sphaerodactylus porphyreus Wagler, 1830, Syst. Amph., p. 143.

Phyllodactylus porphyreus part., Dumeril & Bibron, 1836, Erp. Gen., III, p. 393.

?*Phyllodactylus porphyreus* A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 6

Phyllodactylus porphyreus Boulenger, 1885, Cat. Liz., I, p. 87, pl. VII, fig. 5 (Cape of Good Hope; Cape Town), and 1887, III, p. 482 (Cape Town). Werner, 1896/98, Jahresb. Ver. Magdeburg, p. 140 (Cape Colony). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Table Mountain, nr. Cape Town). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 457 (Cape Peninsula; Cape Town; Cape Flats; Wynberg; Ceres; Calvinia; Sir Lowry's Pass; Caledon; Clanwilliam; Little Namaqualand). Hewitt, 1910, Ann. Tvl. Mus., II, p. 85 (Tokai, Cape Peninsula). Werner, 1910, Jena. Denkschr., XVI, p. 307 (Cape Flats; Warmbad, G.N.). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 12. Gilchrist, 1911, S. Afr. Zoology, p. 230. Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 149 (Kalk Bay). Argel, 1922, Bull. Mus. Hist. Nat. Paris, 28, p. 354 (Cape Town). Essex, 1925, Rec. Alb. Mus., III, p. 336 (Kirstenbosch & Constantia, Cape Peninsula). Rose, 1926, Ann. S. Afr. Mus., XX, p. 491 (Robben Island). Essex, 1927, P.Z.S. Lond., p. 930: Hewitt, 1927, Rec. Alb. Mus., III, p. 345. Rose, 1928, Nature Notes, No. 57, p. 2 and text fig., and 1929, Veld & Vlei, p. 114, text fig. 73 and p. 117 (nr. Cape Town).

Description: Head oviform, much longer than broad. Snout rounded, slightly longer than the distance between eye and ear-opening, from $1\frac{1}{2}$ to $1\frac{2}{3}$ times diameter of eye. Forehead slightly concave. Ear-opening small, rounded or oval, its diameter from one third to half that of eye. Rostral four-sided, twice as broad as deep, with no cleft above. Nostril pierced just above suture of rostral and first labial, and bordered by the former and three small nasals, the first upper labial being separated off by the narrow lowermost nasal; the enlarged upper nasals or nasorostrals are separated by a roundish granule (exceptionally in contact or separated by two granules). Upper and lower labials 8—9. Mental trapezoid or pentagonal, subequal to adjacent lower labials; no regular chin-shields, but with enlarged polygonal scales which pass gradually into the minute granules of the gular region. Body somewhat elongate. Limbs moderate; digits slightly depressed with a series of regular, transversely enlarged scales inferiorly, which break up abruptly into small scales just short of the digital expansion, 7—8 complete lamellae under 4th toe; digital expansions distinctly broader than basal section, rounded and subtrapezoid; diameter of adhesive disc on 4th toe about two-thirds that of eye. Head and body above covered with uniform, small granules which are largest on the snout and smallest on the hinder part of head; usually about 7—8 scales in a straight line from nostril to orbit. Below, abdominal scales moderate, smooth, subhexagonal and slightly imbricate, larger than scales on back; gular scales minute and granular. Tail long, cylindrical and tapering in its posterior half, longer than head and body; covered above with uniform, small, smooth scales, larger than on back, and arranged in more or less regular transverse series or rings; scales below similar to those above, but larger. A single enlarged flattened scale on either side base of tail near vent.

Colour: Head usually darker than body, which is greyish to light brown or greyish-brown above, uniform, variegated or marbled with reddish- to dark brown; a dark streak from nostril through eye, above ear-opening and fading out on side of neck; labials often each with a dark brown spot. Below uniformly whitish, or occasionally with dark speckling along sides of belly. Specimens sometimes with a pale grey stripe or band down the middle of the back from the nape to base of tail; tails often reddish-brown, with pale mesially contiguous bars above.

Dimensions: Male (T.M. No. 19633—De Wet), H. & B. 48, tail 54, length head 11.5, breadth head 9 mm.

Field notes: These prettily marked geckos are very common in the Cape Peninsula and on Robben Island. They are found under dead logs and the loose bark of trees and shrubs in secluded situations, and under stones and in rock crevices on the mountain slopes. The eggs, measuring from $8.7-10.5 \times 7.5-8$ mm., are deposited under stones etc.; often anything from 15 to 20 eggs may be found together, clearly indicating the use of the same nest by several females. The newly-hatched young measure from 30 to 40 mm. in length, and for a short time are covered with a thin white membrane, which sloughs off quickly revealing the bright juvenile colouring.

Distribution: Western and south-western Cape Province. Recorded localities: Robben Island; St. James (A.M.). Kalk Bay; Mossel Bay (A.M. & K.M.). Cape Peninsula (A.M., K.M., R.M. & S.A.M.). Cape Town (A.M. & S.A.M.). Hermanus; Constantia Nek; Table Mountain; Cape Flats; Hout Bay; Sir Lowry's Pass; Rivierzondereinde Mts.; Riversdale Mts.; Clanwilliam; Langkuil, nr. Doorn Riv.; Jutten Island; Saldanha Bay; Nieuwoudtville; Bokkeveld Mts., nr. Calvinia (S.A.M.).

Wynberg (S.A.M. & T.M.). Tokai; Bishop's Court; De Wet; Grootvadersbosch; Garcia Pass (T.M.).

Remarks: Type in Paris Museum? It appears doubtful that this species occurs in South West Africa, and Werner's record (1910, p. 307) from Warmbad is accepted with reserve, pending confirmation by further collecting.

PHYLLODACTYLUS PORPHYREUS CRONWRIGHTI Hewitt.

Cronwright's Marbled Gecko.

Phyllodactylus porphyreus cronwrighti Hewitt, 1937, Ann. Nat. Mus., VIII, p. 205 (Type locality: Cape St. Francis; also recorded from Karatara, nr. Knysna).

Phyllodactylus porphyreus Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Knysna).

Description: An eastern subspecies of *porphyreus* distinguishable on the following: Snout a little longer and slightly more pointed; body generally more slender; scales on snout smaller and more numerous, there being about 9 in a straight line from nasals to orbit (usually 7 or 8 in *porphyreus*); length of snout about twice diameter of eye and $1\frac{2}{5}$ times distance from eye to ear-opening; the enlarged upper nasals are separated in middle line by 2–3 small granular scales (usually only one in *porphyreus*); posterior margin of rostral more or less straight as in typical form; subdigital scales uniformly enlarged; tail long and slender, subcylindrical, indistinctly segmented, with 7 rows of scales to each segment above.

Colour: Above, pale grey to greyish-brown, with darker markings which may be distinct or very faint; when present, dark markings consist of an open network over neck and back, with indications of irregular crossbarring, a dark stripe from nostril to eye, and sometimes an irregular faintly marked dorsolateral streak over anterior half of body. Tail with narrow, irregular, wavy cross-bars above and incipient dark longitudinal stripes below, occasionally a single stripe may extend full length of tail. Lower surfaces dirty yellowish, and finely stippled with grey, with or without faintly marked stripes on throat and underside thighs.

Dimensions: Type (A.M. No. 7649—Cape St. Francis), H. & B. 43.5, tail (reproduced) 40, length head 11, breadth head 8.2 mm. Fully grown specimens attain to about 50 mm. for H. & B.

Field notes: Somewhat uncommon, and rather partial to living in old stone walls and suchlike situations.

Distribution: Apparently confined to the southern coastal area of the Cape Province, between Cape St. Francis and Knysna. Recorded localities: Cape St. Francis (A.M.), Karatara (A.M.), Knysna (S.A.M.).

Remarks: Types in Albany Museum, Grahamstown.

PHYLLODACTYLUS PORPHYREUS NAMAQUENSIS Hewitt.

Namaqua Marbled Gecko.

Phyllodactylus porphyreus namaquensis Hewitt, 1935, Rec. Alb. Mus., IV, p. 320, pl. XXIX, fig. 4 (Type locality: Bitterfontein, Little Namaqualand).

Description: Distinguished from typical *porphyreus* on the following: Snout somewhat narrower and more pointed; upper border of rostral with a short mesial backward prolongation; the single median granular internasal, separating the nasorostrals, not rounded

but slightly longer than broad; no regular continuous row of transversely enlarged scales on basal portion of toes inferiorly, although one or two such scales may occur here and there; under the fingers enlarged scales show better development and a series of as many as three may occur under longest finger; a single enlarged tubercular scale on either side base of tail near vent.

Colour: Above, greyish-brown with pale-grey variegations which tend to form irregular cross-bands on back and dorsolateral stripes on nape; a whitish patch present at base of tail; a pale streak from nostril to upper anterior corner of eye. Lower surfaces creamy white with greyish infusions on sides of belly.

Dimensions: Type (A.M. No. 6943—Bitterfontein), H. & B. 46, tail (reproduced) 39.5, length head 12, breadth head 8.7 mm.

Field notes: An exceedingly active little gecko, living among granite boulders in association with *Cordylus peerii*.

Distribution: Known only from the type locality, i.e. Bitterfontein, Little Namaqualand, but possibly occurring also over the northern parts of Little Namaqualand as well.

Remarks: Type in the Albany Museum, Grahamstown.

PHYLLODACTYLUS MICROLEPIDOTUS FitzSimons.

Smithers' Gecko.

Phyllodactylus microlepidotus FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 5
(Type locality: Pakhuis Pass, Clanwilliam District).

Description: Head moderately depressed, almost as broad as long, flattened above, much broader than neck. Snout broadly rounded, short, about $1\frac{1}{4}$ times diameter of the rather large eye, a little longer than distance from eye to ear-opening; latter oval, and slightly oblique. Scales on snout small, slightly convex, granular (much smaller than in *lineatus*); top and back of head covered with minute granules; scales on back and limbs subequal in size to those on snout, flattened, subgranular, juxtaposed or subimbricate. Rostral subpentagonal, about twice as broad as deep, with a median cleft above. Nostril pierced between rostral, first upper labial and three nasals; nasorostrals separated by two granules, placed one behind the other. Upper labials 9—10, lower 7. Mental large, much broader at base than adjacent labials, narrowing behind to about two-thirds anterior breadth. No chin shields. Gular scales granular, minute, convex, a little smaller over middle and base of throat; ventrals more or less flattened, imbricate, larger than scales on back. Distal expansions of digits broader than basal portions; adhesive plates rectangular; median row of subdigital scales on middle digits distinctly enlarged transversely, the largest being the third or fourth from distal end. No preanal pores present. Scales on tail flattened, in regular transverse rows, juxtaposed above and distinctly larger than scales on snout or back; scales below much larger and subimbricate.

Colour: Above, grey to slate colour, with blackish reticulate markings on head and body, arranged on back in irregular transverse series and edged behind with series of small white specks; tail banded with black, each band edged behind with a series of white specks. Below, greyish-white, chin and throat densely infused with grey.

Dimensions: Female (Type, S.A.M. No. 19259), H. & B. 28, tail 39.5, length head 8, breadth head 7.5 mm.

Distribution: Known only from the type locality, i.e. Pakhuis Pass, Cedarbergen, Clanwilliam District, C.P.

Field notes: Taken on granite boulder, under a loose slab which was about to flake off, presumably rupicolous.

Remarks: Type in South African Museum, Cape Town.

PHYLLODACTYLUS LINEATUS LINEATUS Gray.

(Text-figs. 3 & 4).

Striped or Lineated Gecko.

Phyllodactylus lineatus Gray, 1838, in Alexander, Exped. Africa, II, p. 268 (Type locality: Cape of Good Hope). A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 6 ('in different parts of the Cape Colony'). Boulenger, 1885, Cat. Liz., I, p. 92. Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Buffel's River, Laingsburg). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 457 (Tulbagh; Clanwilliam; O'okiep; Little Namaqualand; Bushmanland). Hewitt, 1910, Ann. Tvl. Mus., II, p. 86, and 1927, Rec. Alb. Mus., III, p. 343, and 1932, Ann. Natal Mus., VII, p. 119 (nr. Garies), and 1937, VIII, p. 203 (Kleinzee; Tulbagh; Garies; Kamieskroon). FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 6 (Pakhuis Pass, Clanwilliam District).

Diplodactylus lineatus Gray, 1845, Cat. Liz., p. 150.

Phyllodactylus lineatus part., FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 527 (Hondekliip Bay), and 1938, XIX, p. 161 (Klipfontein).

Description: Head oviform, a little longer (up to $1\frac{1}{5}$ times) than broad, convex or somewhat flattened. Snout rounded, about $1\frac{1}{4}$ times distance from eye to ear-opening and from $1\frac{1}{2}$ to almost twice diameter of eye. Ear-opening small, slightly oblique and rounded. Scales on

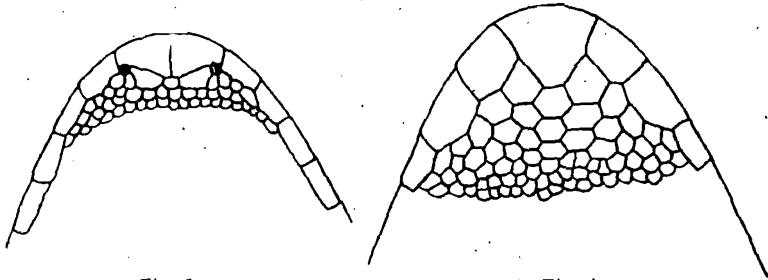


Fig. 3.

Fig. 4.

Fig. 3. *Phyllodactylus l. lineatus* (S.A.M. No. 19259-Garies), showing arrangement of scales on upper surface of snout. $\times 10$.

Fig. 4. *Phyllodactylus l. lineatus* (S.A.M. No. 19259), showing arrangement of scales on chin. $\times 10$.

snout granular and convex, the largest being subequal to those on back, much larger than the small convex to slightly flattened granules on back of head. Rostral sub-pentagonal with a median cleft above, about twice as broad as deep. Nostril pierced between rostral, 1st. upper labial and three nasal scales, of which the anteriormost (or nasorostral) is the largest and separated from its fellow by a rounded granule. Upper and lower labials 6—7. Mental subpentagonal, as broad as or a little broader behind than adjoining lower labials. A row of small chin shields present, the median pair in contact with the mental and considerably larger than any of the others; behind the chin shields are convex granules which become gradually smaller towards base of throat. Body short. Limbs moderate; digits depressed in their basal part, with three rows of scales inferiorly, of which the median series are moderately enlarged transversely; digital expansions rounded, not much broader than basal portion and each bearing below

a pair of large, sub-rectangular adhesive plates (diameter of sub-digital disc on 4th. toe about half diameter of eye). From 4—6 (usually 5) preanal pores in males; arranged in an angular series. Upper surfaces of body and limbs covered with uniform, smooth, flat, rounded, subimbricate scales; below, scales on belly smooth, hexagonal and imbricate, much larger than scales on back. Tail cylindrical, subequal in length to head and body, tapering, covered above with regular transverse rows of uniform, smooth, imbricate scales which are much larger than those on back; below, scales much larger than above and even larger than belly scales. Two to three enlarged tubercular scales on either side base of tail near vent.

Colour: Above, greyish-brown, with either a net-work design of dark brown to black over the back or with series of blackish, wavy, transverse or longitudinal lines over head, body and base of tail; a dark streak from nostril through eye to just above and behind ear-opening; a series of small pale ocellate spots along the flanks; below, dirty white, with or without darker infusions. Tail indistinctly barred or striped above, often tinged with buff to pinky-brown distally.

Dimensions: Male (T.M. 19598—De Wet), H. & B. 25.5, tail 27, length head 7, breadth head 5.6 mm.

Field notes: A somewhat elusive little gecko, usually found among dead leaves and brushwood, under the loose bark of trees and shrubs and occasionally under stones. The eggs, which are laid in early spring, are more or less rounded and average 7.8×6.8 mm.

Distribution: South-western Cape Province and Little Namaqualand. Recorded localities: Saldanha Bay; Garies-Kamiesberg (A.M.). Port Nolloth (N.M.). Tulbagh; Ceres; Pakhuis Pass; Garies; Kamieskroon; Lekkersing (S.A.M.). De Wet; Hondeklip Bay; Klipfontein (T.M.).

Remarks: Types in the British Museum of Natural History.

PHYLLODACTYLUS LINEATUS ESSEXI Hewitt.

Essex's Striped Gecko.

Phyllodactylus essexi Hewitt, 1925, Rec. Alb. Mus., III, p. 343, text figs. 3 & 4, pl. XV, fig. 2 (Type locality: Hounslow, near Grahamstown). Essex, 1925, Rec. Alb. Mus., III, p. 337, and 1927, P.Z.S. Lond., p. 931, pl. II, fig. 2 (Hounslow).

Phyllodactylus lineatus essexi Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 21, pl. VII, fig. 4.

Description: Closely allied to typical *lineatus* but distinguishable on the following: Head more elongated and flattened; snout rather pointed, equal to distance between eye and ear-opening and at least $1\frac{1}{2}$ times as long as diameter of eye. Rostral at least twice as broad as deep, subrectangular to five-sided, with the median cleft extending to the centre. Nasorostrals separated by one or more granules. Upper labials 7, lower 5—6. Mental subpentagonal, broader than first lower labial at base, narrowing distally, where it is much narrower than first labial. A row of 5—6 chin-shields, subequal in size or median pair a little larger. A row of four preanal pores in males. Three to four enlarged scales projecting on either side base of tail, distinct in males, small or absent in females.

Colour: Above greyish-brown, with nine to ten irregular, undulating transverse black lines across back; a dark stripe from snout through eye to just above ear-opening; a second dark stripe from ear along side of neck to shoulder; below whitish. Tail pale

brown (pinkish-brown in juveniles), with indistinct dark cross stripes above.

Dimensions: Male (Type, A.M.), H. & B. 25, tail 26, length head 6.7, breadth head 4.7 mm.

Field Notes: Found under stones and in crevices on rocky hills near Grahamstown. The young show a superficial resemblance to *P. porphyreus*.

Distribution: Known only from the type locality, Hounslow, which lies in the Fish River Valley, near Grahamstown. Recorded localities: Hounslow (A.M., S.A.M. & T.M.).

Remarks: Types in Albany Museum, Grahamstown.

PHYLLODACTYLUS LINEATUS RUPICOLUS FitzSimons.

(Plate VI, fig. 3).

Phyllodactylus lineatus part. FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 527 (Van Rhy'n's Pass), and 1938, XIX, p. 161 (Springbok-Kamaggas).

Phyllodactylus lineatus rupicolus FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 162 (Type locality: Between O'okiep and Springbok, Little Namaqualand).

Description: Distinguished from typical *lineatus* on the following: Head oviform, about $1\frac{1}{2}$ times as long as broad, strongly depressed and flattened above; snout obtusely pointed, a little over $1\frac{1}{2}$ times diameter of eye and about $1\frac{1}{3}$ times distance from eye to ear-opening, which is oval and distinctly oblique. Nostril pierced between rostral, first upper labial, a large nasorostral and 2-3 small nasals; nasorostrals usually widely separated from one another by from one to three granular scales (usually two), sometimes in contact. Rostral large, subrectangular, at least twice as broad as deep, median cleft above not quite reaching half way down. Upper labials 7-8, lower 6-7. Mental large, subtriangular to subpentagonal in shape, broader at base than adjoining lower labials, narrowing to a point behind where it extends well beyond posterior margin of adjacent labials; a row of enlarged chin shields present, median pair in contact with mental and larger than others which become gradually smaller posteriorly. Scales on snout slightly convex, larger than those on occiput, which are much flattened; on back scales more or less flattened, subgranular, rounded, juxtaposed, subequal to or a little larger than those on snout. Below, scales on throat small, subequal to those on occiput; on belly large, flattened, hexagonal, subimbricate and much larger than scales on back. Body strongly depressed; limbs moderate; digits with infero-median row of scales slightly enlarged, distal adhesive plates slightly elongate and rhomboidal. A short slightly curved row of 4-6 preanal pores in males. Tail depressed, covered above with flattened, subimbricate scales which are larger than on back and arranged in more or less regular transverse series; below, scales larger, imbricate, irregular, larger than on belly. On either side base of tail near vent is a slightly oblique row of 3 enlarged flattened scales.

Colour: Above, greyish-brown with numerous dark brown to black semicircular, transversely arranged markings, each of which contains within its posterior curve a pale greyish to slate semicircular area bearing a small yellowish to pinkish spot; a narrow black streak from nostril through eye to just above ear-opening. Lower surfaces greyish-white. Tail tinged with olive yellow and with similar markings above as on back.

Dimensions: Male (T.M. 18161—Btwn. O'okiep and Springbok), H. & B. 28, tail 29.3, length head 6.6, breadth head 5.2, forelimb 8.8, hindlimb 11.5 mm. (Attains to about 34 mm. for length H. & B.).

Field notes: Rupicolous and taken only in cracks and crevices. Diurnal and very quick and active. Eggs white and elliptical, measuring 7.9 × 6.0 mm., deposited in rock crevices. Stomach contents consist almost exclusively of termites.

Distribution: Little Namaqualand, southwards to Wittebergen, southwestern Cape Province. Recorded localities: O'okiep-Springbok; Springbok-Kamaggas; Van Rhy'n's Pass; Pakhuis Pass; Elandskloof; Michell's Pass; Wittebergen nr. Matjesfontein (T.M.). Kleinzee (S.A.M.).

Remarks: Types in Transvaal Museum, Pretoria.

OEDURA Gray.

Oedura Gray, 1842, Zool. Miscell., p. 52, and 1845, Cat. Liz., p. 147 (type: *marmorata*). Boulenger, 1885, Cat. Liz., I, p. 104. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39, and 1910, p. 78. Boulenger, 1910, Ann. S. Afr. Mus., V, pp. 456 & 458. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 12. Hewitt, 1925, Rec. Alb. Mus., III, p. 353, and 1927, p. 402. *Phyllodactylus* part., Dumeril & Bibron, 1836, Erp. Gen., III, p. 388. *Pachyrus* Fitzinger, 1843, Syst. Rept., p. 94.

Digits free, clawed, dilated, with a raised distal phalange bearing a discoid dilation consisting of a pair of large adhesive plates below, separated by a longitudinal groove into which the claw is retractile; at distal end of basal portion inferiorly are one or two pairs of smaller adhesive lamellar plates. Head and body usually strongly depressed; body covered above with homogeneous, juxtaposed to subimbricate scales or granules, below with smooth juxtaposed to imbricate scales. Pupil vertical. Preanal pores present in males; no femoral pores.

Well represented in South Africa by 14 species and subspecies, which are for the most part rupicolous and found from sea-level to mountain top.

Distribution: Eastern Cape Province through Pondoland and Basutoland to Zululand, northern Transvaal and Southern Rhodesia; also occurring in Little Namaqualand and perhaps Damaraland. Recorded also from Australia.

Key to the South African Species and Subspecies of *OEDURA*.

- 1 Head scales granular and more or less convex; naso-rostrals widely separated 2
- Head scales usually flattened; naso-rostrals in contact or narrowly separated 7
- 2 Rostral usually separated from the nostril 3
- Rostral entering the nostril 4
- 3 Rostral widely separated from nostril; 7—8 preanal pores in males; 5 rows of scales to each segment on tail

O. halli Hwt., p. 31

Rostral narrowly separated or just touching nostril; 13—15 preanal pores in males; 6, rows of scales to each segment on tail

O. nivaria Boul., p. 33

- 4 Tail unsegmented; toes slender 5
 Tail segmented; toes stout 6
- 5 Naso-rostrals separated by a single granule, which is much larger than those adjoining; scales on back subimbricate; mental much narrowed behind, subtriangular; 13–15 preanal pores in males
O. pondolia pondolia Hwt., p. 34
- Naso-rostrals separated by a granule equal in size to those adjoining; scales on back juxtaposed; mental not strongly narrowed behind, subpentagonal; 10 preanal pores in males
O. pondolia marleyi Fitz., p. 35
- Naso-rostrals separated by a granule much smaller than those adjoining; scales on back more or less juxtaposed; mental subpentagonal; 17 preanal pores in males
O. pondolia multiporis Hwt., p. 36
- 6 Median row of subdigital scales on basal portion of digits strongly enlarged transversely; scales on back flattened and imbricate; 12 preanal pores in males
O. amatolica Hwt., p. 36
- Median row of subdigital scales on basal portion of digits not strongly enlarged transversely, except for one or two distally; scales on back granular and often somewhat pointed; 6–9 preanal pores in males
O. tembulica Hwt., p. 37
- 7 Chin shields absent or but feebly differentiated 8
 Chin shields enlarged and distinct 12
- 8 Rostral entering nostril 9
 Rostral not entering nostril 11
- 9 Naso-rostrals in contact with one another throughout their length; 13–15 preanal pores in males
O. africana Boul., p. 38
- Naso-rostrals in short contact with one another or narrowly separated; 6–10 preanal pores in males 10
- 10 Mental as large as or larger than adjoining lower labials; the proximal pair of adhesive plates below each median digit usually well-developed and distinct
O. transvaalica transvaalica Hwt., p. 39
- Mental usually markedly smaller than adjoining lower labials; the proximal pair of adhesive plates below each median digit usually poorly developed or absent; head more depressed than in typical *transvaalica*
O. transvaalica platyceps Hwt., p. 40
- 11 A row of 4 small longitudinally elongate scales adjoining mental and the much elongated anterior lower labials behind; 6–7 preanal pores in males
O. karroica karroica Hwt., p. 41
- A row of 5–7 small transversely elongate scales adjoining the mental and the moderately elongate anterior lower labials behind; 4 preanal pores in males
O. karroica wilmoti Hwt., p. 41

12 Naso-rostrals in long contact with one another; tail unsegmented; 14—16 preanal pores in males

O. langi Fitz., p. 42

Naso-rostrals in short contact or separated by a small granule; tail segmented; 8—10 (usually 8) preanal pores in males

O. numaquensis Fitz., p. 43

OEDURA HALLI Hewitt.

(Text-figs. 5—7).

Hall's Thick-tailed or Mountain Gecko.

Oedura nivarica part., Hewitt, 1927, Rec. Alb. Mus., III, p. 401 (Herschel; Cala; Masite).

Oedura halli Hewitt, 1935, Rec. Alb. Mus., IV, p. 321, pl. XXIX, figs. 1 and 2 (Type locality: Telle Junction, nr. Palmietfontein, Herschel District, C.P.), and 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 21, pl. VII, figs. 2 and 3 (Herschel; Cala). Power, 1939, S. Afr. Journ. Sci., XXXVI, p. 374 (Roma Mission Station, Basutoland).

Description: Related to *O. nivarica*. Head depressed, covered above with granular scales, those on snout being somewhat flattened and distinctly larger than the very small more convex granules on back of head. Snout obtusely pointed or rounded, a little longer than distance from eye to ear-opening, about $1\frac{1}{2}$ times diameter of eye. Ear-opening small and rounded. Nostril pierced between three nasal scales and 1st. upper labial, well separated from rostral; the uppermost nasal (or nasorostral) much larger than the other two nasals together, and separated from its fellow behind the rostral by a granular scale which is much larger than scales immediately behind. Rostral 5-sided, usually a little less than twice as broad as deep. About 9 upper and 9 lower labials. Mental as broad as or a little narrower or broader than adjoining labials, narrowing slightly behind. A row of 12 or more enlarged polygonal chin shields, the two median (in contact with mental behind) being the largest and more or less hexagonal in shape. Scales on back granular and juxtaposed, much larger than those on back of head and on nape, subequal to or a little smaller than scales on snout; scales on throat very small and subequal in size to those on back of head; over belly, scales large, flat, subhexagonal and imbricate. Digits short, each with two pairs of adhesive plates at the distal end of the basal portion inferiorly; a median row of enlarged scales on basal portion of each digit, terminating in a transversely enlarged scale adjoining the adhesive plates. In males a series of 7—8 preanal pores, pierced in an angular row of elongate scales. Tail a little longer than head and body, somewhat depressed and segmented, each segment with 5 rows of scales above and 4 below; scales on basal part of tail similar to those on back, but rapidly passing into the larger, smooth, flattened, subquadrangular, imbricate scales over remainder of tail; reproduced tails are unsegmented, and covered with flat imbricate scales arranged in more or less regular transverse rows, larger below. An oblique row of about three blunt tubercles on either side base of tail in males.

Colour: Above, pale grey to greyish-brown with dark brown to blackish pale-edged reticulations over back, usually consisting of 6 or 7 partly fused, irregularly oblique, transverse bands. Head and limbs above, often with irregular blackish markings. Tail with dark crossbands, or irregularly marked when reproduced. Lower surfaces white to greyish-white. Newly hatched young are pale grey with light brown transverse bands and minute speckling of white.

Dimensions: Male (T.M. 19183—Telle Junction), H. & B. 61, tail (partly reproduced) 62, length head 15.5; breadth head 13.8 mm. A large male in Albany Museum, measures 64 mm. for head and body and 74 mm. for tail.

Field notes: A montane form, living in rock cracks and crevices on the higher, open mountain slopes. Nocturnal and insectivorous (mainly ants and small beetles). The eggs, like those of other geckos, are soft and sticky when first laid but harden rapidly on exposure to the air; they are deposited in pairs, and firmly attached to rock surfaces under loose flakes, etc., where quite considerable numbers, laid by different females, are often found together. The eggs are oval and measure from 12.5—16 × 10.0—12 mm., and are partly incubated when laid about midsummer, the young usually emerging a month or so later. Newly hatched specimens average about 42 (22.5 ± 19.5) mm. in total length.

Distribution: Apparently confined to the mountainous districts of the north-eastern Cape Province and Basutoland. Recorded localities: Telle Junction, Herschel Dist. (A.M., N.M. & T.M.); Majuba Nek, Herschel District; nr. Cala; Masite, nr. Morija, Basutoland (A.M.). nr. Giants Castle, Basutoland (N.M.).

Remarks: Types in the Natal Museum, Pietermaritzburg. This form is closely allied to *O. nivaria*, and may eventually prove to be only subspecifically distinct.

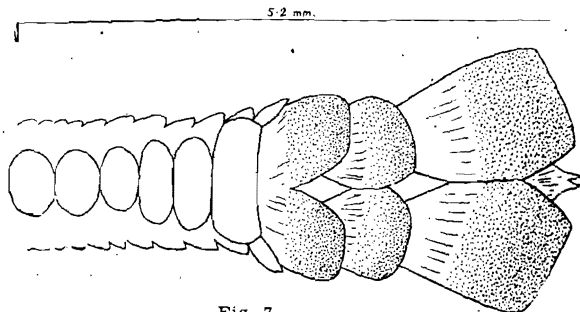
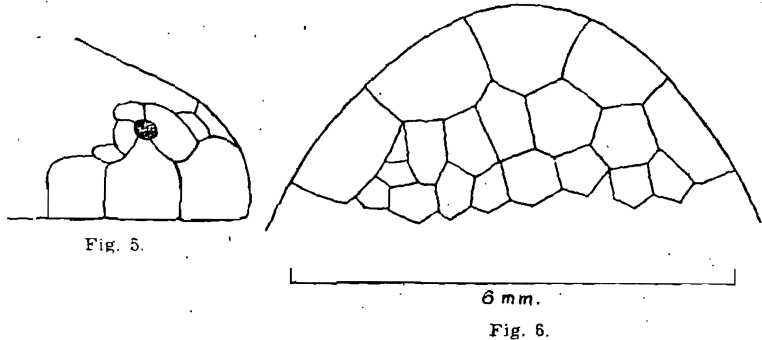


Fig. 7. *Oedura halli* (N.M.-Cotype), showing underside of 3rd toe.

OEDURA NIVARIA Boulenger.

Snowy Thick-tailed or Mountain Gecko.

Oedura nivaria Boulenger, 1894, P.Z.S. Lond., pp. 608 and 726, pl. XLVII, figs. 1 and 1a (Type locality: Drakensberg, Natal).

Oedura nivaria part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 458 (Top of Drakensberg Range, N.W. Natal). Hewitt, 1910, Ann. Tvl. Mus., II, p. 86, and 1927, Rec. Alb. Mus., III, p. 401 (Tugela River, Mont-aux-Sources).

Description: Head moderate, oviform, much depressed, covered above with round convex granules which are very small on back of head and much larger on snout. Snout as long as or slightly longer than distance between eye and ear-opening, from $1\frac{1}{2}$ to $1\frac{3}{4}$ times diameter of eye. Ear-opening small, oval, oblique. Rostral more or less 4-sided, about twice as broad as deep, narrowly separated from or just entering nostril at its extreme upper corner. Nostril pierced between 1st. upper labial and 3 to 4 (usually 3) nasal scales, of which the uppermost (or nasorostral) is the largest and well separated from its fellow by a single granule which is much larger than others on snout. Upper labials 8—10, lower 8—10. Mental a little broader at base than first lower labial, narrowing somewhat behind; adjoining mental and anterior lower labials behind, is a series of about 6 flattened polygonal chin shields which pass gradually into the very small gulars; median pair of chin scales largest and usually longer than broad. Scales on back rounded to suboval, convex, uniformly granular and as large as or a little smaller than scales on snout. Below, scales on throat very small and granular, subequal to those on occiput; on belly, smooth, imbricate and much larger than dorsals. Digits strongly dilated with two pairs of large adhesive plates at distal extremity of the basal portion inferiorly; an inferomedian row of enlarged scales on basal portion of digit. A curved row of 13—15 preanal pores in males, usually in continuous series (sometimes in two series with a simple scale in the middle) and pierced in posterior half of a row of scales which are a little larger and more elongate than those adjoining. Tail a little longer than head and body, depressed, tapering to a fine point, segmented basally with 6 rows of scales to each segment above and 4—5 below. A slightly oblique row of 3—4 enlarged bluntly pointed tubercles on either side base of tail near vent in males.

Colour: Above, light brown, with darker mottlings and irregular dark brown wavy transverse bands on back. Lower surfaces creamy white. Tail with dark brown to blackish zig-zag or chevron-like transverse spots or bars, edged behind over distal portion of tail with whitish annuli. Reproduced tail usually uniformly grey above and below.

Dimensions: Male (N.M. No. 1221—Fort Nottingham), H. & B. 53, tail 59, length head 14, breadth head 12.2 mm. Type specimen has H. & B. 56 mm.

Field notes: Monticolous, living in rock cracks and crevices, and taken even at the highest altitudes within the snow-line.

Distribution: Drakensberg (from foothills to summit), Natal. Recorded localities: Tugela River (about 5 miles from Falls), Mont-aux-Sources (A.M.). Giants Castle; Fort Nottingham (N.M.).

Remarks: Type in British Museum. Boulenger in his original description states "nostril between five scales;" this is incorrect, as an examination of the type reveals that nostril is pierced between 4 scales, i.e. three nasals and 1st. upper labial.

OEDURA PONDOLIA PONDOLIA Hewitt.

(Text-figs. 8 & 9).

Pondo Thick-tailed Rock Gecko.

Oedura pondolia Hewitt, 1925, Rec. Alb. Mus., III, p. 346, pl. XVI, fig. 2 (Type locality: Mbotyi River Mouth, Lusikisiki, C.P.). Godfrey, 1926, Blythswood Review, III, pt. 31, p. 82, and pt. 32, p. 94. Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 21 (Port St. Johns; Coffee Bay; Pondoland Coast).

?*Oedura nivaria* part., Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Durban).

Oedura africana part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 458 (Kentani; Port St. Johns; Durban).

Description: Head depressed. Snout obtuse, in length about $1\frac{1}{5}$ to $1\frac{1}{4}$ times distance from eye to ear-opening, $1\frac{2}{3}$ diameter of eye. Nostril pierced between the rostral, first upper labial and three nasal scales, of which the uppermost is the largest and separated from its fellow by one or two granular scales, which are much larger than any of the scales adjoining; the two lower nasals are well differentiated from scales on snout by their larger size. Rostral twice as broad as deep. Upper labials 8–10, lower 8–9. Mental large, much broader at base than first lower labial, narrowing sharply behind and thus more or less subtriangular in shape. Scales behind mental and anterior labials very large, six-sided, each being almost as long as a series of five of the small, rounded scales on middle of throat. Head scales granular, slightly convex, smallest on back of head. Scales on back somewhat flattened, subimbricate and much larger than on back of head but smaller than on snout. Below scales on throat subgranular and a little larger than those on back of head; belly scales large, smooth, flat, imbricate and at least twice as large as those on back. Preanal pores 13–15 in males, arranged in a continuous angular series. Digits rather slender, each with two pairs of well-developed adhesive plates at the distal end of the basal portion inferiorly; an inferomedian row of subcircular, or slightly broader than long, scales along each digit, gradually increasing in size and terminating distally in one or two transversely enlarged scales, 6–7 in number under middle toes. Tail longer than head and body, slender, cylindrical, tapering to a fine point, unsegmented and covered with scales arranged in regular transverse series. A short oblique row of 3 or 4 rounded tubercles (uppermost largest) on either side base of tail in males.

Colour: Above, greyish-white with irregular or broken up transverse bands of dark brown, one on occiput and five on back; a dark stripe from nostril through eye and above ear to side of neck; canthus rostralis pale; upper surface head with indefinite brownish infuscations. Tail with dark brown crossbands. Lower surfaces creamy to dirty white.

Dimensions: Male (Type, A.M. No. 4897), H. & B. 47, tail (partly reproduced) 53, length head 12, breadth head 9.2 mm.

Field notes: Usually found living in the cracks and crevices of rocks, often on cliffs actually overlooking the sea; also found frequenting the walls of houses and kraals, or in the thatch of native huts.

Distribution: The coastal areas of the Transkei, Pondoland and Natal. Recorded localities: Mbotyi River Mouth, Lusikisiki; Coffee Bay; Mquanduli District (A.M.). Port St. Johns (A.M., K.M. &

S.A.M.). South Coast, Natal (D.M.). Margate (N.M.). Kentani; Durban (S.A.M.).

Remarks: Types in the Albany Museum, Grahamstown.

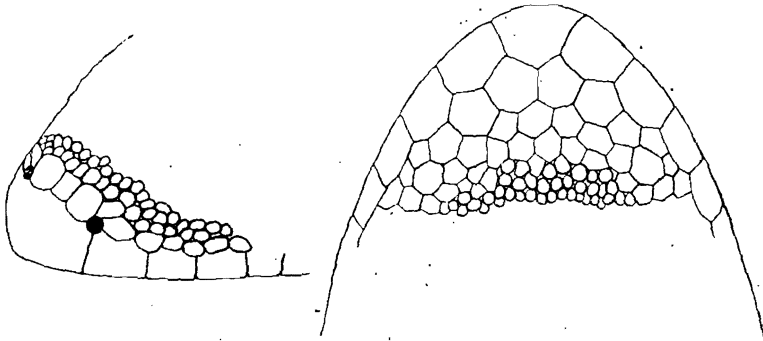


Fig. 8.

Fig. 9.

Fig. 8. *Oedura p. pondolia* (A.M. No. 4897-Lusikisiki), showing arrangement of scales on upper surface of snout. $\times 6$.

Fig. 9. *Oedura p. pondolia* (A.M. No. 4897), showing arrangement of scales on chin.

OEDURA PONDOLIA MARLEYI FitzSimons.

(Text-figs. 10. & 11).

Marley's Thick-tailed Rock Gecko.

Oedura marleyi FitzSimons, 1930, Ann. Tvl. Mus., XIV, p. 22, text-figs. 4 and 5 (Type locality: False Bay, Zululand).

Description: Distinguishable from typical *pondolia* on the following: Enlarged upper nasals (or nasorostrals) very much larger than other nasals, and separated from one another behind rostral by a small granular scale, which is equal in size to those immediately behind; the two lower nasals on each side very small and almost indistinguishable from adjoining scales on snout. Mental large and subpentagonal, much broader at base than adjacent lower labials, narrowing posteriorly where it is subequal in breadth to first lower

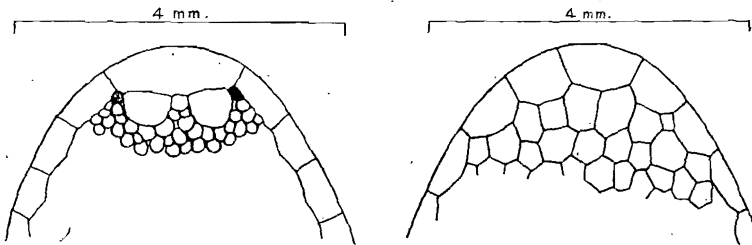


Fig. 10.

Fig. 11.

Fig. 10. *Oedura p. marleyi* (Type, T.M. No. 13184), showing arrangement of scales on upper surface of snout.

Fig. 11. *Oedura p. marleyi* (T.M. No. 13184), showing arrangement of scales on chin.

labial at its base. Scales on back small, granular and juxtaposed. Two pairs of adhesive plates at the distal end of the basal portion of each digit inferiorly, the proximal pair much the smaller and poorly developed; infero-median row of scales feebly enlarged transversely, terminating distally in a dumb-bell shaped scale. A slightly angular row of 10 preanal pores in the male.

Colour: Above, greyish-white tinged with brown, with a series of six dark brown, irregular, wavy, transverse bands (first across back of head and other five on back); a dark brown streak from nostril through eye, passing above ear-opening and fading out on neck just anterior to arm; head with irregular infuscations of dark brown. Lower surfaces dirty white to creamy.

Dimensions: Subadult male (Type, T.M. 13184), H. & B. 30.5, tail (reproduced) 25, length head 8, breadth head 6.5 mm.

Distribution: Known only from the type locality, viz.: False Bay, off St. Lucia Lake, Zululand.

Remarks: Type in Transvaal Museum, Pretoria.

OEDURA PONDOLIA MULTIPORIS Hewitt.

?*Oedura nivaria* part., Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Transvaal).

Oedura pondolia multiporis Hewitt, 1925, Rec. Alb. Mus., III, p. 348 (Type locality: 'Clearwaters,' Haenertsburg, N. Tvl.). FitzSimons, 1930, Ann. Tvl. Mus., XIV, p. 24.

Description: Closely allied to typical *pondolia*, but distinguishable on the following: Large upper nasals (or nasorostrals) separated from one another behind rostral by a single granular scale, which is smaller than scales immediately posterior; 8—10 upper and 9—11 lower labials. Mental subpentagonal, not nearly so narrowed behind as in *pondolia*. Scales on back rounded, slightly convex and juxtaposed. An angular series of 17 preanal pores in male. Digits somewhat slender with inferomedian row of scales on basal portion not enlarged nor differentiated from adjoining scales, except for the last two (just proximal to distal expansion), which are moderately enlarged transversely or divided in two.

Colour (in spirit): Above, greyish with dark brown, somewhat coarse, reticulate markings, which tend to form indefinite transverse bands on back. Lower surfaces greyish-white, a little darker on tail than belly.

Dimensions: Male (Type, T.M. 3420), H. & B. 53, tail 59, length head 14.3, breadth head 11.5 mm.

Field notes: Found in a rock crevice on hillside at altitude of 5000 to 6000 feet.

Distribution: Known only from the type locality, viz. Farm "Clearwaters," Haenertsburg, N. Transvaal.

Remarks: Type in the Transvaal Museum, Pretoria.

OEDURA AMATOLICA Hewitt.

Amatola Thick-tailed Mountain Gecko.

Oedura amatolica Hewitt, 1925, Rec. Alb. Mus., III, p. 349, pl. XVI, fig. 3 and pl. XVII, fig. 2 (Type locality: Summit of the Amatola Range, near Hogsback, C.P.). Essex, 1925, Rec. Alb. Mus., III, p. 337, and 1927, P.Z.S. Lond., p. 931, pl. II, fig. 3 (Hogsback). Hewitt, 1927, Rec. Alb. Mus., III, p. 402 (Katberg summit; Stutterheim). Fitz-Simons, 1930, Ann. Tvl. Mus., XIV, p. 23 (Lushington, Alice District). Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 21, pl. VIIa, figs. 1 & 2 (nr. Dohne Peak, Stutterheim).

?*Oedura africana* part., Hewitt, 1911, Ann. Tvl. Mus., III, p. 43 (Pirie).

Description: Head oviform, moderately depressed, covered with convexly granular scales, largest on snout and smallest on occiput. Snout rounded, slightly longer than distance from eye to ear-opening, and a little over $1\frac{1}{2}$ times diameter of eye. Nostril pierced between

rostral, first upper labial and three nasal scales, of which the uppermost (or nasorostral) is the largest and separated from its fellow behind rostral by an enlarged granule. Rostral barely twice as broad as deep. Upper labials 8—9, lower 7—9. Mental large, subtriangular to subpentagonal in shape, slightly broader at base than adjacent labials, narrowing behind. Enlarged chin shields present. Body stout and heavy, covered above with somewhat flattened, subimbricate scales which are distinctly smaller than largest scales on snout. Digits fairly stout, each with two pairs of well-developed adhesive plates at distal end of basal portion inferiorly; an infero-median row of 6—7 transversely enlarged scales, of which the most distal one is the largest and dumbbell-shaped. Usually 12—13 preanal pores in males, arranged in a slightly angular row with its apex directed anteriorly; sometimes (in specimens from Dohne Peak, nr. Stutterheim) there are only 8 preanal pores, arranged in two converging series of 4, and usually separated in the middle by a normal scale. Tail somewhat depressed, with segmentation showing on sides only; reproduced tails unsegmented; an oblique row of 4 tubercles on either side base of tail in males.

Colour: Above, brownish-grey, with 7 to 8 irregular, wavy or zig-zag, dark brown bands across back; a dark infusion on loreal region. Lower surfaces uniform whitish. Tail banded above.

Dimensions: Female (T.M. 12712—Lushington), H. & B. 50, tail (partly reproduced) 48, length head 13.5, breadth head 11.3 mm. Fully adult specimens attain to a length of 60 mm. for head and body.

Field notes: A montane gecko, found under stones on upper mountain slopes as high as 6000 feet.

Distribution: Apparently confined to the Amatola Mountains and immediate neighbourhood. Recorded localities: Katberg & Hogsback, Amatola Mountain range (A.M.). Dohne Peak, nr. Stutterheim (A.M. & S.A.M.). Nr. Lushington, Alice District (A.M. & T.M.).

Remarks: Types in the Albany Museum, Grahamstown.

OEDURA TEMBULICA Hewitt.

Tembu Thick-tailed Rock Gecko.

Oedura tembulica Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 415 (Type locality: Cofimvaba, Tembuland, C.P.), and 1927, Rec. Alb. Mus., III, p. 402 (Braam Nek, nr. Imvani; Nanusi's (= Nonesis?) Nek, nr. Queenstown; Mackay's Nek, nr. Cala); and 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 22.

Description: Related to *O. amatolica*. Snout rounded, its length being a little greater than distance from eye to ear-opening, and from $1\frac{1}{4}$ to twice diameter of eye. Nostril pierced between rostral, 1st. upper labial and three nasal scales of which the uppermost is the largest and in contact with or separated from its fellow behind rostral by a single enlarged granule. 9 Upper and 8—9 lower labials. Mental broader at base than adjoining lower labials, narrowing very strongly behind (sometimes subtriangular in shape), and there much narrower than first labial, which is distinctly longer than broad. Chin shields small or a series of 5—6 moderately enlarged polygonal shields in contact with mental and anterior labials behind. Scales on snout granular, rounded and convex, much larger than on back of head. Body stout; scales on back granular and sometimes obtusely pointed, more or less juxtaposed and not so flattened as in *amatolica*. Two pairs of adhesive plates at distal end of basal portion of digits inferiorly; infero-median row of digital scales rounded to oval except for the terminal one (adjoining the distal expansion), which

is greatly enlarged transversely. A curved or slightly angular row of 5—9 preanal pores in males. Tail subequal in length to head and body, flattened at base and segmented (segments indicated laterally by faint constrictions), with 6—7 rows of scales to each segment above and 4 below.

Colour: Above, greyish to greyish-brown, with indefinite blackish markings or mottlings, which often form zig-zag crossbands on back; a dark streak from nostril, through eye to just above ear-opening. Lower surfaces creamy white, with stippling of greyish-brown in old specimens. Tail with dark, dentated crossbars and spots at intervals.

Dimensions: Male (A.M. 5333—Mackay's Nek), H. & B. 52.5, tail 53, length head 13.6, breadth head 11.6 mm. Female (Cotype, A.M. 5044), H. & B. 57, tail reproduced, length head 14.5, breadth head 13.1 mm.

Field Notes: Found in the cracks of sun-slit rocks lying on open hillsides.

Distribution: Apparently confined to the mountainous areas of the Queenstown District and south-western Tembuland, Cape Province. Recorded localities: Cofimvaba (A.M. & S.A.M.). Braam Nek, nr. Imvani (A.M., P.E.M. & T.M.). Nonesis Nek nr. Queenstown; Mackay's Nek, nr. Cala (T.M.).

Remarks: Types in Albany Museum, Grahamstown.

OEDURA AFRICANA Boulenger.

African Thick-tailed Rock Gecko.

Oedura africana Boulenger, 1888, A. M. N. H. (6) II, p. 137 (Type locality: Walvis Bay, Damaraland), & 1890, P.Z.S. Lond., p. 77. Sclater, 1899, Ann. S. Afr. Mus., I, p. 102. Hewitt, 1910, Ann. Tvl. Mus., II, p. 86. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 12. Hewitt, 1925, Rec. Alb. Mus., III, p. 353.

Oedura africana part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 458 (Walvis Bay). Hewitt, 1911, Ann. Tvl. Mus., III, p. 43.

Description: Head oviform and strongly depressed, a little longer than broad. Snout obtusely rounded, about $1\frac{1}{2}$ times diameter of eye and subequal to distance from eye to ear-opening; latter small, oval and oblique. Nostril pierced between rostral, first upper labial and three nasal scales, of which the lowermost is smallest and the uppermost much the largest and in good contact with its fellow behind rostral. Scales on snout granular, rounded and slightly convex towards sides, a little smaller than the more flattened, hexagonal scales towards the supraorbital region; scales on back of head smaller than on snout, while those on interorbital region are smallest of all. Upper and lower labials 10. Mental small, equal to or a little narrower than adjacent labials, narrowing feebly behind. Four enlarged polygonal chin-shields present, in contact with mental and anterior lower labials, passing behind into the small, flattened, granular, gular scales which are a little smaller than on occiput. Body depressed and covered above with uniform, small, rounded, flattened or slightly convex granules which are subequal to or slightly larger than those on back of head; below, scales smooth, flat, hexagonal, imbricate and larger than dorsals. Digits strongly dilated, the basal portion being as broad as distal expansion; each digit with two pairs of adhesive plates at distal end of basal portion inferiorly; subdigital scales not enlarged, except for the distalmost one which is somewhat transversely enlarged and dumbbell-shaped. An angular series of 13—15 preanal pores in males. Tail strongly depressed basally, distinctly segmented above and below and deeply grooved on the

sides; scales in regular transverse series, the dorsals being sub-quadrangular, imbricate and larger than on back, ventrals larger and strongly imbricate; about 7 rows of scales to each segment above and 5 below.

Colour (in spirit): Above, pale greyish-brown with about 5 dark brown, somewhat zig-zag, transverse bands on back and 3 on tail, together with scattered dark spots on occiput and back. Lower surfaces greyish-white.

Dimensions: Male (Cotype, S.A.M. No. 1055), H. & B. 64, tail 65, length head 14, breadth head 11.8, forelimb 19.2, hindlimb 26.8 mm.

Distribution: Known only from the type locality, viz. Walvis Bay, Damaraland.

Remarks: This form is represented only by the two co-types (one in the British Museum and the other in the South African Museum), which are stated to have been taken from the stomach of a snake (*Pythonodipsas carinata* Boul.). From its strongly depressed form, this species obviously comes from a rocky habitat, and as the areas in and around Walvis Bay consist of nothing but sanddune-covered desert, it appears probable that the only two known specimens and their snake host came from some other locality, and were possibly washed up on floating debris, which comes ashore in great quantities on this coast. Boulenger in his original description states that there are no chin-shields, but an examination of the cotype in the South African Museum reveals the presence of 4 distinct chin-shields.

OEDURA TRANSVAALICA TRANSVAALICA Hewitt.

Transvaal Thick-tailed Rock Gecko.

Oedura transvaalica Hewitt, 1925, Rec. Alb. Mus., III, p. 350, pl. XVI, fig. 1 and pl. XVII, fig. 1 (Type locality: N'Jelele River, Zoutpansberg District, N. Tvl.). FitzSimons, 1930, Ann. Tvl. Mus., XIV, p. 24.

Description: Somewhat slender in general form. Head and body moderately depressed. Snout rounded, a little longer than distance from eye to ear-opening, from $1\frac{3}{4}$ to almost twice diameter of eye. Nostril pierced between rostral, first upper labial and three nasal scales, of which the uppermost (or nasorostral) is the largest and usually in short contact with its fellow behind rostral, exceptionally just separated. Rostral over twice as broad as deep. Mental 5-sided, subequal to and much like the adjoining lower labials. No well-differentiated chin shields, the enlarged polygonal scales immediately behind the mental and anterior labials passing gradually into the small gular scales. 9—10 Upper and 8—9 lower labials. Scales on snout large and subhexagonal, a little larger than the enlarged and much flattened scales on orbits. Scales on back flattened, rounded to suboval, juxtaposed, subequal to scales on orbits, much larger than granular scales on back of head and nape. Scales on belly smooth, subhexagonal, flattened, subimbricate and slightly larger than those on snout. Digits moderately stout, each with two pairs of adhesive plates at distal end of basal portion inferiorly; the proximal pair of plates often poorly developed and barely discernible on outer digits, and usually absent in young specimens; an infero-median row of transversely enlarged scales on basal portion of all digits except the 1st. A transverse row of about 6 preanal pores in males, each pore pierced in the posterior half of a longitudinally enlarged scale. Tail depressed and much thickened at base, as long as or slightly longer than head and body and tapering gradually, strongly

segmented, especially at base where there are well-marked constrictions on sides of tail; about 7 rows of scales above and 5 below to each segment. An oblique row of 3-4 small tubercles on either side base of tail in males.

Colour (in spirit): Above, pale greyish to greyish-brown with irregular dark brown cross-bands or blotches of which there is one across back of head and 5 on back. Tail with about 7 dark cross-bands. Lower surfaces creamy white.

Dimensions: Male (Cotype, T.M. 3488), H. & B. 61.5, tail incomplete, length head 14, breadth head 11.8 mm. Female (Cotype, T.M. 3487), H. & B. 59, tail 64, length head 14, breadth head 12 mm.

Field notes: Found living in rock cracks and crevices among granite boulders on small koppies in the bushveld. Stomach contents consist for the most part of Heteropterous bugs and grasshoppers.

Distribution: Known only from the type locality, viz. N'Jelele River, Zoutpansberg District, N. Transvaal. Recorded localities: N'Jelele River (A.M. & T.M.).

Remarks: Types in Transvaal Museum, Pretoria.

OEDURA TRANSVAALICA PLATYCEPS Hewitt.

(Plates I, fig. 6, VI, fig. 5 and XIII, fig. 1).

Oedura transvaalica platyceps Hewitt, 1925, Rec. Alb. Mus., III, p. 353. pl. XVI, fig. 4 (Type locality: Umtali, S. Rhodesia; recorded also from Matopos). FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 25 (nr. Devuli River Bridge, 7 mls. W. of Birchenough Bridge, S.R.).

Description: Very similar to typical *transvaalica*, but distinguished on the following characters: Head more strongly depressed. Snout a little more pointed and scales thereon more distinctly flattened. Mental small, 5-sided, much smaller than 1st lower labial on either side and also much narrower at base than latter. Often only a single pair of adhesive plates present at end of basal portion of median digits inferiorly in adults, second pair when present usually much reduced. Enlarged nasals or nasorostrals in contact with one another behind rostral or separated by an upward prolongation of the rostral in front and a single granule of varying size behind. A slightly curved row of 6-10 preanal pores in males. Segments of tail each with 7-9 rows of scales above and 4-6 below. Ventral scales regularly hexagonal, larger than scales on snout.

Colour: Light greyish to greyish-brown with dark brown cross-bands (usually irregular and broken up) on back; lower surfaces creamy white, often slightly greyish on chin and under tail. Tail banded with dark brown; reproduced tails not banded but with dark zig-zag streaks. In juveniles, the dark wavy, cross-bands above, are clearly marked, there being about 6 on body from nape to rump; a dark streak on either side of snout; a short narrow streak below eye; a curved streak arising on upper temporal region and passing inwards round back of head, but separated from its fellow behind by an elongate spot between their ends (in adults these dark streaks and markings on head are indistinct or absent); pale creamy yellow spots often present on sides of body and on limbs.

Dimensions: Male (A.M. No. 7250—Mtoko), H. & B. 67, tail 70, length head 14.5, breadth head 13.8 mm. Female (A.M. No. 8187—Bikita), H. & B. 68, tail (partly reproduced) 55, length head 14.5, breadth head 13.9 mm.

Field notes: Found in thick bushveld country, living in the cracks and crevices of granitic boulders which outcrop extensively over certain areas of Southern Rhodesia.

Distribution: Southern Rhodesia. Recorded localities: Musami; Mtoko; Empandeni; btwn. Filabusi & Shabani; Bikita (A.M.). Matopos (R.M.). Nr. Umtali (S.A.M.). Devuli River Bridge (T.M.).

Remarks: Type in South African Museum, Cape Town.

OEDURA KARROICA KARROICA Hewitt.

Karoo Thick-tailed Rock Gecko.

Oedura nivaria part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 458. (Albany Division).

Oedura karroica Hewitt, 1925, Rec. Alb. Mus., III, p. 348, text-fig. 1 (Type locality: Albany District, C.P.), and 1927, p. 402, and 1937, Guide-Vert. Fauna E. Cape Prov. S. Afr., II, p. 22.

Description: Head depressed and flattened; snout pointed, covered above with large, strongly flattened, subcircular scales which are much larger than those on back of head. Nostril pierced between three nasal scales and 1st upper labial, well separated from rostral; the large upper nasal (or nasorostral) in contact with its fellow behind rostral, forming a fairly long median suture. Mental and first two lower labials on either side much elongated, the former at its base about as broad as adjoining labials, but narrowing considerably behind where it is less than half its anterior breadth; anterior labials narrowing but slightly behind and extending beyond mental. No definite chin shields, but scales adjoining mental and anterior lower labials somewhat elongate longitudinally and merging gradually into the smaller flattened gular scales which are subequal in size to those on back of head. Scales on back flattened, juxtaposed, to subimbricate, larger than those on back of head, but a little smaller than those on snout. Ventral scales flattened, subcircular and imbricate, larger than scales on back. Digits each with two pairs of adhesive plates at distal end of basal portion inferiorly; median row of scales under digits rounded, excepting the distalmost which is transversely elongate or sometimes double. According to the arrangement of the scales in front of vent, there are probably 6-7 preanal pores in males.

Colour (in spirit): Greyish above, with irregular dark brown spots forming broken crossbands over back.

Dimensions: Female (Type, S.A.M. No. 11019), H. & B. 43, tail missing, length head 11.3, breadth head 9.3 mm.

Distribution: Known only from the type locality, viz. Albany District.

Remarks: Type (in poor condition) in South African Museum, Cape Town.

OEDURA KARROICA WILMOTI Hewitt.

Wilmot's Thick-tailed Rock Gecko.

Oedura karroica wilmoti Hewitt, 1926, Ann. Nat. Mus., V, p. 446, pl. XXV, figs. 1 & 2 (Type locality: Tarkastad, C.P.), and 1927, Rec. Alb. Mus., III, p. 402 (Farm 'Hopewell,' btwn. Tarkastad and Winterbergen; Graaff-Reinet; Coetzee's Berg, nr. Pearston). FitzSimons, 1930, Ann. Tvl. Mus. XIV, p. 23 (Tarkastad). Hewitt, 1937, Guide Vert. Fauna E. Cape Prov., II, p. 22, pl. VI, fig. 4 (Cradock; Abbotsbury, nr. Lett's Kraal).

Description: Closely allied to *karroica*, but distinguishable on the following: Scales on snout not nearly so flattened nor so strongly enlarged. Mental and adjoining lower labials not so strongly elongate; mental less narrowed behind where breadth is usually not less than half that anteriorly; anterior labials not or but feebly narrowed behind. Scales adjoining mental and anterior lower labials somewhat

feebly enlarged transversely, and from 4—5 in number. Ventral scales subhexagonal. Males with a transverse row of 4 preanal pores. Tail depressed and segmented, each segment with 5 rows of scales above and 3 below; an oblique row of three small tubercles on either side of base of tail near vent.

Colour: Above, greyish with numerous transversely elongated dark spots which often fuse to form 9 or 10 irregular crossbands on back; sometimes a thin dark stripe from nostril through eye to above ear-opening, and another from angle of jaw through ear to shoulder; labials usually infuscated. Lower surfaces creamy white.

Dimensions: Male (T.M. 11971—Tarkastad), H. & B. 47, tail 58, length head 11.7, breadth head 10.5 mm. Female (Cotype, A.M. 5069), H. & B. 50.5, tail 48, length head 11.5, breadth head 11 mm.

Field notes: Found on rocky koppies, living in narrow crevices of sunspilt rocks, often in association with *Pachydactylus m. maculatus*; taken up to an altitude of 5400 feet.

Distribution: Eastern Cape Province, extending from Tarkastad to Graaff-Reinet District. Recorded localities: Tarkastad (A.M., K.M., S.A.M. & T.M.). Cradock; Abbotsbury; Farm 'Hopewell,' Tarkastad District; Pearston Dist. (A.M.).

Remarks: Types in Albany Museum, Grahamstown.

OEDURA LANGI FitzSimons.

(Text-figs. 12—14).

Lang's Thick-tailed Rock Gecko.

Oedura langi FitzSimons, 1930, Ann. Tvl. Mus., XIV, p. 21, text-figs. 1—3. (Type loc.: Farm 'Venice,' on Brak River, Lydenburg District, E. Tvl.).

Description: Head oviform, somewhat narrowed and moderately depressed. Snout longer than distance between eye and ear-opening, almost twice diameter of eye. Nostril pierced between rostral, first upper labial and three nasal scales, of which the uppermost is the

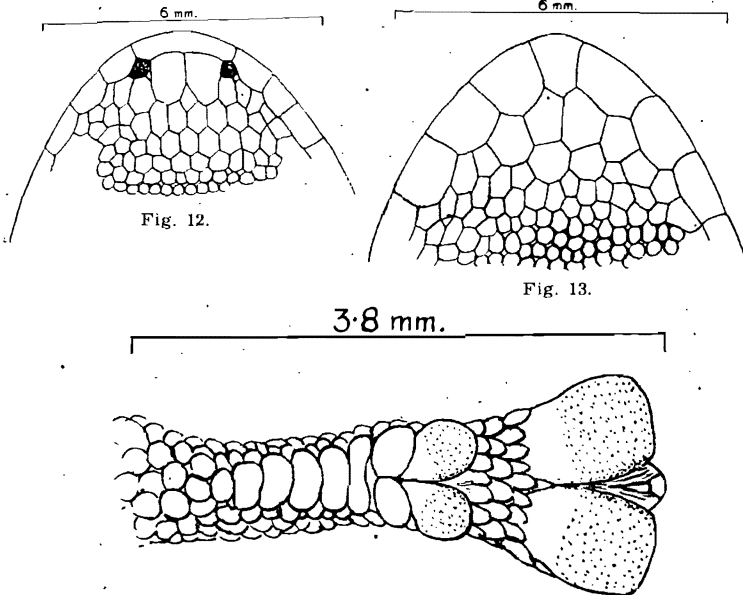


Fig. 12. *Oedura langi* (Type, T.M. No. 12850), upper surface of snout.
 Fig. 13. *Oedura langi* (T.M. No. 12850), chin region.
 Fig. 14. *Oedura langi* (T.M. No. 12850), underside of 4th toe.

largest and in long contact with its fellow behind rostral, which is about twice as broad as deep. Upper labials 8, lower 7. Mental sub-triangular or keystone-shaped, much narrower at base than adjacent lower labials, narrowing slightly posteriorly; chin scales behind mental and anterior labials large and polygonal, the median pair largest. Scales on snout granular and flattened, passing to very small, convex scales on back of head and nape. Body elongate and somewhat depressed, with flattened granular, juxtaposed, scales on back, subequal in size to those on snout, passing to smaller, subimbricate scales on flanks; below, scales on belly smooth and flattened, larger than those on back, throat scales very small. Digits slender, each with a single pair of rounded adhesive plates at the distal end of the basal portion inferiorly, well separated from the large quadrangular terminal pair of plates by a scaly interspace; an infero-medial row of enlarged scales along basal portion of each digit, sub-circular proximally, becoming transversely elongate and usually terminating in a double scale distally; 5—6 enlarged scales under median digits, 2—4 under outer. Preanal pores, according to a slightly angular row of longitudinally elongate scales situated in the same position as those bearing pores in males of other species, probably 14—16. Tail long, slender, tapering, feebly depressed, unsegmented, covered above with smooth, subquadrangular scales larger than those on back and arranged in more or less regular transverse rows; below, scales much larger than above, subhexagonal and subimbricate.

Colour: Above, greyish- to dirty-white, with six, irregular wavy, dark-brown to blackish transverse bands on occiput and back; a dark streak from nostril to eye; sides of body with irregular brownish infusions; tail with nine dark cross-bands, the last two completely encircling tail. Below, dirty white over belly, greyish under tail.

Dimensions: Female (Type, T.M. No. 12850), H. & B. 32, tail 53, length head 11, breadth head 8.3 mm.

Field notes: Found in typical lowveld country, living among the rocks on small stony koppies occurring in this area. The eggs, measuring 8×5.6 mm. are laid in pairs and deposited under stones and in rock cracks.

Distribution: Known only from the type locality, viz. Farm 'Venice,' on the Brak River near its junction with the Olifants River, Lydenburg District, E. Transvaal.

Remarks: Type in the Transvaal Museum, Pretoria.

OEDURA NAMAQUENSIS FitzSimons:

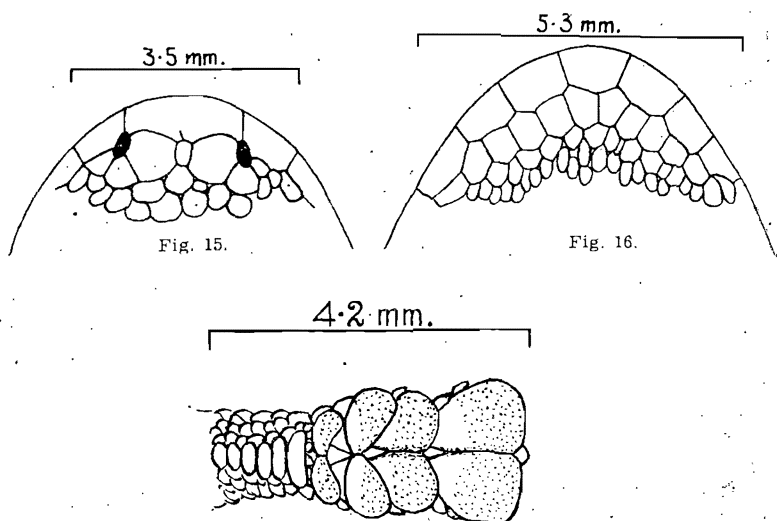
(Text-figs. 15—17; Plates II, figs. 1 & 2 and VI, fig. 4).

Namaqua: Thick-tailed Rock Gecko.

Oedura namaquensis FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 163, text-figs. 1 & 2 (Type locality: 32 miles from Springbok, on road to Kamaggas, Little Namaqualand).

Description: Head oviform, strongly depressed, slightly longer than broad. Snout rounded, longer than distance from eye to ear-opening (which about equals distance from eye to nostril) and a little less than twice the diameter of eye. Nostril pierced between the rostral, first upper labial and three nasal scales of which the uppermost (or naso-rostral) is by far the largest and usually separated from its fellow in the middle line by a granular scale, which is subequal in size to those immediately posterior; sometimes naso-rostrals in short contact with one another behind rostral. Rostral twice as broad as deep. Upper labials, 11, lower 10. Mental subpentagonal,

narrowing but slightly behind, similar in shape to adjacent labials but a little longer; chin-scales, adjoining mental and anterior lower labials behind, distinctly enlarged, flattened and polygonal, much larger than the small flattened subgranular scales on throat. Scales on snout large, rounded and somewhat flattened; over back of head and on nape much smaller and granular; on back slightly rounded, granular, larger than on back of head but smaller than on snout. Scales on belly large, larger than on snout; flat, smooth, hexagonal and juxtaposed; on throat granular and subequal in size to those on back of head. Body strongly depressed. Limbs and digits stout, each digit with two pairs of adhesive plates at the distal end of the basal portion inferiorly; infero-median row of scales enlarged, subcircular basally, becoming transversely elongate distally and terminating in a dumbbell-shaped or double scale (often with adhesive surface)



- Fig. 15. *Oedura namaquensis* (Type, T.M. No. 18094), showing arrangement of scales on upper surface of snout.
 Fig. 16. *Oedura namaquensis* (T.M. No. 18094), showing arrangement of scales on chin.
 Fig. 17. *Oedura namaquensis* (Paratype, T.M. No. 18096), underside of 4th toe.

immediately behind proximal pair of adhesive plates; 4–5 enlarged infero-median scales on middle digits. Preanal pores 8–10 (usually 8) in males, arranged in a more or less regular transverse or slightly curved row. Tail moderately slender and depressed basally, segmented, with 7 scale rows above and 5 below to each segment; scales on upper surface subgranular, much smaller than on under surface where they are smooth, quadrangular and subimbricate; on either side base of tail near vent are one or two enlarged, rounded projecting scales.

Colour: Above, light greyish-brown, with irregular or broken up transverse bands of dark velvety chocolate brown, bearing dull chalky yellow spots; sides of body pale greyish-yellow to dirty cream, usually with a line of yellow spots from axil to groin. Eye golden yellow; a dark streak on side of head from just behind nostril, through eye to above ear-opening. Below creamy white. Tail banded above with chocolate brown, bands irregular and bearing yellow spots as on back; below, grey to slate; reproduced tails greyish with thin, closely set, zig-zag encircling bars.

Dimensions: Male (Type, T.M. 18094), H. & B. 53, tail (tip reproduced) 55.5, length head 12, breadth head 10.8 mm. Female (T.M. 18096), H. & B. 56, tail (tip reproduced) 59, length head 12.2, breadth head 11.5 mm.

Field notes: Found living in association with *Pachydactylus weberi*, under loose flakes on granitic boulders in hilly country. Largely nocturnal, though sometimes abroad in the early hours of the day. Stomach contents consist mainly of Muscid or Tachinid flies and geometrid larvae.

Distribution: Known only from the type locality, viz. between Springbok and Kamaggas, Little Namaqualand.

Remarks: Types in Transvaal Museum, Pretoria.

HEMIDACTYLUS OKEN.

Hemidactylus Oken, 1817, *Isis*, p. 1183 (based on Cuvier's *Hemidactyle*, 1817, *Regne Anim.*, II, 47 (type: *tuberculosis* Daud. = *mabouia* Mor. de Jon.). Boulenger, 1885, *Cat. Liz.*, I, p. 113, and 1890, *Fauna Brit. Ind.*, p. 82. Hewitt, 1909, *Ann. Tvl. Mus.*, II, p. 38, and 1910, p. 78. Boulenger, 1910, *Ann. S. Afr. Mus.*, V, p. 456. De Rooij, 1915, *Rept. Indo-Austral Archipel.*, I, p. 28. Schmidt, 1919, *Bull. Amer. Mus. N. H.*, XXXIX, p. 436. Loveridge, 1923, *P.Z.S. Lond.*, p. 844. M. A. Smith, 1935, *Fauna Brit. Ind.*, II, p. 83.

Boltalia Gray, 1842, *Zool. Miscell.*, p. 58.

Hoplopodion, *Microdactylus*, *Onychopus*, *Tachybates* & *Phoepus* Fitzinger, 1843, *Syst. Rept.*, pp. 19 & 103—106.

Velernesia, *Doryura*, *Leiurus* & *Nubilila* Gray, 1845, *Cat. Liz.*, pp. 156, 157 & 273.

Digits free or partly webbed, more or less strongly dilated, with a double series of adhesive lamellæ below; terminal phalanges long, slender, free, clawed, arising angularly from within the expansion. Dorsal scales uniformly granular or intermixed with enlarged tubercles; scales smooth, flat and imbricate below. Pupil vertical. Preanal and (or) femoral pores present in males.

Represented in South Africa by two species.

Distribution: Throughout Tropical Africa, extending southwards into the Kaokoveld, northern Bechuanaland, northern and eastern Transvaal and Zululand; recorded also from Southern Europe, Southern Asia, Islands of the Indian and West Pacific Oceans, Tropical Central and South America and West Indies.

Key to the South African Species of *HEMIDACTYLUS*.

Tubercles on back moderately enlarged, smooth or weakly keeled, their longest diameter from $\frac{1}{4}$ to $\frac{1}{2}$ the length of interspaces

H. mabouia Mor. de Jon., p. 46

Tubercles on back distinctly enlarged and strongly keeled, longest diameter equal to or a little greater than length of interspaces

H. tasmani Hwt., p. 48

HEMIDACTYLUS MABOUIA (Moreau de Jonnes).

(Text-fig. 18).

Moreau's Gecko; Tropical or House Gecko.

Gecko mabouia Moreau de Jonnes, 1818, Bul. Soc. Philom. Paris, p. 138 (Type locality: "From Trinidad to Jamaica, in the Antilles, and adjacent mainland." Note: Probably introduced to West Indies from West Africa in slave trading days).

Hemidactylus mabouia Dumeril & Bibron, 1836, Erp. Gen., III, p. 362. Gray, 1845, Cat. Liz., p. 154. Bianconi, 1850, Spec. Zool. Mossamb., p. 21, pl. I. Peters, 1882, Reise n. Mossamb., III, p. 27, pl. V. figs. 3, 3a-d (Portu. E. Afr. localities). Boulenger, 1885, Cat. Liz., I, p. 122, and 1887, III, p. 484 (Delagoa Bay). De Jeu de, 1895, Notes Leyden Mus., XVI, p. 227 (Junct. Komati & Crocodile Rivs., E. Tv!). Bocage, 1895, Herp. Angola, p. 10 (Angola localities) Boulenger, 1907, P.Z.S. Lond., II, p. 483 (Zoutpansberg, Tvl.; Coguna & Beira, Portu. E. Afr.). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Pretoria District ?). Boulenger, 1908, Ann. Nat. Mus., I, p. 223 (Mseleni. Zululand), and 1910, Ann. S. Afr. Mus., V, p. 458 (Louw's Creek, E. Tvl.). Hewitt, 1910, Ann. Tvl. Mus., II, p. 86 (Barberton District), and 1911, III, p. 46 (Bushman Mine). Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 149 (Bushman Mine). Schmidt, 1919, Bul. Amer. Mus. N. H., XXXIX, p. 440, map. 5. Loveridge, 1920, P.Z.S., Lond., p. 133 (Delagoa Bay). Cott, 1934, P.Z.S. Lond., p. 147 (Caia; Fambani; Amatongas; Mortimer, C.P. ?).

Hemidactylus mabouia part., FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 25 (Changadzi River & Birchenough Bridge, S. Rhodesia).

Hemidactylus mercatorius Gray, 1831, Zool. Miscell., p. 58.

Hemidactylus platycephalus Peters, 1854, Monatsb. Ak. Wiss. Berlin, p. 615.

Description: Head depressed, longer than broad, a little broader than neck. Snout rounded, distinctly longer than distance between eye and ear-opening, from $1\frac{1}{2}$ to $1\frac{3}{4}$ times diameter of eye. Ear-opening oval and oblique, not more than half the diameter of eye. Rostral 4-sided, almost twice as broad as deep, with a median cleft above. Forehead concave and loreal region often somewhat swollen just anterior to eye. Nostril pierced between rostral, first upper labial and three (sometimes 4) nasal scales, the uppermost of which is

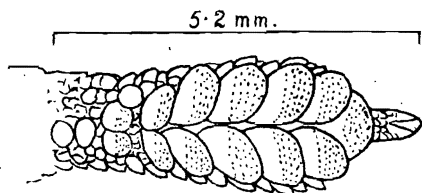


Fig. 18. *Hemidactylus mabouia* (T.M. No. 18787—Birchenough Br.), underside of 4th toe.

largest and in contact with its fellow behind rostral. Upper labials 10—14, lower 9—10. Mental large and triangular; usually two (sometimes three) pairs of postmentals, the anterior pair largest (often somewhat elongated) and usually in good contact with one another, the second pair usually well separated from one another (exceptionally meeting one another behind the first). Scales on snout small, convex and granular, usually a little larger on loreal region just in front of eye; back of head covered with minute granules, intermixed with larger rounded tubercles which are sometimes very sparsely scattered. Back of head covered with minute granules intermixed with larger rounded tubercles, which are sometimes very sparsely scattered. Back covered with very small, somewhat flattened granules (sometimes faintly striate), intermixed with larger, rounded or oval,

convex, almost smooth (weakly keeled or striate) tubercles arranged in 10—18 (usually 14—18) somewhat irregular longitudinal rows; enlarged tubercles rather widely spaced, the longest diameter of those over middle of back varying from $\frac{1}{3}$ to $\frac{1}{2}$ that of interspaces, but towards the sides tubercles more closely set. Ventral scales cycloid, smooth and imbricate. Limbs moderate; digits free, each with a long, slender, terminal phalange bearing a well-developed claw; digits moderately dilated, with a series of paired adhesive lamellae below terminating in a single undivided lamella, usually from 3—5 paired lamellae under 1st finger and toe, and 6—7 under middle digits; lamellae smallest basally, where sometimes series ends also in an undivided lamella. In males 30—60 (usually 40—52) femoral pores forming one long uninterrupted series across preanal region. Tail a little longer than head and body, cylindrical, segmented; covered above with small imbricate scales and enlarged pointed conical tubercles, which are arranged in 6 longitudinal series and form regular, more or less evenly spaced transverse rows; below, scales small and irregular basally but thereafter a median row of transversely enlarged flattened scales extends almost to the tip; in reproduced tails enlarged tubercles above not developed, but median ventral row of scales transversely enlarged, as in normal tails. One or two enlarged scales or tubercles on either side base of tail in males.

Colour: Above, grey to light greyish-brown or brown, uniform or with scattered dark spots or more usually about five, dark brown to blackish, distinct or ill-defined, wavy cross-bands on back. Tail banded with dark brown to black, usually about 10 bands in all. Lower surfaces white to pale yellowish-brown; subdigital lamellae dark. Colouring is variable in degree according to the environment.

Dimensions: Male (T.M. 4268—Inhaca Island), H. & B. 56, tail 63, length head 17, breadth head 12 mm. In the tropics these geckos apparently attain to a much larger size, Loveridge (1936) records a male of a total length of 163 mm. (i.e. H. & B. 83, tail 80 mm.).

Field notes: This is the common house gecko of the tropics, where it is often found living in the wall cracks and roofings of native huts and settlement houses. Normally found in the hollows of trees (particularly the Baobab), under loose bark, in the crowns of palms, in rock cracks and crevices and, in fact, any dark convenient place on or above the ground. Very active in movement, and when alarmed able to run like any normal lizard; usually abroad at night and on dull days, although the hours of activity probably depend largely on the facility with which they can procure their prey. Largely insectivorous, their diet consisting mainly of flies, cockroaches, beetles, homopterous bugs etc., but also very fond of spiders and on occasion quite prepared to accept any small creature with which they can cope. Frequently infested with nematode worms and red ascarine parasites. Very few males are found with complete tails, which in most cases are probably lost when fighting with one another. The range of colour change from dark to light shades is very considerable, varying from dusky brown to almost white according to habitat. The eggs when first laid are globular, soft and sticky, adhering tightly to the inside surfaces of any convenient nook or cranny where they may be deposited; on exposure to the air they harden rapidly and are then an opaque to bluish-white in colour, measuring from 10—13 mm. in diameter; on occasion a particularly favourable spot may be used by many females as a communal depository, and as many as from 50—60 eggs, in all stages of incubation, have been found together. The newly hatched young measure from 30—32 mm. in total length.

Distribution: Widely distributed throughout tropical Africa, and extending southwards to the Kaokoveld, northern Bechuanaland, northern and eastern Transvaal and Zululand. Recorded localities: Kaoko Otavi; Gokomere; Chishawasha; Musami; Serowe (A.M.). Ubombo (A.M. & T.M.). N'Gxwala Hill, nr. Ubombo, (D.M. & T.M.). Bushman Mine; Rikatla (K.M.). Mseleni (N.M.). Louws Creek (P.E.M., S.A.M. & T.M.). Masieni; Uanetsi Riv., Portu. E. Afr.; Bindura (S.A.M.). Brak River; N. Tvl.; Zondagsfontein; Gravelotte; Griffin Mine; Punda Maria; Pont Drift, Limpopo Riv.; Klaserie; Olifants River Dist., E. Tvl.; Hectorspruit; Malelane; Machabezane; Lourenco Marques; Inhaca Island; Magude; Mazambo; Birchenough Bridge; Changadzi Riv.; Mt. Silinda (T.M.).

Remarks: Type in the Paris Museum? The authenticity of Roux's (1907) record of this species from Pretoria District is extremely doubtful, while that of Cott (1934) from Mortimer, Cape Province, is quite unacceptable.

HEMIDACTYLUS TASMANI Hewitt.

(Plates II, fig. 3 and VII, fig. 2).

Tasman's Tropical Gecko

Hemidactylus tasmani Hewitt, 1932, Ann. Nat. Mus., VII, p. 120 (Type locality: Driefontein, nr. Gwelo, S. Rhodesia).

?*Hemidactylus tasmani* Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Malelane; Lower Sabie; Satara).

Hemidactylus mabouia part., FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 25 (Vumba Mtn.).

Description: This species is very closely related to *H. mabouia*, but can be readily distinguished by the much larger and better developed dorsal tubercles, which are longitudinally oval, striated, strongly keeled and arranged in about 16 regular longitudinal rows on back; these tubercles are largest dorsolaterally and more closely spaced than in *mabouia*, their long diameter being equal to or even greater than the interspaces; on sides of body tubercles less strongly keeled but more closely set, there often being but a single granule separating one tubercle from another; tubercles on sides of neck distinctly conical (barely convex in *mabouia*), while those on tail are much larger and more strongly projecting than in *mabouia*; in general, granular scales more roughened and convex, those on back being usually distinctly striated and convex to subconical (in *mabouia* smooth or feebly striated and more or less flattened); from 40–50 femoral pores in a continuous series.

Colour: Above, greyish to brownish with about 5 dark brown to black, somewhat irregular bands across nape and back, each with a short mesial backward prolongation and bordered behind (especially towards the sides) with white. Tail irregularly banded. Lower surfaces uniform creamy white.

Dimensions: Male (T.M. 18759—Vumba Mtn.), H. & B. 73, tail 73, length head 17.8, breadth head 14.8 mm.

Distribution: Southern Rhodesia. Recorded localities: Driefontein & Chilimanzi, nr. Gwelo; Rusape; Monte Cassino, nr. Mackeke; Chishawasha & Musami, E. of Salisbury; Kutama, nr. Makwiro; Mtoko; Gokomere, N. of Ft. Victoria; Bikita (A.M.). Vumba Mtn. (A.M. & T.M.). Penhalonga (K.M.).

Remarks: Types in the Albany Museum, Grahamstown. It is doubtful if the specimens, recorded from the eastern Transvaal by Mertens (1937), are true *tasmani*, as all specimens from this area in the collection of the Transvaal Museum are assignable to *mabouia*.

LYGODACTYLUS Gray.

Lygodactylus Gray, 1864, P.Z.S. Lond., p. 59 (type: *strigatus* Gray = *capensis* Smith). Boulenger, 1885, Cat. Liz., I, p. 158. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39, and 1910, p. 78. Boulenger, 1910, Ann. S. Afr. Mus., V, pp. 456 & 458. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 12. Loveridge, 1923, P.Z.S. Lond., p. 485. Schmidt, 1919, Bul. Amer. Mus. N. H., XXXIX, pp: 436 & 462.

Scalobotes Peters, 1880, Monatsb. Ak. Wiss. Berlin, p. 705.

Digits slender, free, very unequal in length, all (excepting the 1st) strongly dilated distally and bearing a double series of regular oblique lamellae below, separated by a median groove; 1st or inner digit rudimentary with a minute indistinct sheathed retractile claw; all other digits with a recurved terminal clawed phalange, the claw being retractile between the anterior pair of lamellae. Body covered above with small juxtaposed granules, below with imbricate scales. Pupil round; eyelid distinct all round the eye. Preanal pores present in males, femoral pores absent.

Represented in South Africa by seven species and subspecies.

Distribution: From Portuguese Guinea in the west and the Sudan and Somaliland in the east, extending southwards throughout tropical Africa to the north-western Cape Province, Bechuanaland Protectorate, Transvaal and northern Natal.

Key to the South African Species and Subspecies of

LYGODACTYLUS.

- | | | |
|---|--|---|
| 1 | Mental with two clefts converging forwards | 2 |
| | Mental entire, without clefts | 3 |
| 2 | Nostril pierced between rostral, 1st upper labial and usually 3 small nasal scales, the uppermost of which is the largest; tail slender, tapering to a fine point, with 4—8 pairs of adhesive lamellae below distally; 4—7 preanal pores in males; throat uniformly pale and unmarked | |
| | <i>L. capensis capensis</i> Smith, p. 50 | |
| | Nostril pierced between rostral, 1st upper labial and 2 nasal scales, of which the upper is slightly larger; snout longer and more pointed than in <i>capensis</i> ; tail tapering gradually, but not so slender distally as in <i>capensis</i> , with 3 pairs of adhesive lamellae below distally; 5 pairs of subdigital adhesive lamellae; 8—9 preanal pores in males; chin and throat with dark stripes | |
| | <i>L. capensis stevensoni</i> Hwt., p. 52 | |
| | Nostril pierced between rostral, 1st upper labial and 2 nasal scales; snout shorter and stouter than in <i>capensis</i> or <i>stevensoni</i> ; 5 preanal pores in males; 4 pairs of subdigital adhesive lamellae; no dark stripes on throat, or if present very short | |
| | <i>L. capensis bradfieldi</i> Hwt., p. 53 | |
| 3 | A well-marked median series of transversely enlarged sub-caudal scales | 4 |
| | No well-marked median series of transversely enlarged sub-caudal scales | 5 |
| 4 | Rostral narrowly separated from or just entering nostril; naso-rostrals separated by 1—3 granules; mental rounded behind; 3 postmental scales; 6—9 preanal pores and throat black in males | |
| | <i>L. picturatus picturatus</i> Pet., p. — | |

Rostral well separated from nostril; nasorostrals separated by a single granule; mental obtusely angled behind; two post-mental scales; 8—10 preanal pores in males; throat pale, with a single dark chevron-shaped marking

L. picturatus chobiensis Fitz., p. 54

- 5 Rostral entering nostril; 1st upper labial larger than 2nd; 7—10 preanal pores in males

Rostral well separated from nostril; 1st upper labial smaller than 2nd; 2 well developed preanal pores in males

L. lawrenci Hwt., p. 55

- 6 Canthus rostralis well marked; length of snout twice diameter of eye; mental $1\frac{1}{2}$ times as broad as long, distinctly angled behind; 4—5 enlarged chin shields; 7—10 preanal pores in males

L. ocellatus Roux, p. 56

Canthus rostralis not marked; length of snout $2\frac{1}{2}$ times diameter of eye; mental twice as broad as long, feebly angled behind; about 8 enlarged chin-shields; 9—11 preanal pores in males

L. methueni Fitz., p. 57

LYGODACTYLUS CAPENSIS CAPENSIS (A. Smith).

(Text-figs. 19 & 20; Plate XIII, fig. 3).

Common Dwarf Gecko.

Hemidactylus capensis A. Smith, 1849, Ill. Zool. S. Afr. Rept., pl. LXXV, fig. 3 (Type locality: Kaffirland, and the districts to the north of the Cape Colony). Peters, 1885, Archiv. Naturg., I, p. 44 (Portu. E. Afr. localities).

Hemidactylus (Peropus) capensis Peters, 1882, Reise n. Mossamb., III, p. 28.

Lygodactylus strigatus Gray, 1864, P.Z.S. Lond., p. 59 (S.E. Africa).

Lygodactylus capensis Boulenger, 1885, Cat. Liz., I, p. 160. Boettger, 1886, Ber. Senck. Naturf. Ges., p. 21 (Ghous, S. Kalahari). Boulenger, 1902, P.Z.S. London, II, p. 16 (Mashonaland), and 1905, II, p. 252 (Ngoye Hills, Zululand), and 1907, II, p. 484 (Coguna & Beira, Portu. E. Afr.). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 405 (Lourenco Marques; Verulam, Natal; Pretoria District). Boulenger, 1908, Ann. Nat. Mus., I, p. 223 (Indukuduku, Zululand; Natal). Odhner, 1908, Arkiv. Zool. Stockholm, IV, No. 18, p. 2 (Dukuduku (= Indukuduku), Mkusi & Lake Sibayi, Zululand). Chubb, 1909, P.Z.S. Lond., p. 595 (Bulawayo). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 458 (Durban; Barberton; Salisbury; Delagoa Bay). Hewitt, 1910, Ann. Tvl. Mus., II, p. 86 (Kimberley), and 1911, III, p. 43 (Potchefstroom; Pongola; Mafeking). Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 149 (Eldorado; Mafeking; Madibi; Taungs; Kimberley). Werner, 1915, in Michaelsen, Land- u. Süsswasserfauna Deutsch-S.W. Afr., I, p. 336 (Okawango). Loveridge, 1920, P.Z.S. Lond., p. 135 (Zoutpansberg; Rustenburg; De Kaap Goldfields; Lower Umkomaas Riv.; Mazoe; Mt. Chirinda = Mt. Silinda; Indukuduku; Ngoye Hills; Delagoa Bay). Hewitt, 1926, Ann. Nat. Mus., V, p. 444 (Salisbury; Melssetter Dist.; N'Tambanana; Newington). Power, 1931, Trans. Roy. Soc. S. Afr., XX, p. 40 (Linokana), & p. 46 (Lobatsi). Brock, 1932, S. Afr. Journ. Sc., XXIX, p. 508 & 16 text-figs. (Development of skull). FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 264.

Lygodactylus capensis part., Werner, 1910, Jena. Denkschr., XVI, p. 307 (Kalahari). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 12, text-fig. 8.

Lygodactylus capensis capensis Cott, 1934, P.Z.S. Lond., p. 147 (Amatongas; Fambani; Beira; Caia). FitzSimons, 1935, Ann. Tvl. Mus., XVI, p. 332 (Gaberones; Kaotwe Pan; Motlhatlogo; Shaleshonto; Tsotsoroga Pan; Figtree; Zimbabwe). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Mazimba Hill, Zululand). FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 26 (Vumba Mt.; Mt. Silinda; Birchenough Bridge).

Description: Head oviform, much longer than broad. Snout obtusely pointed, much longer than distance from eye to ear-opening (latter distance less than distance from eye to nostril), from $1\frac{1}{2}$ times to twice diameter of eye. Ear-opening small and rounded. Rostral broader than deep. Nostril above and behind suture of rostral and first upper labial, pierced between rostral (exceptionally separated from rostral), first upper labial and three (sometimes two) small nasals, of which the anterior is much the largest and separated from its fellow by one, two or three (usually one, exceptionally three) granules. Upper labials 6-8, lower 6-7. Mental large, subtriangular, extending beyond posterior margin of adjacent lower labials, with two clefts (one on either side) converging anteriorly from posterior margin. Chin scales bordering mental and anterior labials behind, enlarged and flattened, passing gradually into the smaller granular scales on throat. Scales on snout somewhat flattened and much larger than scales on back of head, which in turn are distinctly larger than the finely granular scales on nape. Scales on back small and granular, much smaller than those on snout and slightly smaller than on back of head. Scales on belly large, smooth, subhexagonal and imbricate.

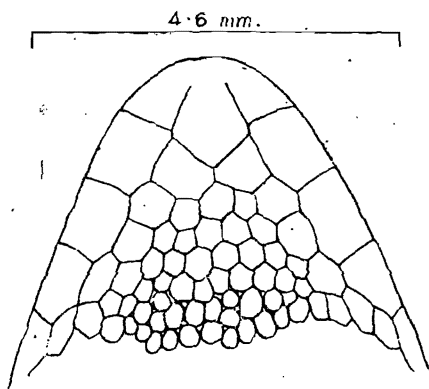


Fig. 19.

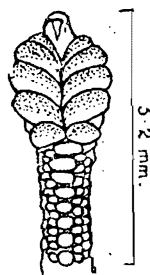


Fig. 20.

Fig. 19. *Lygodactylus c. capensis* (T.M. No. 15323-Ingwavuma), showing arrangement of scales on chin.

Fig. 20. *Lygodactylus c. capensis* (T.M. 18459-Vumba Mtn.), underside of 4th toe.

Digits very unequal, inner rudimentary; 2nd toe much shorter than 5th, 4th longest; 4-5 pairs of adhesive lamellae under dilated portion of middle digits; median row of subdigital scales on basal portion of digits slightly enlarged. Scales on underside thigh and tibia and also on preanal region often somewhat thickened and modified, especially in breeding males. An angular row of 4-7 (usually 5) preanal pores in males. Tail longer than head and body, cylindrical, feebly segmented, tapering smoothly from base to tip where it is slender and pointed, with a series of 4-8 pairs of subcaudal adhesive lamellae terminally, which are similar to but much smaller than those under digits; tail covered above with small, juxtaposed or subimbricate scales, in regular transverse rows, there being about 7 rows to each segment; below, scales larger, smooth and subimbricate with a few often more or less transversely enlarged; in reproduced tails there is usually an irregular series of transversely enlarged scales along the infero-median line.

Colour: Above, grey, greyish-brown to dark brown or blackish, with darker variegations and often small scattered pale spots; a pale streak (dark-edged above and below) from nostril through eye and over anterior part of back, fading out posteriorly, sometimes only faintly marked or absent; a pale lateral stripe or series of light-

coloured ocellar spots along body and basal part of tail; throat and labials often speckled with dark grey or brown. Lower surfaces yellowish-white to yellow; in breeding males throat and belly bright yellow, sides of head, body, limbs and tail reddish-brown, underside tail orange-yellow to orange brown.

Dimensions: Male (T.M. 15323—Ingwavuma), H. & B. 35, tail 40, length head 9, breadth head 6.5 mm. Female (T.M. 19046—Mt. Silinda), H. & B. 33, tail 36, length head 8.4, breadth head 6 mm.

Field notes: These small, active, diurnal geckos, prefer the open woodland and savannah country and are very common in South Africa, north of the Vaal River. They are largely arboreal, but are also frequently found living on old fence poles, on the walls and in the roofings of huts and houses, among rocks and dead vegetation, etc. A marked preference is shown, however, for trees where these are available, especially Baobab, Mimosa and Mopane, on whose rough bark there is plenty of suitable cover and where they are most difficult to detect, owing to the variation in their colouring from dark to light shades according to habitat. The tails are most friable and are shed very easily, the shed portion often remaining active for minutes on end. The eggs, which are oval and measure about $7.5 \times 5-6$ mm., are laid in pairs; the female often assisting their emergence and deposition with her hind feet. Their diet is largely insectivorous, comprising diptera, beetles, lepidoptera, cockroaches, aphids, homopterous bugs, etc., together with woodlice, ants and spiders.

Distribution: From West Africa and Tanganyika Territory, southwards to Bechuanaland Protectorate, northern Cape Province, Transvaal, Swaziland and Natal. Recorded localities: Newington; Leeuwdoorns; Glentig & Honingfontein, Waterberg Dist.; Potchefstroom; Chilimanzi; Driefontein; Bikita; Monte Cassino; Plumtree; Melsetter; Rusape; N'Tambanana (A.M.). Kimberley (A.M., K.M. & T.M.). Pietermaritzburg (A.M. & N.M.). Ingwavuma (A.M., N.M. & T.M.). Louis Trichardt; Salisbury (A.M. & S.A.M.). Empangeni (A.M. & T.M.). Durban (D.M. & S.A.M.). Eldorado; Francistown; Lobatsi; Linokana; Mafeking; Umvona; Madibi; Taungs; Pienaars River; Premier Mine (K.M.). Barberton (K.M., S.A.M. & T.M.). Indukuduku; Umfolosi; Ubombo; Dargle (N.M.). Mariepskop (P.E.M. & T.M.). Bulawayo (R.M.). Riemtastmat, Molopo Riv.; Upington; Junct. Marico & Crocodile Rivs.; Acornhoek; Mazoe; Bindura; Livingstone; Delagoa Bay; Uanetsi Riv.; Inhaca Island; Umhlali (S.A.M.). Tsotsoroga Pan; Shaleshonto; Lake N'Gami; Kaotwe Pan; Gaborones; Pretoria; Rustenburg; Pongola & Vygeboompoort, Waterberg Dist.; Saltpan, nr. Hamanskraal; N'Jelele, N'Wanedzi & Brak Rivs. N. Tvl.; Ratomba; Gt. Saltpan, nr. Waterpoort; Palmaryville; Punda Maria; Pietersburg; Krabbefontein; Tzaneen; Metlepetsi Riv.; Woodbush; Haenertsburg; Letsitele; Gravelotte; Griffin Mine; Klaserie; Blyde, Uanetsi & Olifants River Districts, E. Tvl.; Waterval Onder; Louws Creek; Hectorspruit; Komatipoort; Nelspruit; Wyldedale; Figtree; Vumba Mtn.; Birchenough Bridge; Mt. Silinda; Mazambo; Papai; Maguele; Masieni; Kosi Bay; Muden, nr. Greytown; Pinetown; Weenen (T.M.).

Remarks: Smith's original types appear to have been lost.

LYGODACTYLUS CAPENSIS STEVENSONI Hewitt.

Stevenson's Dwarf Gecko.

Lygodactylus stevensoni Hewitt, 1926, Ann. Nat. Mus., V. p. 445, pl. XXV, figs. 3 & 4 (Type locality: Khami Ruins, S. Rhodesia), and 1932, VII, p. 126, pl. VI, fig. 11. Loveridge, 1933, Bull. Mus. Comp. Zool., LXXIV, p. 287 (Nyamkolo, N. Rhodesia).

Description: Closely related to typical *capensis* but distinguished on the following: Snout more pointed, much longer than distance between eye and ear-opening, well over twice (up to $2\frac{1}{2}$ times) diameter of eye. Nostril pierced between rostral, 1st. upper labial and two nasal scales, of which the upper is the larger and separated from its fellow behind rostral by one or two granular scales (exceptionally separated by three scales, i.e. a large one in front and two smaller ones behind). First upper labial with a distinct upward prolongation in contact with the smaller and lower nasal. Scales on head rather strongly flattened, on neck only slightly smaller than on back of head. Middle or longer toes with 4—5 (usually 5) pairs of adhesive lamellae inferiorly; no enlarged subdigital scales. Tail moderately depressed, faintly segmented basally (each segment with 7 rows of scales above), tapering gradually towards tip, which is not so slender distally as in *capensis* and bears three pairs of modified adhesive scales inferiorly; median row of subcaudal scales subequal in size and only slightly larger than those adjacent. An angular series of 8—9 preanal pores in males.

Colour: Above, brown with a few greyish-white spots dorso-laterally near to and behind forelimbs; a narrow blackish stripe from nostril through eye and above ear-opening to base of forelimb; a second broken up stripe from upper lip through ear towards forelimb, and a third stripe along lower lip almost to forelimb. Gular region with dark stripes extending from the chin shields backwards to base of throat, the outermost stripe on either side meeting its fellow on chin to form a large V. Tail with indistinct greyish-white cross-bands above.

Dimensions: Type (A.M. No. 5053), H. & B. 36, tail 42, length head 9.3, breadth head 7.7 mm.

Distribution: Known in Southern Africa only from the type locality, viz. Khami Ruins, S. Rhodesia.

Remarks: Types in the Albany Museum, Grahamstown.

LYGODACTYLUS CAPENSIS BRADFIELDI Hewitt.

Bradfield's Dwarf Gecko.

Lygodactylus bradfieldi Hewitt, 1932, Ann. Nat. Mus., VII, p. 126, pl. VI, fig. 10 (Type locality: Farm 'Quickborn,' Okahandja, S.W. Africa).
? *Lygodactylus capensis* part., Werner, 1910, Jena. Denkschr., XVI, p. 307 (Keetmanshoop). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 12.
Lygodactylus capensis Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 127 (Wasserfall & Narudas Süd, Gt. Karasberg District, Quibis = Kuibis). FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 527 (Pofadder).
Lygodactylus capensis ngamiensis FitzSimons, 1932, Ann. Tvl. Mus., XV, p. 35, & 1935, XVI, p. 334, text-figs. 8 & 9 (Mabeleapudi).

Description: Distinguished from typical *capensis* on the following: Snout shorter, stouter and more rounded, a little longer than distance from eye to ear-opening (latter distance about equal to distance from eye to nostril), over twice diameter of the rather small eye; scales on snout granular, not so flattened but more convex than in *capensis*. Nostril sometimes separated (usually on one side only) from rostral by the large upper nasal, which makes contact below with the 1st. upper labial. Large upper nasals well separated by 2—3 (exceptionally by 1) granular scales behind rostral. First upper labial usually some-

what elevated and almost as deep as long. Usually 4 pairs of adhesive lamellae under the longer toes. Five preanal pores in males, arranged in a slightly angular transverse line. Tail slightly depressed, more or less distinctly segmented above, with 5 rows of scales to each segment; about 4 pairs of modified adhesive scales at tip of tail inferiorly.

Colour: Above, greyish-brown to brown, with numerous thin black longitudinal streaks (often broken up or indistinct on head and back), of which the following are usually well-marked: one from nostril through eye to inguinal region, a second from angle of mouth through ear-opening to axil, and a third from just behind upper edge of eye along neck to lumbar region; between the two upper longitudinal stripes there is sometimes a band or series of pale orangy-brown to yellowish ocellate spots, extending from eye to posterior part of back, and also often continued on basal part of tail. Lower surfaces a uniform creamy white to yellow, or sometimes on throat there may be faint darkish spots and markings, which in some cases form short irregular streaks not reaching chin region; lower labials usually spotted with blackish.

Dimensions: Male (T.M. 9528—Waterberg, S.W. Afr.). H. & B. 30, tail 34, length head 8, breadth head 5.5 mm.

Field notes: Usually found living on Acacia trees, but also found on rocky outcrops. Eggs white and regularly oval, laid in pairs under bark of trees and measuring on the average 7.2×5.3 mm.

Distribution: Confined to the western parts of South Africa, from the Kaokoveld and Damaraland, southwards through Great Namaqualand into the northern parts of Little Namaqualand and Great Bushmanland, and eastwards to southern Ngamiland. Recorded localities: Okahandja (A.M. & T.M.), Otjiwarongo (A.M. & S.A.M.), Kaoko Otavi; Kalkfontein south; Henkries (S.A.M.). Waterberg, S.W. Afr.: Kuibis; Wasserfall & Narudas Süd, Gt. Karasberg Dist.; Pofadder; Mabeleapudi (T.M.).

Remarks: Types in the Albany Museum, Grahamstown.

LYGODACTYLUS PICTURATUS CHOBIENSIS FitzSimons.

(Text-fig. 21).

Lygodactylus picturatus chobiensis FitzSimons, 1932, Ann. Tvl. Mus., XV, p. 35, and 1935, XVI, p. 335, text-fig. 10 (Type locality: Kabulabula, on Chobe River, N. Bechuanaland; also recorded from Kasane).

Description: Head much longer than broad, distinct from neck. Snout more or less pointed, much longer than distance between eye and ear-opening, about twice diameter of eye; ear-opening small and almost vertically elongate. Rostral twice as broad as deep. Nostril above and well behind suture of rostral and first upper labial, pierced between latter and two nasal scales, of which the upper or anterior is much the larger and separated from its fellow behind rostral by a granular scale. Upper labials 7—8, lower 6—7. Mental large, entire, subtriangular, much broader than long, projecting behind almost as far as adjacent lower labials; three enlarged chin shields (or post-mentals) bordering mental and first lower labial behind; the median shield barely half the size of outer; following post-mentals and adjoining lower labials along either side, is a series of unequal-sized scales which pass gradually into the small granular scales on throat, and thence to the large, smooth, flat, hexagonal, juxtaposed or subimbricate scales over chest and belly. Scales large, granular and convex on snout, becoming smaller and more flattened on back of head and passing on nape to the slightly smaller granular

scales over back. Digits unequal, inner rudimentary, 4th. longest, 2nd. shorter than 5th.; distal expansions inferiorly, each with 5 pairs of adhesive lamellae; median row of scales under basal portion of digits enlarged. An angular series of about 10 preanal pores in males. Tail subequal in length to head and body, tapering, rounded above and slightly flattened below; covered above with regular transverse series of small imbricate scales, and below with a median row of transversely enlarged scales, bordered on either side by a row of large irregular imbricate scales; traces of segmentation above basally, with 7—8 rows of scales to each segment; tip of tail expanded laterally, with 7—8 pairs of modified adhesive subcaudal lamellae and a few scales proximal thereto also with roughened adhesive surfaces. In males, scales under hindlimbs usually with roughened surfaces and swollen.

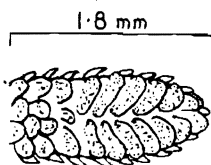


Fig. 21. *Lygodactylus picturatus chobiensis* (Type, T.M. No. 14580), showing subcaudal lamellae at tip of tail.

Colour: Above, dull grey to greyish-brown, with irregularly scattered, black-edged, pale bluish-white patches and spots over back and limbs; a dark streak from nostril through eye to shoulder; a russet-brown band along lower flanks from armpit to groin. Below, ochre-yellow from chest to root of tail, which is slate grey with an indistinct darker streak along median row of enlarged scales; chin and throat creamy white, with a greyish-brown chevron marking on throat and a thin dark streak along inner edge of labials from mental to below ear-opening; lower labials tinged with russet brown.

Dimensions: Male (Type, T.M. 14580), H. & B. 39.6, tail 40.4, length head 9.9, breadth head 7.3, forelimb 12.7, hindlimb 15.0 mm.

Field notes: Arboreal and particularly partial to large Acacia trees (*Acacia giraffae*), on the dark, rough-barked trunks of which they make their home.

Distribution: Known only from the northern edge of Bechuanaland Protectorate, bordering on the Chobe River. Recorded localities: Kabulabula, on Chobe River (T.M.).

Remarks: Type in Transvaal Museum, paratype in Field Museum, Chicago. Loveridge's records of *L. picturatus* from the Victoria Falls (1929), together with the above record of *chobiensis*, are the most southerly records of what had previously been regarded as an essentially tropical form.

LYGODACTYLUS LAWRENCI Hewitt.

Lawrence's Dwarf Gecko.

Lygodactylus lawrenci Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 478 (Type locality: Otjitambi, Kaokoveld, S.W. Africa).

Description: Snout short and stout, broadly rounded; canthus rostralis not marked. Supraorbital region raised. Rostral barely $1\frac{1}{2}$ times as broad as deep, well separated from nostril, which is pierced between first upper labial and 2 or 3 small nasal scales, the upper of which is the largest and separated from its fellow behind the rostral by two of three small scales. About 8 upper (first much smaller than second), and 7 lower labials. Mental entire, in contact

behind with two scales which, like those adjoining them laterally, are only a little larger than scales immediately posterior and only about twice the size of smallest scales on throat. Scales on snout rounded, larger than on occiput, which again are a little larger than scales on back. Gular scales round, juxtaposed and subequal to those on snout. Ventrals large, subhexagonal, flat and imbricate; preanal scales and those under thighs all swollen and modified in males, which have a single pair of rather large preanal pores. Digits with three pairs of well-developed subdigital adhesive lamellae and a much smaller fourth pair just distal thereto. Tail segmented above, with 6 rows of scales to each segment; subcaudal scales more or less equal in size.

Colour: Above, ashy grey with numerous thin blackish (more or less broken up) longitudinal stripes, of which the following are the most marked: one from eye over ear-opening, thickening towards shoulder where it ends abruptly; a second fine stripe from just above eye, passing backwards along dorsolateral line of back; a third very narrow stripe from corner of mouth through eye to base of forelimb; a fourth from middle of occiput, bifurcating on nape and continuing over back in two broken lines. A thin V-shaped marking on head between eyes anteriorly; a streak from nostril to eye. Below, two V-shaped streaks on throat and a streak along lower lip from 1st. labial backwards to below ear-opening; belly white; underside thighs and preanal region dull brownish. Often a pale chestnut, lateral band from neck, along flanks and anterior half of tail.

Dimensions: Male (S.A.M. 17467—Kowares), H. & B. 30.5, tail 35 (partly reproduced), length head 8.4, breadth head 6.6 mm.

Distribution: Kaokoveld, S.W. Africa. Recorded localities: Otjitambi & Kowares, Kaokoveld (S.A.M.).

Remarks: Type in the South African Museum.

LYGODACTYLUS OCELLATUS Roux.

(Text-fig. 22; Plates II, fig. 4, and XIII, fig. 4).

Ocellated Dwarf Gecko.

Lygodactylus ocellatus Roux, 1907, Zool. Jahrb. Syst., XXV, p. 406, pl. XIV, figs. 1—3 (Type locality: Pretoria District, Tvl.). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 459. Hewitt, 1910, Ann. Tvl. Mus., II, pp. 82 & 86 (Waterval Onder: Doornkop, nr. Belfast), and 1911, III, p. 43 (Athol, Ermelo Dist.).

Description: Head a little longer than broad; snout rounded, longer than distance between eye and ear-opening (latter distance about equal to distance from nostril to eye) and at least twice diameter of eye. Canthus rostralis distinct; loreal region slightly concave. Ear-opening very small, rounded or vertically oval. Rostral at least twice as broad as deep. Nostril pierced between rostral, first upper labial and two or three nasal scales, of which the uppermost is the largest and separated from its fellow behind rostral by one or two small granular scales; 1st. upper labial larger than 2nd. Upper labials 6—8, lower 5—6. Mental very broad, about $1\frac{1}{2}$ times as broad as long, subtriangular, without lateral clefts; a row of 4—5 enlarged, 5- to 6-sided scales in contact with mental and anterior lower labials behind, passing gradually into the small scales on throat. Scales on upper surfaces small and granular, largest on snout; below, scales large, smooth, hexagonal and imbricate over belly and much larger than those on snout. Digits very unequal, inner rudimentary, 4th. longest and 2nd. much shorter than 5th.; dilated portions of digits

broad (much shorter and broader than in *capensis*), usually with 3 pairs of adhesive lamellae inferiorly, sometimes 4 pairs of lamellae present; when the distalmost pair are very small and inconspicuous. A slightly curved series of 7—10 (usually 8) preanal pores in males. Tail a little longer than head and body, rounded above and somewhat flattened below, indistinctly segmented with about 6 rows of scales to each segment above; scales above, in regular transverse rows, juxtaposed to subimbricate, larger than on back; below, scales much larger, posterior edges rounded, distinctly imbricate.

Colour: Above, olive (with a slight bluish tinge) to dark brown with numerous, roundish, creamy-white to bluish-white spots. (encircled with reddish-brown to blackish) arranged in more or less regular longitudinal series or irregularly scattered over back and sides; similar pale spots on limbs and tail, and a few scattered dark spots on head; rump and tail often tinged with chestnut brown; labials each bearing a dark spot; a dark streak from nostril to eye. Lower surfaces greenish- to bluish-white, chin often yellowish with or without infuscations of greyish-brown; in males, underside limbs and tail usually dirty yellow to pale brownish.

Dimensions: Male (T.M. 19236—Mbabane). H. & B. 33, tail 38.5, length head 8.2, breadth head 6.7, forelimb 12, hindlimb 16.2 mm.

Field notes: Apparently more or less rupicolous, and usually found among rocks and stones on exposed hill and mountain slopes. The eggs, which are deposited in pairs under stones and in rock crevices, are creamy white in colour, oval in shape and measure about 7.5×6.2 mm.

Distribution: The Highveld areas of the Transvaal and Swaziland, extending northwards to the Zoutpansberg Range, N. Transvaal. Recorded localities: Groenkloof, Pretoria District; Athol, Ermelo Dist.; Carolina; Waterval Boven; Oshoek, Forbes Reef & Mbabane. Swaziland; Woodbush; Zoutpansberg, nr. Louis Trichardt; Entabeni; Leipzig, nr. Blaauwberg (T.M.). Doornkop, nr. Belfast (A.M., D.M. & T.M.).

Remarks: Types in Natural History Museum, Amsterdam.

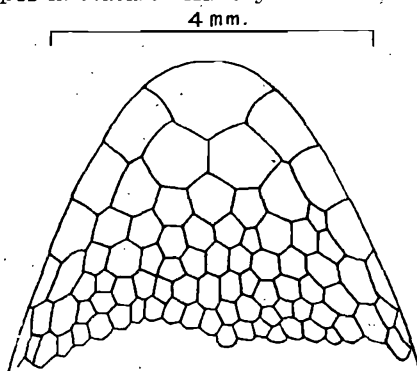


Fig. 22. *Lygodactylus ocellatus* (T.M. 12954—Waterval Boven), showing arrangement of scales on chin.

LYGODACTYLUS METHUENI FitzSimons.

(Text-figs. 23 & 24; Plate XIII, fig. 2).

Methuen's Dwarf Gecko.

Lygodactylus methueni FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 276. text-figs. 1 & 2 (Type locality: Woodbush, N. Transvaal).

Description: Head longer than broad; snout obtusely rounded, somewhat flattened above, about $1\frac{1}{2}$ times distance from eye to ear-

opening and over $2\frac{1}{2}$ times diameter of eye; canthus rostralis not marked. Nostril pierced between rostral, first upper labial and three nasal scales, of which the anteriormost is the largest, transversely elongate and separated from its fellow by a single granular scale (exceptionally two) behind rostral; lowermost nasal longitudinally elongate and subequal to or a little larger than middle one. First upper labial much longer than second. Rostral large, subpentagonal, just over $1\frac{2}{3}$ times as broad as deep. Mental very large, entire, extending on sides beyond posterior margin of rostral, about twice as broad as long, obtusely angled behind; a row of 6 or 8 distinctly enlarged chin shields behind mental and anterior lower labials, the anteriormost pair in contact with one another behind mental; the enlarged chin shields pass more or less abruptly into the much smaller, somewhat elongate scales on throat. Scales on snout large, more or less flattened and much larger than granular scales on back; scales on belly smooth, flat, imbricate and slightly larger than largest scales on snout. Digits very unequal, inner rudimentary, 2nd. toe much shorter than 4th.; distal expansions each with 5 pairs of adhesive lamellae below, four of which are well-developed while the fifth (i.e. distalmost) is small and inconspicuous. Preanal pores 9—11 (usually 10), arranged in a slightly curved row. Tail longer than head and body, indistinctly segmented, with 6 rows of scales to each segment above and 3—4 below; scales above elongate and sub-imbricate, larger and more flattened than on back; below, scales much enlarged, irregular, flattened, imbricate and larger than those on belly.

Colour: Above, olive to olive grey, with four longitudinal rows of well-defined reddish-brown angular spots over the back (i.e. a dorsolateral and a lateral on either side), each spot bearing a smaller yellowish spot in an angular recess posteriorly; pale spots on limbs and a few indistinct dark brownish markings scattered on head;

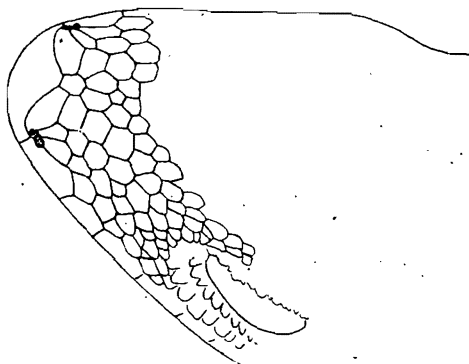


Fig. 23.

Fig. 23. *Lygodactylus methueni* (Type, T.M. No. 1961), showing arrangement of scales of snout. $\times 6$.

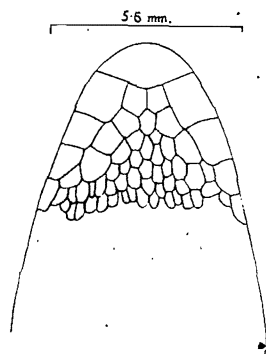


Fig. 24.

Fig. 24. *Lygodactylus methueni* (T.M. No. 1961), showing arrangement of scales on chin.

markings on tail similar to those on back. Underparts olive yellow, more intense on anal region and under tail; lower labials greyish and vermiculations of the same colour on throat. Specimens displaying a distinct colour variation are sometimes found; in these the rows of spots above are lacking, and are replaced on either side of the back by a broad brownish-white dorsolateral band, which extends from the eye to the base of the tail, and is broadly edged above and below with dark brown to black.

Dimensions: Male (Type, T.M. No. 1961), H. & B. 41.4, tail 50, length head 10.3, breadth head 7.8 mm.

Field notes: These geckos occur only within the precincts of the forest, where they are found living on the boles of large trees or on rocky outcrops at the edges of open spaces and clearings. The eggs, which are white and oval, vary from 6—7 × 8—8.5 mm. in size and are deposited in the usual manner in rock cracks and crevices or under the loose bark of trees.

Distribution: Known only from the type locality, viz. Woodbush Forest, Pietersburg District, N. Tvl.

Remarks: Type and topo-types in the Transvaal Museum, Pretoria.

PACHYDACTYLUS.

Platydaactyles part., Cuvier, 1829, Regne Anim., II, p. 45.

Platydaactylus Gray, 1825, Ann. Phil. (2) X, p. 199.

Anoplopus part., Wagler, 1830, Nat. Syst. Amph., p. 142.

Pachydaactylus Wiegmann, 1834, Herp. Mex., p. 19 (type: *bergii* Wiegmann = *ocellatus* Cuv.). Fitzinger, 1843, Syst. Rept., p. 99. Gray, 1845, Cat. Liz., p. 167. Boulenger, 1885, Cat. Liz., I, p. 200. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39. Boulenger, 1910, Ann. S. Afr. Mus., V, p. 459. Werner, 1910, Jena. Denkschr., XVI, p. 314. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 13. Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 133. Hewitt, 1927, Rec. Alb. Mus., III, p. 397.

Platydaactylus part., Dumeril & Bibrón, 1836, Erp. Gen., III, p. 290.

Homödaactylus Gray, 1864, P.Z.S. Lond., p. 59.

Elasmödaactylus Boulenger, 1894, P.Z.S. Lond., p. 727. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39. Boulenger, 1910, Ann. S. Afr. Mus., V, p. 456.

Digits free, with or without minute claws, more or less dilated, with a flattened nail-like scale at or near extremity above and a series of curved or angular, transverse, adhesive lamellae below distally (distalmost lamella usually divided); basal portion of digits inferiorly, covered with longitudinal series of scales similar to those above, or with median series enlarged. Body covered above with scales or granules, uniform or intermixed with enlarged tubercles; below, scales usually flattened and imbricate, exceptionally granular and convex (eg. *P. rugosus*). Pupil vertical; eyelid distinct above, with scales forming a more or less well marked denticulation, especially posteriorly. Preanal and femoral pores absent.

Distribution: Throughout Southern Africa, extending northwards into Angola, Nyasaland and Tanganyika Territory. Represented in South Africa by 40 species and subspecies.

Key to the South African Species and Subspecies of

PACHYDACTYLUS.

- | | |
|--|----|
| 1 Dorsal scaling homogeneous, with no enlarged scales or tubercles above | 2 |
| Dorsal scaling usually heterogeneous, some or the majority enlarged into tubercles | 13 |
| 2 Rostral not entering nostril | 3 |
| Rostral entering nostril | |

P. pircelli Boul., p. 65

- 3 Inferomedian row of scales on basal portion of digits not enlarged 4
 Inferomedian row of scales on basal portion of digits more or less enlarged 7
- 4 Nostril pierced between a large nasal scale and a number of small granular scales.
P. microlepis Hwt., p. 66
- Nostril pierced between two nasal scales only
P. austeni Hwt., p. 67
- Nostril pierced between three nasal scales 5
- 5 Nasorostrals usually in contact; scales on back granular and juxtaposed 6
 Nasorostrals widely separated by granular scales; scales on back flattened and subimbricate
P. latirostris Hwt., p. 68
- 6 First upper labial separated from nostril; scales on snout convex, subequal in size to those on back; scales on occiput finely granular and convex; belly scales only slightly smaller than scales on back
P. mariquensis mariquensis Smith, p. 69
- First upper labial entering nostril; scales on snout large, flattened, hexagonal, much larger than scales on back; scales on occiput small (but distinctly larger than in typical *mariquensis*), rounded, slightly convex; belly scales much smaller than scales on back
P. mariquensis macrolepis Fitz., p. 70
- 7 Scales on back more or less flattened and imbricate 8
 Scales on back granular and juxtaposed 9
- 8 Nasorostrals usually in long contact, snout obtusely pointed; habit moderately stout
P. punctatus punctatus Pet., p. 71
- Nasorostrals in short contact or separated by a small granule; snout more or less pointed; habit slender
P. punctatus amoenooides Hwt., p. 73
- 9 Head and body depressed; nasorostrals in contact 10
 Head and body not or but feebly depressed; nasorostrals usually separated 12
- 10 Head and body strongly depressed and flattened; rostral much broader than deep 11
 Head and body moderately depressed; rostral only slightly broader than deep
P. serval Wern., p. 74
- 11 Snout about $1\frac{3}{4}$ times diameter of eye; upper labials 9—10, lower 10; 7 transverse adhesive lamellae under median toes; tail distinctly segmented, with a transverse row of enlarged tubercles to each segment
P. kobosensis Fitz., p. 74

Snout almost twice diameter of eye; upper labials 7—9, lower 6—8; 5 transverse adhesive lamellae under median toes; tail indistinctly segmented, without transverse rows of enlarged tubercles or scales

P. bicolor Hwt., p. 75

- 12 Rostral subpentagonal, slightly broader than deep; 4—5 transverse adhesive lamellae under median digits

P. ocellatus (Cuv.), p. 77

Rostral rectangular, twice as broad as deep; 5—6 transverse adhesive lamellae under median digits

P. amoenus Wern., p. 78

- 13 Tubercles on back small, subconical to conical, distinguished from intervening granules only by their larger size 14

Tubercles on back large, smooth to strongly keeled or trihedral, convex to conical (exceptionally quite flat, smooth and juxtaposed eg. *P. laevigatus tessellatus*) 16

- 14 Nostril pierced between a large nasal (nasorostral) and two smaller nasals; 4—5 subdigital adhesive lamellae; small scattered white, dark-edged spots above

P. monticolus sp. nov., p. 79

Nostril pierced between a large nasal (nasorostral) and a number of much smaller scales; 3—4 subdigital adhesive lamellae; series of large dark brown to black spots or blotches above 15

- 15 Snout obtuse; scales on dorsolateral surface of snout subequal in size between eyes; nasorostrals widely separated by 2—4 granules; dark markings above not edged with white

P. maculatus maculatus Gray., p. 79

Snout somewhat pointed; scales on dorsolateral surface of snout larger than scales between eyes; nasorostrals narrowly separated by 1—2 granules; dark markings above edged with white

P. maculatus albomarginatus Hwt., p. 81

- 16 Dilated portion of digits small to moderately large, with 5—9 transverse adhesive lamellae below median toes 17

Dilated portion of digits large, with 10—13 transverse adhesive lamellae below median toes 28

- 17 Median row of subdigital scales on basal portion of digits strongly enlarged transversely 18

Median row of subdigital scales on basal portion of digits not or but feebly enlarged transversely 25

- 18 Rostral entering nostril 19

Rostral separated from nostril 21

- 19 A few small rounded tubercles scattered over back of head; dorsal tubercles somewhat small and well separated by granules 20

Tubercles on back of head numerous, subconical and keeled; back completely covered with large, strongly keeled, contiguous scales (no granular interspaces)

P. scutatus Hwt., p. 82

- 20 Head moderately depressed, just slightly longer than broad; enlarged dorsal tubercles more or less evenly spaced over back; mental not or but slightly narrowed behind; 7 transverse adhesive lamellae under median toes

P. montanus montanus Mthn. & Hwt., p. 83

Head strongly depressed, from $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as broad; enlarged dorsal tubercles sparsely scattered and confined for the most part to dorsolateral and lateral surfaces of back; mental distinctly narrowed behind; 6 transverse adhesive lamellae under median toes.

P. montanus onsepeensis Hwt., p. 84

- 21 Enlarged scales or tubercles usually present on forearm; median row of subcaudal scales distinctly enlarged 22
No enlarged scales or tubercles on forearm; median row of subcaudal scales not enlarged; tubercles on back oval, keeled. evenly spaced and in about 16 regular longitudinal rows

P. wernerii Hwt., p. 85

- 22 Tubercles on back all large and more or less equal-sized, strongly keeled or trihedral, in about 18 regular longitudinal rows; habit slender, tail subcylindrical 23
Tubercles on back largest dorsolaterally (much larger than those over middle of back), simply keeled; habit somewhat stout, tail depressed basally 24

- 23 Head elongate, not much broader than neck, $1\frac{1}{2}$ times as long as broad; rostral rectangular, distinctly less elevated than adjoining upper labials; tubercles on back large and closely set, with seldom more than a single granule between; a few small dark spots on back

P. robertsi Fitz., p. 85

Head moderate, not much depressed, much broader than neck, $1\frac{1}{4}$ times as long as broad; rostral pentagonal, subequal in height to adjoining upper labials; tubercles on back usually at least 2 granules apart; banded above with dark brown

P. fasciatus Boul., p. 87

- 24 Tubercles on dorsolateral surface of back about twice as large as the more flattened ones mesially; small button-like tubercles on back of head a little smaller than scales on snout; rostral pentagonal, not more than $1\frac{1}{2}$ times as broad as deep; nasorostrals usually in moderate to short contact

P. weberi weberi Roux, p. 88

Tubercles on back enlarged dorsolaterally, over middle of back at most very small and flattened, and often a considerable mesial area quite free of tubercles; button-like tubercles on back of head very small and few in number, sometimes absent; no enlarged scales or tubercles on forearm as in typical *weberi* or *acuminatus*

P. weberi gariesensis Hwt., p. 90

Tubercles on back in regular longitudinal rows, differentiation in size between dorsolateral and median tubercles not strongly marked; button-like tubercles on back of head much smaller than scales on snout; rostral subrectangular, almost twice as broad as deep; nasorostrals usually in long contact; snout more pointed and habit a little more slender than in typical *weberi*

P. weberi acuminatus Fitz., p. 90

- 25 Dorsal scaling composed of flattened to convex granules, intermixed with keeled or trihedral tubercles; scales on throat granular, flattened or convex and smooth; scales on belly smooth, flat, imbricate and larger than on middle of throat 26

Dorsal scaling very rough, composed of small unequal-sized granules (often subconical and striated) intermixed with large, sharply conical, striated and keeled tubercles; scales on throat granular, subconical and usually striated; scales on belly granular, convex to subconical or subpyramidal, juxtaposed (sometimes more or less flattened and subimbricate posteriorly), smaller than scales on middle of throat

P. rugosus Smith, p. 91

- 26 No well defined chin shields present 27

A well defined row of 5 or 6 chin shields present behind mental and anterior lower labials; nasorostrals separated by a large flattened granule; 4 transverse adhesive lamellae under median digits

P. mentalis Hwt., p. 92

- 27 Tubercles on back moderate to large, simply keeled, in more or less regular longitudinal rows; tubercles on back of head subequal in size to scales on snout; nasorostrals usually in contact; 1st upper labial not entering nostril; enlarged tubercles on forearm and hindlimb; more or less regular transverse rows of enlarged, keeled scales on tail; 5—6 transverse adhesive lamellae under median digits; variegated above with white and dark spots, white below

P. capensis capensis Smith, p. 93

Tubercles on back large, strongly keeled or trihedral towards the sides, in somewhat irregular longitudinal series; tubercles on back of head smaller than scales on snout; enlarged tubercles present on limbs; 4—5 transverse adhesive lamellae under median digits; transverse rows of enlarged scales on tail somewhat feebly differentiated; dark spots and wavy, black-edged white crossbars above, white below

P. capensis vansoni Fitz., p. 96

Tubercles on back large, strongly keeled or trihedral, regularly spaced in longitudinal rows; tubercles on back of head rounded, conical, keeled, smaller than scales on snout; nasorostrals well separated by a moderately large granule; upper labials distinctly elevated; tubercles present on limbs; regular transverse rows of enlarged pointed, keeled scales on tail; with dark brown to blackish paired markings above, creamy white to greyish below

P. capensis labialis Fitz., p. 97

Tubercles on back large, closely set, strongly keeled or trihedral, in regular longitudinal series; tubercles on back of head few in number, smooth, rounded, subequal in size to scales on snout; nasorostrals usually separated by 1 or 2 granules; 4—5 adhesive lamellae under median digits; tubercles on forearm small and smooth, on hindlimb larger and keeled; regular transverse rows of enlarged, flattened, keeled and pointed tubercles on tail; brown, with 5 pale, dentated, transverse bands above, finely speckled with brown below

P. capensis formosus Smith, p. 98

Tubercles on back similar to *formosus*; tubercles on back of head conical, striated, larger than the keeled, subconical scales on snout; nasorostrals separated by 1 or 2 granules; enlarged tubercles present on limbs, those on hindlimb being conical, keeled and striated; regular transverse rows of large, somewhat flattened, conical, keeled and spinose scales or tubercles on tail; 5 transverse adhesive lamellae under median digits; dark above with dentated white crossbars, often linked up with longitudinal streaks thus forming series of large dark oval spots or blotches; below with dark vermicular markings on chin and throat and dark speckling on belly

P. capensis barnardi Fitz., p. 99

Tubercles on back subconical and weakly keeled; tubercles on back of head subequal in size to scales on snout; nasorostrals in contact; mental almost twice as long as broad; enlarged tubercles absent on forearm but present on hindlimb; no transverse rows of enlarged scales or tubercles on tail; dark above with three broad creamy-white transverse bands, white below

P. capensis o'shaughnessyi Boul., p. 100

Tubercles feebly differentiated on back, but back covered with closely intermingled small and large granules, the latter of which are definitely conical and each encircled by a ring of small granules; no enlarged tubercles on back of head; nasorostrals separated by a single small granule; 5 transverse adhesive lamellae under median digits; light brown above with 4 longitudinal series of elongate oval dark brown blotches, each edged with white, brownish-white below

P. capensis oculatus Hwt., p. 101

Tubercles on back small, oval, more or less keeled and irregularly disposed (often feebly enlarged and inconspicuous mesially); no tubercles on back of head nor on limbs; no transverse rows of enlarged scales or tubercles on tail; 5-6 transverse adhesive lamellae under median digits; dark spotted or blotched above, usually with 5-6 (often ill-defined) thin, dark-edged, white cross-stripes; white to pale brownish below

P. capensis affinis Boul., p. 102

Tubercles on back small, flattened, smooth or feebly keeled, subequal in size to scales on snout, more or less juxtaposed, without or with very few intervening granules; tubercles on back of head very small, smooth and rounded; no tubercles on limbs; no transverse rows of enlarged scales nor tubercles on tail; 4-5 transverse adhesive lamellae under median digits; greyish to purplish-brown above, with 5-6 distinct yellowish-white cross stripes; white to greyish-brown below

P. capensis tigrinus van Dam, p. 103

- 28 Rostral entering nostril; infero-median row of scales on basal portion of digits more or less enlarged

P. namaquensis Sclat., p. 104

Rostral separated from nostril; median row of subdigital scales on basal portion of digits not or but very feebly enlarged

29

- 29 Dorsal tubercles strongly keeled, trihedral or stellate; nostril directed upwards and outwards; gular scales subgranular

P. bibronii Smith, p. 106

Dorsal tubercles smooth or obtusely keeled; nostril directed almost vertically upwards; gular scales flattened 30

30 Tubercles on back raised, rounded to suboval, smooth or feebly keeled, with granular interspaces

P. laevigatus laevigatus Fisch., p. 109

Tubercles on back flattened, smooth, contiguous, rounded to polygonal in shape, no intervening granular scales present except on sides

P. laevigatus tessellatus Fitz., p. 110

PACHYDACTYLUS PURCELLI Boulenger.

(Plates VII, fig. 3, and XIII, fig. 5).

Purcell's Gecko.

Pachydactylus purcelli Boulenger, 1910, Ann. S. Afr. Mus., V, p. 494 (Type locality: Touwsriver, C.P.). Hewitt, 1911, Ann. Tvl. Mus., III, p. 45. Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 131, text-fig. 15 (Wasserfall, Kraikluft, Narudas Süd & Alt Wasserfall, Gt. Karasberg Dist.). Hewitt, 1927, Rec. Alb. Mus., III, p. 397. Parker, 1936, Novit. Zool., XL, p. 130 (Maltahohe). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 176 (nr. Warmbad south; nr. Van Wyksvlei).

Pachydactylus pardus Sternfeld, 1911, Mittl. Zool. Mus. Berlin, V, p. 398 (Warmbad).

Pachydactylus purcelli part., FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 529 (Kakamas; nr. Kenhardt).

Description: Head much depressed, a little longer than broad, much broader than neck. Snout about $1\frac{1}{4}$ times the distance between eye and ear-opening, and $1\frac{2}{3}$ times diameter of eye. Ear-opening oval or sub-circular, oblique. Nostril pierced between three nasals, first upper labial (exceptionally just separated from nostril) and rostral; the anteriormost nasal (or nasorostral) in contact with its fellow behind the rostral, which is almost twice as broad as deep and broader above than below. Upper and lower labials 8—10. Mental elongate, from $1\frac{3}{4}$ to slightly over twice as long as broad, usually narrowing considerably behind and extending as far, or almost as far, back as the adjoining lower labials; latter somewhat elongate, broader than mental, not narrowing behind. No chin shields; scales on chin and throat minute, flat and granular. Head and body above covered with flat granules, which are largest on the snout and flanks posteriorly and smallest on back of head. Scales on belly smooth, flat, subimbricate and much larger than granules on back; ventral scales usually distinctly enlarged preanally. Digits short, feebly dilated distally, with 5—6 (usually 6) transverse adhesive lamellae below; median row of subdigital scales transversely enlarged, there being 9—10, under median toes. Tail longer than head and body, distinctly segmented, each segment with 5—6 rows of scales above and 3—4 below; a transverse series of 6—8 (usually 6) enlarged tubercles along posterior border of each segment above and on the sides, the outermost being largest (in very old specimens these tubercles are often absent or reduced to 4, i.e. two on each side); scales on tail arranged in regular annular series, those above being flat, subimbricate and larger than granules on back, while those below are imbricate and at least twice as large as above. Two moderately enlarged flattened tubercles on either side base of tail in males.

Colour: Above, pale olive to greyish-brown with darker spots, blotches or vermicular marblings of rich sienna to dark brown;

these dark markings sometimes coalesce to form irregular crossbars which enclose three broad, pale, slate-coloured crossbands (on nape, across middle of back and on rump); a dark streak from nostril through eye to just above ear-opening, often continuing and almost encircling back of head in young specimens; sides of neck tinged with yellow. Lower surfaces white to greyish-white. Tail banded with dark brown and transverse series of enlarged tubercles picked out in white.

Dimensions: Male (T.M. 15921—Kakamas), H. & B. 44, tail 53, length head 10.3, breadth head 9 mm.

Field notes: Rupicolous and nocturnal, confined to dry arid areas where they live in rock cracks and crevices, sometimes at fairly high altitudes, as in the Gt. Karasberg District. The ground colour varies from pale to dark, according to the nature of the rocks among which they are found.

Distribution: Inland districts of the western Cape Province and Great Namaqualand, from Touwsriver and Matjesfontein in the south to Maltahöhe in the north. Recorded localities: Modder River (A.M.). Kraikluft, Gt. Karas Mts. (A.M. & T.M.). Touws River; Prince Albert Poort; Naroep and Kraaiwater. L.N. (S.A.M.). Matjesfontein; Beaufort West (S.A.M. & T.M.). Narudas Süd; Kraikluft-Wasserfall, Gt. Karas Mts.; Kakamas; Van Wyk's Vlei; Kenhardt-Prieska; Verloor; 15 mls. S. Warmbad, G.N. (T.M.).

Remarks: Types in the South African Museum, Cape Town. There is but little doubt that *P. pardus* Sternf., described from Warmbad (presumably in Great Namaqualand), is the same as *purcelli*, which is known from just south of Warmbad and other localities in Great Namaqualand.

PACHYDACTYLUS MICROLEPIS Hewitt.

Small-scaled Gecko.

Pachydactylus maculatus microlepis Hewitt, 1935, Rec. Alb. Mus., IV, p. 312 (Type locality: Coetzee's Berg, near Pearston, Cape Province).
? *Pachydactylus maculatus* part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 462 (Bulawayo).

Description: Similar to *P. maculatus maculatus*, but with scales on back all uniformly subgranular, there being no enlarged tubercles present either on back, tail or upper surfaces of limbs; head more depressed and snout more pointed; nasorostrals narrowly separated from one another by one or two small granules; mental much narrower and shorter than adjacent lower labials, distinctly narrowed behind.

Colour: Above, more or less uniformly brownish, with faint indications of small darker spots on back; a dark band on either side of head from behind nostril, through eye and fading out at a point just above ear-opening; a few dark spots on snout and on labials, especially the lower; eye ringed with white.

Dimensions: Type (A.M. 5353), H. & B. 33, tail reproduced, length head 8.0, breadth head 7.0 mm.

Distribution: Known only from the type locality, viz. Coetzee's Berg, Pearston District, Cape Province.

Remarks: Type in the Albany Museum, Grahamstown. A juvenile specimen in the Rhodesian Museum, collected near Bulawayo, comes very close to *microlepis*, but will probably prove separable when a series is available.

PACHYDACTYLUS AUSTENI Hewitt.

(Text-fig. 25; Plate XIII, fig. 6).

Austen's Gecko.

Pachydactylus austeni Hewitt, 1923. Ann. Natal Mus., V, p. 67, text-figs. 1 & 3, pl. IV, figs. 1 & 2 (Type locality: Port Nolloth, L.N.), and 1927. Rec. Alb. Mus., III, p. 397. Loveridge, 1936, Field Mus. N. H. Zool. Ser., XXII, p. 51 (Kleinsee).

Description: Head oviform, flattened above, swollen in temporal region, a little longer than broad, distinctly broader than neck. Snout more or less pointed, short, subequal to distance between eye and ear-opening, from $1\frac{1}{3}$ to $1\frac{1}{2}$ times diameter of the rather large eye. Rostral subpentagonal, $1\frac{1}{2}$ times as broad as deep. Nostril well separated from rostral and first upper labial, pierced between two nasal scales, the anterior of which is much the larger and in contact

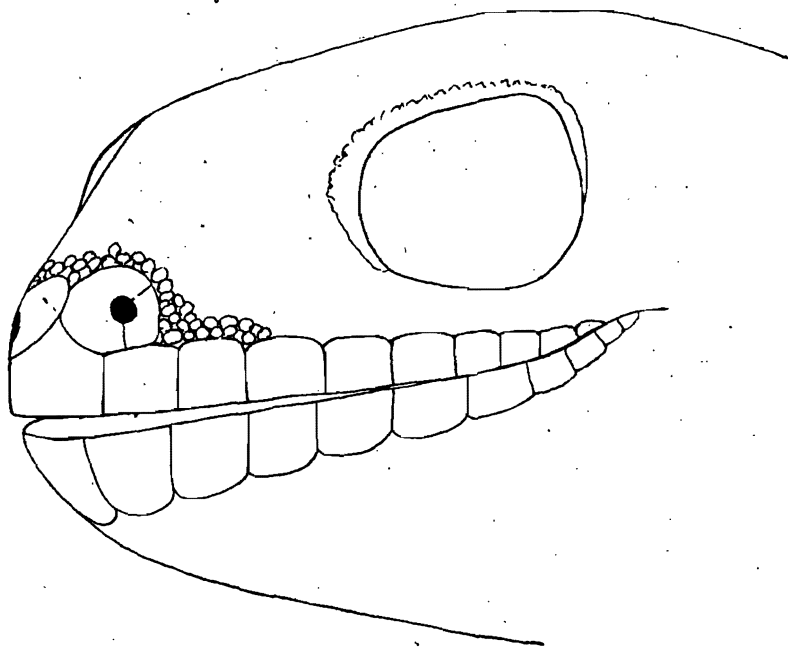


Fig. 25. *Pachydactylus austeni* (T.M. No. 3762-Lamberts Bay), showing position of nostril in relation to surrounding scales. $\times 8.5$.

with its fellow behind the rostral (exceptionally separated by 2 granules placed one behind the other). Upper labials 8—10, lower 7—10. Mental distinctly narrower but slightly longer than adjoining lower labials, about $1\frac{1}{3}$ times as long as broad, rounded behind. No enlarged chin-shields, scales on chin and throat all minutely granular. Upper surfaces covered with small homogeneous granular scales, those on snout somewhat flattened and larger than on back; scales on back of head subequal in size to those on back, on limbs slightly smaller; no enlarged tubercles present. Scales on belly more or less flattened, subimbricate, subequal to or a little smaller than those on back. Digits very slightly dilated distally, with 3—4 (3 under fingers and 4 under toes) transverse adhesive lamellae inferiorly; basal portion of digits covered above and below with very small equal-sized scales, there being no enlarged scales along the median line below. On either side base of tail near the vent, there is a

longitudinal row of 5-6, vertically enlarged scales, the largest proximally.

Colour: Above, greyish- to yellowish-brown, with a dorsolateral series of moderate-sized darker markings or spots over back and tail; dark spots above often ill-defined or absent, when back may be stippled with dark brown and white or with white spots arranged in three more or less regular longitudinal series (one vertebral and two lateral) over back. A dark streak on temple, from behind eye to above ear, and another from nostril to eye, present or absent. Below, uniform creamy to dirty white. Eyelid white.

Dimensions: Male (T.M. 3762—Lamberts Bay), H. & B. 47, tail (reproduced) 32, length head 12.2, breadth head 10, forelimb 16, hind-limb 19.5 mm.

Distribution: The coastal areas of Little Namaqualand, extending southwards as far as Darling in the western Cape Province. Recorded localities: Darling (S.A.M.). Lamberts Bay (T.M.). Kleinzee (K.M. & S.A.M.). Port Nolloth (A.M. & N.M.).

Remarks: Types in the Natal Museum, Pietermaritzburg and Albany Museum, Grahamstown.

PACHYDACTYLUS LATIROSTRIS Hewitt.

(Plates VIII, fig. 1 & XIV, fig. 1).

Karoo Stone or Quartz Gecko.

Pachydactylus latirostris Hewitt, 1923, Ann. Natal Mus., V, p. 69, pl. IV, fig. 3 (Type locality: Victoria West, C.P.), and 1927, Rec. Alb. Mus., III, p. 398. Power, 1933, Trans. Roy. Soc. S. Afr., XXI, p. 215 (nr. De Aar Station). FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 529 (Pofadder; Kakamas; nr. Kenhardt). Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 20.

Pachydactylus mariquensis (non A. Smith) Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 130 (Narudas Süd, Gt. Karasberg Dist.).

Description: Head about $1\frac{1}{2}$ times as long as broad. Snout short, convex, rounded, about $1\frac{3}{4}$ times distance between eye and ear-opening and a little over $1\frac{1}{2}$ times diameter of eye. Nostril pierced between three nasal scales, the anteriormost (or nasorostral) widely separated from its fellow behind rostral by several small scales. Rostral over twice as broad as deep, with upper edge truncated and not forming a median angle. Upper labials 6-8, lower 7-10. Mental small, subequal to or a little narrower than adjacent lower labials, not or but slightly narrowed behind, where it is rounded and extends a little further than anterior labials. No chin shields, scales on chin and throat uniformly minute and granular. Scales on snout subgranular and more or less flattened, on back of head much smaller and distinctly flattened. Back covered with flattened, subimbricate scales, which are slightly larger than those on snout. Scales on belly smooth, subgranular and juxtaposed, often subimbricate in young; over preanal region scales enlarged, flattened and subimbricate. Limbs moderately long; digits each with 3-4 transverse adhesive lamellae below distally, but with infero-median rows of scales under basal portion of digit not enlarged. Tail shorter than head and body, covered with smooth imbricate scales (larger than on back), arranged in more or less regular transverse rows; a series of 2-4 (usually 3) enlarged scales on either side base of tail in males.

Colour: Above, light purplish to cinnamon drab, with six irregular, wavy, dark-edged crossbands of light reddish- to carrot-brown on nape and back, and 8-9 on tail; these cross-bands are often reduced to a series of transverse patches along middle of back, and occasion-

ally bands are absent, when head and body are spotted and freckled with darker brown. A buffy pink spot usually present near upper posterior corner of eye, also a bar of the same colour from just behind the eye to labial margin. Below, white, usually tinged with pink.

Dimensions: Female (T.M. 15903—Kakamas), H. & B. 58, tail 45, length head 11.7, breadth head 9.3 mm.

Field notes: Usually found in open areas, living under stones, and especially partial to the quartz fields which occur frequently in the western parts of South Africa. Nocturnal.

Distribution: From the western Karroid areas of the Cape Province, through the north-west Cape into Great Namaqualand. Recorded localities: Zwart Modder, Rietfontein (A.M.). Victoria West (A.M., K.M. & N.M.). De Aar; Namies, Kenhardt District (S.A.M.): Kakamas; Pofadder; Kenhardt—Prieska; Narudas Süd, Gt. Karasberg District (T.M.).

Remarks: Types in the Albany Museum, Grahamstown.

PACHYDACTYLUS MARIQUENSIS MARIQUENSIS A. Smith.

(Plate XIV, fig. 2).

Marico Gecko.

Pachydactylus mariquensis A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 3 (Type locality: "Interior of Southern Africa, towards the Tropic of Capricorn"). Boulenger, 1885, Cat. Liz., I, p. 207, pl. XVI, fig. 6. Hewitt, 1910, Ann. Tvl. Mus., II, p. 85, and 1911, III, p. 45 (Bluecliff, nr. Uitenhage). Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 150 (Kimberley). Hewitt, 1927, Rec. Alb. Mus., III, p. 397. Cott, 1934, P.Z.S. Lond., p. 149 (Mortimer). Loveridge, 1936, Field Mus. N.H. Zool. Ser., XXII, p. 51 (Lady Frere). FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 265. Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 20, pl. VIII, fig. 2 (Fort Brown; Bitterfontein).

Pachydactylus mariquensis part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 462 (Clanwilliam; Worcester; Hanover, Graaff-Reinet; Malmesbury; Kerhardt; Albany District). Hewitt, 1910, Ann. Tvl. Mus., I, p. 87 (Grahamstown; Blue Cliff, Uitenhage Dist.).

Description: Head very convex, a little longer than broad. Snout very short, rounded, slightly longer than distance between eye and ear-opening, $1\frac{1}{2}$ times diameter of eye. Nostril pierced between three nasal scales, the anteriormost of which (nasorostral) is generally in contact with its fellow behind the rostral, which is not more than $1\frac{1}{2}$ times as broad as deep. Upper and lower labials 6—8. Mental not or but slightly narrowed behind, as long as but narrower than adjacent lower labials. No chin-shields; gular scales all minute, granular and juxtaposed. Upper surfaces covered with convex granules, those on snout and back being subequal in size, while those on back of head are much smaller. Body not or but feebly depressed; limbs long; digits rather short, dilated slightly at tips, with 3—4 transverse adhesive lamellae inferiorly; no median row of enlarged subdigital scales. Scales on belly flattened, equal and subimbricate, slightly smaller than on back. Tail cylindrical, tapering, unsegmented, shorter than head and body, covered above and below with equal-sized, smooth, slightly imbricate scales, arranged in regular transverse series and much larger (3—4 times) than granules on back. A series of 3—4 enlarged conical or sharply pointed, compressed scales on either side base of tail in males.

Colour: Above, grey, with five irregular reddish-brown, black-edged markings across back, in the form of posteriorly directed angular bands, which are sometimes divided along the vertebral line; similar bands on tail; a dark spot on snout, often fusing with

another on forehead between the eyes; a third spot on side of head between eye and second labial; an irregular dark band round back of head, commencing from behind the eyes; upper and lower labials with or without dark spots. A few pale spots often present on upper surface of hind-limbs. Lower surfaces uniform creamy white.

Dimensions: Female (T.M. 12786—Fort Brown), H. & B. 43, tail 36, length head 11, breadth head 9 mm.

Field notes: Somewhat similar in general habits to *P. m. maculatus*, but usually found in open Karroid localities, where it lives in holes in the ground, often utilising deserted Trapdoor Spider's nests for its home.

Distribution: From the south-western and central Cape Province, eastwards to the Albany District, and northwards into the Orange Free State and Griqualand West. Recorded localities: Ludlow; Cranford; nr. Steytleville; Koup, nr. Laingsburg; Springfield, nr. Rosmead; Meadows; Douglas (A.M.). Kimberley (A.M. & S.A.M.). Halesowen (A.M. & P.E.M.). Worcester; Graaff-Reinet (A.M. & S.A.M.). Redhouse; Albany Dist. (A.M., S.A.M. & T.M.). Fort Brown (A.M. & T.M.). Winburg Dist. (B.M.). Schoombie; Belmont; Riverton (K.M.). Pakhuisberg; Touwsriver; Hanover; Matjiesfontein; Burgersdorp; Smithfield (S.A.M.), nr. Fraserburg Rd. (T.M.).

Remarks: Types in the British Museum of Natural History, London.

PACHYDACTYLUS MARIQUENSIS MACROLEPIS FitzSimons.

(Text-fig. 26).

Pachydactylus mariquensis Boulenger, 1905, P.Z.S. Lond., II, p. 252 (Klipfontein). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 412 (O'okiep). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 16.

Pachydactylus mariquensis part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 462 (Little Namaqualand; Springbokfontein). Hewitt, 1910, Ann. Tvl. Mus., II, p. 87 (British Namaqualand).

Pachydactylus mariquensis macrolepis FitzSimons, 1939, Ann. Tvl. Mus., XX, p. 6, text-fig. 1 (Type locality: Springfontein; Little Namaqualand).

Description: Nostril pierced between three nasals and first upper labial (first upper labial usually not entering nostril in typical *mariquensis*), the anteriormost nasal (or nasorostral) in good contact

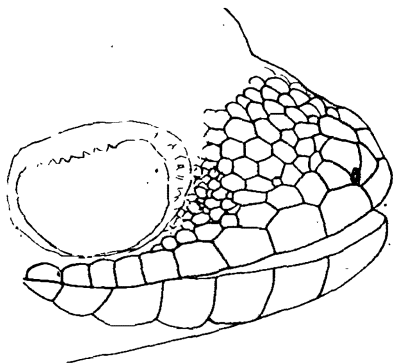


Fig. 26. *Pachydactylus mariquensis macrolepis* (Type, S.A.M. No. 1159), showing arrangement of scales on snout $\times 6$.

with its fellow behind rostral; a moderately large (as large as or larger than any other on snout), flattened, polygonal scale placed mesially just behind nasorostrals and separating second pair of nasals.

Scales on snout large, flattened hexagonal, much larger than those on back (in *mariquensis* scales much smaller, granular, convex and subequal in size to those on back); on occiput scales much smaller, rounded and slightly convex (in *mariquensis* finely granular and convex); scales over back more or less flattened or but very slightly convex, juxtaposed, larger than on back of head; scales smallest on nape. Upper labials 8—9, lower 6—7; scales on throat very small, convex and granular; belly scales flattened, imbricate, much smaller than on back (in *mariquensis* belly scales only slightly smaller than scales on back). Digits with 3 transverse adhesive lamellae below distal dilation. A horizontal row of three enlarged, pointed, compressed scales on either side base of tail near vent.

Colour (in spirit): Tawny to yellowish-brown above, with 5—6 irregular, broad, chestnut-brown, dark-edged, transverse bands, the first round back of head from behind the eyes, second on nape, third and fourth on back and last on rump; these crossbands may sometimes be partially divided mesially; head uniform or finely speckled with black. Tail banded, the pale interspaces being much narrower than the dark bands. Limbs light brown above with indistinct whitish spots. Lower surfaces a uniform creamy white.

Dimensions: Male (Type, S.A.M. No. 1159), H. & B. 50.5, tail 39, length head 11.8, breadth head 9.2 mm. Female (Type, S.A.M. No. 2417), H. & B. 52, tail missing, length head 12, breadth head 10.2 mm.

Distribution: Little Namaqualand, probably confined to the northern part thereof. Recorded localities: Little Namaqualand; Springbokfontein (S.A.M.).

Remarks: Types in the South African Museum, Cape Town.

PACHYDACTYLUS PUNCTATUS PUNCTATUS Peters.

(Plates VIII, fig. 2 & XIV, fig. 3).

Peters' Spotted Gecko.

Pachydactylus punctatus Peters, 1854, Monatsb. Ak. Wiss. Berlin, p. 615 (Type locality: Sena & Tete, Mocambique), and 1855, Archiv. Naturg., I, p. 44, and 1882, Reise n. Mossamb., III, p. 26, pl. V, figs. 2, 2a—e. Boulenger, 1885, Cat. Liz., I, p. 206, and 1910, Ann. S. Afr. Mus., V, p. 462 (Matopos, S.R.; Serowe, B.P.). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 85 & 88 (Selati, Tvl.), and 1916, Ann. Nat. Mus., II, p. 483 (Serowe). Parker, 1936, Novit. Zool., XL, p. 130 (Hoffnung, S.W. Africa).

Pachydactylus punctatus punctatus Hewitt, 1927, Rec. Alb. Mus., III, p. 398. FitzSimons, 1935, Ann. Tvl. Mus., XVI, p. 339 (Titumi & Kalakamati, B.P.). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Letaba Camp). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 175 (Lake Guinas; Okaukuejo-Outjo; nr. Outjo; Paderburn; Kalkveld; nr. Usakos; nr. Arandis; Neudamm), and 1939, XX, p. 28 (Birch-enough Eridge).

?*Pachydactylus ocellatus* (non Cuvier) Peters, 1869, Oefvers Vet. Ak. Forh., No. 7, p. 657 (Damaraland). Bocage, 1905, Herp. Angola, p. 16 (Angola locs.). Boulenger, 1905, A.M.N.H. (7) XVI, p. 110 (Angola).

?*Pachydactylus ocellatus* part., Boulenger, 1885, Cat. Liz., III, p. 205 (Benguela). Werner, 1910, Jena. Denkschr., XVI, p. 313 (S. Hereroland; farm 'Neitsas,' nr. Grootfontein). Sternfeld, 1911, Mitt. Zool. Mus., V, p. 397 (Windhoek), and Fauna Deutsch. Kolon., IV, 2; p. 15, (Kubub; Windhoek).

Pachydactylus brunthaleri Werner, 1913, Denkschr. Ak. Wiss. Wien, LXXXVIII, p. 718 (Bulawayo, S.R.), and 1915, in Michaelsen, Land-u. Süswasserfauna-Deutsch-S.W. Afr., I, p. 334 (Grootfontein; Teufelsbach & Osona, nr. Okahandja; Karibib; Windhoek).

Pachydactylus punctatus brunthaleri Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 478 (Narebis, W. of Otjiwarongo), and 1927, Rec. Alb. Mus., III, p. 398. Schmidt, 1934, Ann. Carnegie Mus. XXII, p. 5 (Pico Azevedo, S. Angola).

Pachydactylus punctatus langi FitzSimons, 1932, Ann. Tvl. Mus., XV, p. 35 (Gemsbok Pan, Ghansi Dist.), and 1935, XVI, p. 339.

Description: Head oviform, moderately depressed, from $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad. Snout convex, obtusely pointed, in length from $1\frac{1}{3}$ to almost twice (usually $1\frac{1}{2}$ to $1\frac{2}{3}$) times diameter of eye and from $1\frac{1}{5}$ to $1\frac{1}{3}$ times distance between eye and ear-opening; latter small, round to suboval, slightly oblique. Rostral subtriangular to subpentagonal, $1\frac{1}{2}$ times to twice as broad as deep, widely separated from nostril; latter pierced between three nasal scales, the anteriormost (or nasorostral) much larger than the two small subequal posterior scales, and usually in good contact with its fellow behind rostral, sometimes in short contact or separated by a small granule; first upper labial separated from or just entering nostril. Scales on snout large and more or less flattened, from two to four times size of those on back of head (exceptionally less than twice). Upper labials 6—9 (usually 7), lower 5—7 (usually 6). Mental subequal to or a little broader than adjoining labials at base, narrowing but slightly behind, where it is rounded and does not project beyond posterior margin of adjacent labials (occasionally narrowing behind to about half anterior width). Gular scales minute, slightly convex or flattened and a little larger along labial margin. Scales on back flattened, subimbricate to imbricate, subequal to or a little larger than scales on snout, larger on sides. Scales on belly smooth, flattened, imbricate, usually distinctly larger than those on back. Tail cylindrical, feebly depressed at base, unsegmented, tapering to a fine point, from $1\frac{1}{5}$ to $1\frac{1}{3}$ times length of head and body; covered above and below with smooth, flat, strongly imbricate scales which are, dorsally, at least twice as large as scales on back, and ventrally still larger. Digits feebly dilated distally, fingers I and V each with 3 subdigital adhesive lamellae, remaining digits with 4—5 (usually 4); on basal portion of digits there is an infero-median row of more or less enlarged (transversely) scales, numbering 9—10 on 4th toe. A series of 3—5 (usually 3) enlarged, strongly compressed, pointed scales on either side base of tail near vent.

Colour: Above, pale grey, greyish-brown to purplish-brown, with small spots and vermicular markings of dark brown or with dark blotches, which may be arranged in irregular longitudinal or transverse series; small, scattered, whitish spots often present also and sometimes dark spots and markings faint or absent, especially in young specimens; a dark streak on either side of head (sometimes indistinct or absent) from nostril through eye to above ear-opening, often distinctly emarginate below, from behind eye. Labials usually dark spotted. Lower surfaces uniform white to creamy white. Tail sometimes indistinctly barred above; in juveniles the tail pales distally to light pinky-brown above and pink below. Eye edged with white above and in front.

Dimensions: Male (T.M. 19035—Birchenough Bridge), H. & B. 38.5, tail 43, length head 9.5, breadth head 7.3 mm.

Field notes: Invariably found living under stones in open grass country or bushveld; largely nocturnal, coming out after dark to seek their food, which consists mainly of small ground living beetles; in certain areas where these little geckos are plentiful, they are often encountered abroad in large numbers at night after or during rainy weather; fairly slow in movement and easily captured by hand. The eggs, which are laid in midsummer and deposited in pairs under stones, are white, oval and measure from 8—8.6 × 6.2—7 mm.

Distribution: Northern Transvaal, extending westwards into Damaraland and Angola, northwards into Southern Rhodesia and eastwards into Portuguese East Africa. Recorded localities: Messina; Swakopmund; Omatjenne; Omataku Mts.; Karib; Rehoboth; Empan-

dëni; Plumtree (A.M.). Serowe; Kam River, Rehoboth Dist. (A.M. & T.M.). Bulawayo (N.M. & R.M.). Louis Trichardt; Acornhoek; Namakunde; Otjiwarongo; Hares; Gaub; Kamanyab; Otjimbombe; Sandup; Otjitundua; Otjikondo—Kamanyab; Karos; Otjitambe; Tsumeb; Ababis; Otjituo; Narebis; Matopos (S.A.M.). Outjo (S.A.M. & T.M.). N'Jelele, Magalakwin & Brak River Districts, N. Tvl.; Gravelotte; Wilhanshohe; Zondagfontein; Bridgewater; Selati; Leydsdorp; Blyde, Brak, Nuanetsi & Olifants River Districts, E. Tvl.; Klaserie; Haenertsburg; Punda Maria; Letsitele Sdng.; Titumi; Lake Guinas; Paderburn; Kalkveld; Arandis; Neudamm; Usakos; Birch-enough Bridge (T.M.).

Remarks: Types in the Berlin Museum. All records of *Pachydactylus ocellatus* from S.W. Africa and Angola have here been included with *punctatus*, as it is extremely doubtful if the former species occurs in these areas, (for details see under description of *P. ocellatus*).

PACHYDACTYLUS PUNCTATUS AMOENOIDES Hewitt.

?*Pachydactylus ocellatus* part., Werner, 1910, Jena. Denkschr. XVI, p. 313: (Kubub & Luderitzbucht). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 15 (Kubub; Luderitzbucht).

Pachydactylus punctatus Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 130 (Quibis = Kuibis; Nakeis Mine; Kraikluft, Gt. Karasberg Dist.).

Pachydactylus brunthaleri (non Werner), FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 530 (Kuibis & Aus, G.N.).

Pachydactylus punctatus amoenoides Hewitt, 1935, Rec. Alb. Mus., IV, p. 314 (Type locality: Luderitzbucht). Mertens, 1937/38, Veröff. Deutsch. Kolon.-u. Übersee Mus. Bremen, II, hft. 1, p. 10 (Luderitzbucht). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 175 (Farm 'Barby,' G.N.).

Description: Distinguishable from typical *punctatus* on the following: Form generally more slender; head more depressed and about $1\frac{1}{3}$ times as long as broad; snout somewhat pointed, from $1\frac{2}{5}$ to $1\frac{3}{5}$ times diameter of eye; nasorostrals in short contact or separated by a granular scale; 1st. upper labial entering nostril, exceptionally narrowly separated therefrom; rostral from $1\frac{1}{2}$ to $1\frac{3}{5}$ times as broad as deep; upper labials 6—8 (usually 7), lower 5—7 (usually 6); mental distinctly narrower than adjacent lower labials, and narrowing behind; scales on snout flattened, much larger than granular scales on back of head, subequal to or a little larger than flattened imbricate scales on back; subdigital scales on basal portion of digits distinctly enlarged, 9—10 on median digits; 4 subdigital adhesive lamellae to each digit, except for fingers I & V which have only 3.

Colour: Above, pale brown to greyish-brown, usually finely reticulated or mottled with dark brown, sometimes intermixed with indistinct pale spots or with pale spots only; a well-marked dark streak on side of head from nostril through eye and above ear-opening, fading out near forearm, emarginate below from behind eye; labials dark spotted, usually more intense on anterior labials and fainter on posterior; eye margined with white above and on sides. Below, uniform white to creamy white.

Dimensions: (T.M. 17646—Barby), H. & B. 37, tail 39.5, length head 9, breadth head 7.3 mm.

Distribution: Southern part of Great Namaqualand. Recorded localities: Luderitzbucht (A.M.). Kuibis (A.M. & T.M.). Kalkfontein.

South (S.A.M.). Farm 'Barby,' nr. Helmeringshausen; Aus; Nakeis Mine, Klein Karasberg (T.M.).

Remarks: Types in Albany Museum, Grahamstown.

PACHADACTYLUS SERVAL Werner.

Pachydactylus serval Werner, 1910, Jena. Denkschr., XVI, p. 313, text-fig. 10 (Type locality: Chamis, Gt. Namaqualand); Boulenger, 1910, Ann. S. Afr. Mus., V, p. 463. Hewitt, 1911, Ann. Tvl. Mus., III, p. 45. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 16. Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 478, and 1927, Rec. Alb. Mus., III, p. 398. Monard, 1930, Bul. Soc. Neuchat. Sc. Nat., LV, p. 90, and 1937, Arquiv. Mus. Bocage, Lisb., VIII, p. 54 (Angola localities).

Description (after Werner): Head small and oviform. Snout $1\frac{3}{4}$ times diameter of eye. Ear-opening elliptical, oblique. Body depressed; digits short, not greatly differentiated in length, each with 6 adhesive lamellae under dilated portion. Upper labials 9, lower 7. Naso-rostrals in contact with one another. Mental $1\frac{1}{2}$ times as long as broad. Rostral slightly broader than deep. Back covered with homogeneous granular scales; scales on snout distinctly larger than scales on back of head, but not greatly so.

Colour: Above, dark greyish-brown, with irregularly arranged dark spots. Below, greyish.

Dimensions: (Type) H. & B. 38, tail (reproduced) 31 mm.

Distribution: Great Namaqualand to Southern Angola? There are apparently no specimens of this species in the South African Museums, and it would appear to be of rare occurrence; Monard (1930, p. 90 and 1937, p. 54) records the species from Southern Angola.

PACHYDACTYLUS KOBOSENSIS FitzSimons.

(Plates II, fig. 6, VII, fig. 4 & XIV, fig. 4).

Baster Gecko.

Pachydactylus kobosensis, FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 170 (Type locality: Farm 'Kobos,' 40 miles S. of Rehoboth, Great Namaqualand).

Description: Head large, subtriangular, strongly depressed, slightly longer than broad, much broader than neck. Snout pointed, about $1\frac{3}{4}$ times diameter of eye and $1\frac{1}{2}$ times distance from eye to ear-opening. Nostril pierced between three nasal scales, widely separated from rostral and more narrowly from first upper labial; nasorostrals in contact with one another behind rostral. Rostral quadrangular, narrower below than above, a little less than twice as broad as deep. Upper labials 9—10, lower 10. Mental narrower at base than adjoining lower labials, narrowed behind to about one third anterior breadth. Scales on snout large, at least 3—4 times as large as the uniformly small granules on occiput. Scales on back granular, flattened, a little irregular in shape and for the most part smaller than scales on snout, although sometimes there may be a few enlarged slightly tubercular scales postero-laterally, which are equal to or a little larger than scales on snout. Scales on chin and throat minute, granular, flattened and smaller than those on occiput; on chest and belly scales are flat, smooth, subhexagonal, imbricate, as large as or slightly larger (posteriorly) than those on snout; the posteriormost two rows of scales on underside of thighs are much enlarged and over twice as large as scales over middle of belly. Limbs and digits moderately stout; median row of subdigital scales on basal portion of digits enlarged and arranged as follows: **Fingers**

I & II with 5—6 scales, III & IV with 7—8 and V with 6—7; Toes I & II with 5—6 scales, III with 8—9, IV with 9, and V with 6—8. Digits distinctly dilated distally, fingers each with 6 adhesive subdigital lamellae, and toes with 6 on digit I and 7 on II—V. Body and tail strongly depressed. Tail longer than head and body, tapering, distinctly segmented; covered above with smooth, imbricate scales (larger than on back), with 6—7 rows of scales to each segment, and a transverse row of 6 enlarged (the outermost being the largest) tubercular scales about middle of each segment; below, scales much larger than above, imbricate, with three rows of scales to each segment, no median row of enlarged scales present. Two to three enlarged, flattened scales in an oblique row on either side base of tail near vent.

Colour: Adult, pale olive or olive brown above, with large sienna to dark reddish-brown blotches, which form irregular broken up cross-bands over back; tail more or less distinctly banded (regenerated tails blotched with brown); eyelid (above and behind) and enlarged scales on tail yellow; snout uniform reddish brown with a pale streak from nostril to eye; labials stippled with reddish-brown, which extends below on to chin and along inner margin of lower labials; eye brown, flecked with gold; pupil slit edged with yellow; lower surfaces uniform creamy yellow or lightly stippled with brown (except on middle of throat). Juvenile, greyish olive above with three pairs of reddish-brown transverse bars (the first round back of head and across nape, second across middle of back and third across rump), the areas enclosed between each pair of bars is a very pale pinkish-brown; tail olive yellow, barred with brown; lower surfaces uniform white.

Dimensions: Male (Type, T.M. 17574). H. & B. 50.5, tail 57, length head 12.4, breadth head 10.9, forelimb 14.8, hindlimb 18.3 mm.

Field notes: Rupicolous, and found living under loose rock flakes and in cracks on exposed boulder strewn koppies; nocturnal.

Distribution: Known only from the type locality, viz. Farm 'Kobos,' in the 'Baster' Reserve, about 40 miles south of Rehoboth, Great Namaqualand.

Remarks: Types in Transvaal Museum, Pretoria.

PACHYDACTYLUS BICOLOR Hewitt

(Plates VIII, fig. 3 & XIV, fig. 5).

Velvety Gecko.

Pachyductylus punctatus bicolor Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 477, pl. XLIV, fig. 4 (Type locality: Kaross, Kaokoveld), and 1927, Rec. Alb. Mus., III, p. 398.

Pachyductylus bicolor FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 167 (Kamanyab, Paderburn & Huab, Kaokoveld; Karub).

Description: Head strongly depressed, slightly longer than broad, not or but little broader than neck. Snout pointed, distinctly swollen on either side on canthal region, in length about $1\frac{3}{4}$ times distance between eye and ear-opening and almost twice diameter of the rather small eye. Ear-opening oval and oblique. Nostril pierced between three nasals and well-separated from rostral and 1st. upper labial; nasorostrals in contact. Rostral subpentagonal, about $1\frac{3}{4}$ times as broad as deep. Upper labials 7—9 (usually 8), lower 6—8 (usually 7). Mental rectangular, almost twice as long as broad, much narrower at base than adjacent lower labials, narrowing only slightly behind. No chin shields. Scales on snout enlarged, flattened, largest on

canthal region, much larger (almost twice) than similar flattened scales on back of head; scales smallest on interorbital region. Scales on back flattened, smooth, rounded, granular and subequal in size to those on snout. Scales on throat minute, smooth and juxtaposed, becoming gradually larger and imbricate over base of throat and on chest; over middle of belly scales smooth, flat, subhexagonal and subimbricate, distinctly larger than scales on back, enlarging posteriorly until over preanal region they are at least twice as large again and subequal to largest on underside of thigh (preanally and on thighs, scales not so conspicuously enlarged in females). Body strongly depressed. Limbs moderately short and stout. Digits dilated distally with 4—5 (4 on inner digits and 5 on others) subdigital adhesive lamellae; infero-median row of scales on basal portion of digits distinctly enlarged, and arranged as follows: Fingers, I with 5 scales, II with 6, III with 7—8, IV with 8 and V with 5—6; toes, I with 5—6 scales, II with 6, III with 8—11, IV with 9—10 and V with 7—9. Tail strongly depressed, rather indistinctly segmented, longer than head and body (about $1\frac{1}{2}$ times), covered above with smooth rounded imbricate scales, much larger than on back and arranged in regular transverse rows, 4—5 to each segment; below, scales much larger and strongly imbricate, largest along median line but not in regular series, 3 scales rows to each segment. A row of 5 enlarged scales on either side base of tail near vent, the three upper being strongly compressed with sharp projecting edges.

Colour: Above, fawn to pale slate, greyish-olive to greyish-brown, with velvety, dark chocolate brown, irregular, dentated bars and blotches, together with small scattered white or yellow spots which are usually aggregated around and edge the dark markings on back; head usually tinged with yellow, with a few dark spots on occiput; a dark streak from nostril through eye, widening above ear-opening and continuing behind to encircle occiput; a second dark streak on side of neck arising from behind ear-opening; labials infused with dark brown. Lower surfaces white, dirty white to greyish, chin and throat often tinged with pink. Tail greyish-brown, with scattered scales, white or yellow. Colour markings in juveniles differ considerably from adults and are as follows: head greyish-brown, with a blackish streak on each side from nostril through eye, and completely encircling back of head; this streak is bordered below and behind by a white stripe arising on upper lip below eye, passing through ear-opening and then widening out on nape; sides of neck, forelimbs and greater part of back and sides of body, black; lumbar region greyish-white, with a dark brown transverse bar between limbs above; hindlimbs and tail pale greyish- to yellowish-brown, with faint indications of darker cross-stripes; below, greyish-white to yellowish-grey, infused with dark brown on sides. As specimens grow the black turns to greyish-brown or greyish, and finally breaks up into the isolated blotches as found in adults; tail often yellowish above, while pale lumbar marking may also sometimes be yellowish.

Dimensions: Male (T.M. 17263—Kamanyab), H. & B. 40, tail 53, length head 10, breadth head 9.2, forelimb 11, hindlimb 17 mm.

Distribution: North-western Damaraland and Kaokoveld, S.W. Africa. Recorded localities: Usakos; Wilhelmstal (A.M.). Kaross, Kowares & Kaoko-Otavi, Kaokoveld (S.A.M.). Karub; Rooibank; Kamanyab, Paderburn & Huab, Kaokoveld (T.M.).

Field notes: Usually found among rocks, living in closely fitting cracks or under flakes. Comparatively slow in movement and thus

easy to capture. Nocturnal in habit. The eggs, which are deposited in rock clefts, are white and regularly oval, measuring on the average 9.2×6.0 mm.

Remarks: Types in the South African Museum, Cape Town.

PACHYDACTYLUS OCELLATUS (Cuvier).

(Plate XIV, fig. 6).

Ocellate or Eyed Gecko.

?*Lacerta geitje* Sparrman, 1778, Goteborgs Vetensk. o. Witterhets Samhälles Handl., I, p. 75.

Gecko ocellatus Oppel, in Cuvier, 1829, Reg. Anim., Ed. 2, II, p. 46, pl. V, fig. 4 (Type locality: South Africa).

Platydictylus (Phelsuma) ocellatus Gray, 1827/35, Griff. Anim. King., IX, Syn., p. 47.

Pachydactylus bergii Wiegmann, 1834, Herp. Mex., p. 19. A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 5.

Platydictylus ocellatus Dumeril & Bibron, 1836, Erp. Gen., III, p. 298.

Pachydactylus ocellatus Gray, 1845, Cat. Liz., p. 167. Steindachner, 1867,

Novara, Rept., p. 10. Boettger, 1887, Ber. Senck. Naturf. Ges., p. 141

(Malmesbury). Werner, 1896/98, Jahresb. Ver. Magdeburg, p. 140

(Cape Colony). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 411 (Cape

Town; Matjesfontein). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 462

(Cape Town; Robben I.; Tulbagh; Beaufort West; Calvinia; Worcester;

Mossel Bay; Bredasdorp; Caledon; Swellendam; Robertson; Prince

Albert; Steynsburg). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 85 & 88

(Touwsriver), and 1911, III, p. 45. Rose, 1926, Ann. S. Afr. Mus.,

XX, p. 491 (Robben I.). Hewitt, 1927, Rec. Alb. Mus., III, p. 401.

Rose, 1928, Nature Notes, No. 57, p. 2 & text-fig., and 1929, Veld &

Vlei, p. 117, text-figs. 75—77, also app., p. 219 (Cape Peninsula).

Pachydactylus ocellatus part., Boulenger, 1885, Cat. Liz., I, p. 205 (Cape of Good Hope). Sternfeld, 1911, Mitt. Zool. Mus. Berlin, V, p. 397

(Table Mtn. & Kobisberge, C.P.).

?*Pachydactylus geitje* Andersson, 1900, Bihang K. Svenska Vet. Ak. Handl. XXVI, pt. 4, No. 1, p. 28.

Description: Head short, not or but slightly depressed, about $1\frac{1}{5}$ times as long as broad. Snout very short, obtuse, convex, slightly longer than distance between eye and ear-opening, from $1\frac{1}{3}$ to $1\frac{2}{5}$ times diameter of eye (which is subequal to its distance from nostril). Ear-opening small and subcircular. Nostril pierced between three nasal scales, of which the anteriormost (or nasorostral) is usually separated from its fellow by a single (sometimes 2—3) granule, occasionally in short contact. Rostral not or but slightly broader than deep, widely separated from nostril. Upper labials 7—9, lower 7—8; first upper labial separated from nostril. Mental quadrangular, as long as, but narrower than adjacent lower labials, not narrowing behind. Scales adjoining mental and anterior labials behind, minute and granular, smaller than following scales on throat. Scales on snout granular and convex, subequal to or slightly larger than those on occiput. Body but slightly depressed, covered above with equal-sized convex granules, which are subequal to or a little larger than those on snout; abdominal scales equal, imbricate and not much larger than scales on back. Limbs moderate; digits short and subequal, slightly dilated distally, each with 4—5 transverse adhesive lamellae inferiorly; median row of subdigital scales on basal portion of digits slightly enlarged. Tail thick at base, cylindrical, tapering, covered above and below with smooth, subequal, slightly imbricate scales, which are about twice the size of granules on back; a series of 2—4 (usually 3), pointed, conical tubercles on either side base of tail in males, anteriormost largest.

Colour: Above, greyish-brown to dark brown, with small, scattered, dark-edged, white or yellow spots and sometimes also

dark blotches or longitudinal streaks; pale ocelli sometimes arranged in more or less transverse or longitudinal series; a dark brown streak on either side of head, from nostril through eye to above ear, with lower edge, from behind eye, crenulate, and on snout often bordered with white; 3—4 anterior upper labials dark spotted, remainder white; lower labials usually dark spotted; eye edged with white above. Lower surfaces white, uniform or stippled with brown; throat dotted with brown. In very young specimens pale spots usually not dark-edged and thus not so conspicuous, tail pinkish.

Dimensions: Male (T.M. 3575—Robben Island), H. & B. 39, tail (partly reproduced) 29, length head 9.6, breadth head 8.0 mm. Fully adult specimens attain to about 45 mm. for length of head and body.

Field notes: Usually found living among loose stones or dead leaves and brushwood, sometimes also in small animal holes. The skin is very soft and velvety, and easily torn. In repose they curl up, much in the same manner as a cat, and also have a peculiar habit of standing stiffly erect on rigid forelimbs, with head raised sharply on an almost vertical neck. The eggs are white, and average 9.5×7 mm.

Distribution: Western, south-western and south-central Cape Province. Recorded localities: Saldanha Bay; Onrust; Darling; Vleermuisclip, Olifants Riv., C.P. (A.M.). Cape Town; Robben Island (A.M. & S.A.M. & T.M.). Mossel Bay (A.M., K.M. & S.A.M.). Naauwpoort (K.M.). Matroosberg; Ceres; Caledon; Table Mountain; Hermanus; Lions Head; Riversdale Mtns.; Herbertsdale; Swartberg Pass; Hout Bay; Cogmanskloof; Robertson; Brandvlei, Triangle, Rabiesberg & Nandisberg, Worcester Dist.; Wagerhuis; Touwsriver; Cape Peninsula; Paarl; Houwhoek. Caledon Dist.; Ashton; Bokkeveld Mtns.; Nieuwoudtville; Tulbagh Rd.; Pakhuisberg, to Oorlogskloof; Clanwilliam; Prince Albert Poort; Swellendam; Beaufort West (S.A.M.). De Wet; Zoetendals Vallei; Cape Agulhas; Stillbay (T.M.).

Remarks: Type in Stockholm Museum? The species has been recorded from S.W. Africa and S. Angola by various authors, but is apparently unknown from Little Namaqualand. In view of its absence from the latter intermediate area, and the fact that there are no specimens from S.W. Africa or Angola in the collections of the South African Museums, it appears probable that the records in question are of *P. punctatus*, which often strongly resembles *P. ocellatus* superficially. Thus all records of *ocellatus* from S.W. Africa and S. Angola have been placed tentatively under *punctatus*.

PACHYDACTYLUS AMOENUS Werner.

Pachydactylus amoenus Werner, 1910, Jena. Denkschr., XVI, p. 314, text-fig. 11 (Type locality: Kamaggas, Little Namaqualand). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 462. Hewitt, 1911, Ann. Tvl. Mus., III, p. 46. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 16. Hewitt, 1927, Rec. Alb. Mus., III, p. 398.

Description (after Werner): Head moderately convex. Snout somewhat pointed, about $1\frac{1}{2}$ times diameter of eye, subequal to the distance between eye and ear-opening. Ear-opening small, oval and somewhat oblique. Rostral twice as broad as deep, rectangular, not entering the nostril, which is pierced between the first upper labial and three nasal scales, the anteriormost of which is largest and separated from its fellow behind rostral by three small granules. Upper labials 9, lower 7—8. Mental not narrowed posteriorly, rounded behind. Scales above, small, granular and subequal in size; below, minutely granular on throat passing to small cycloid, imbricate scales

over belly. Scales on tail homogeneous. Digits not dilated distally, with 5—6 transverse adhesive lamellae below. A row of five tubercular scales on either side base of tail in males.

Colour: Above, pale brownish-grey, with five, wavy, black-edged, reddish-brown cross-bands on back and five on tail; a dark spot on either side of snout extending over upper and lower lips; a second spot on lower lip just below the eye. Lower surfaces white.

Dimensions (after Werner): Total length 66, tail 30 mm.

Distribution: Known only from the type locality, viz. Kamaggas, Little Namaqualand.

Remarks: Type in Berlin Museum. There are no specimens of this species in the collections of the South African Museums, so that it is apparently of rare occurrence.

PACHYDACTYLUS MONTICOLUS sp. nov.

Types: Holotype (T.M. 19698) & three paratypes (T.M. 19714, 19728 & 19736) from Assegaibos, Lamotte Forestry Station, Fransch Hoek, 12/10/40.

Description: Closely resembling *ocellatus* in appearance, but immediately distinguishable on the heterogeneous dorsal scaling. Snout slightly longer and more pointed than in *ocellatus*. Nasorostrals separated by 2—3 small granules. Rostral distinctly broader than deep. 8—9 Upper and 7 lower labials. Mental subequal in breadth to adjacent lower labials, narrowing only slightly behind. Upper parts of head and body covered with small, rounded granules, which are smallest on back of head; granules on back subequal to those on snout and intermixed with enlarged, rounded, conical tubercles, which are in general more closely aggregated and conspicuous dorsolaterally but extend also on to nape and basal part of tail; granules on sides of body much larger than those on middle of back. Scales on upper arm flat and imbricate, on forearm granular; hindlimb covered above with granules intermixed with enlarged tubercles similar to those on back. Chin and throat minutely granular, chest and belly covered with flat imbricate scales. Tips of digits slightly dilated, each with 5 subdigital, adhesive lamellae; subdigital scales slightly enlarged. Three large, compressed, upwardly-directed, sharp-edged tubercles on either side base of tail near vent.

Colour: Greyish-brown above, with white, black-edged, ocellate spots scattered over whole of upper surfaces; a dark streak on side of head as in *ocellatus*; but differing from latter in that there is posteriorly a narrow, curved, downwardly-directed process to upper anterior border of ear-opening, enclosing thus a pale spot above latter. Chin and throat covered with dark brown vermicular spots; sides belly, underside limbs and tail speckled with dark brown.

Dimensions: Male (Type, T.M. No. 19698), H. & B. 36, tail (partly reproduced) 30, length head 10, breadth head 7.8 mm.

Field notes: Found on mountain sides, living in rock clefts or under stones.

Distribution: Known only from the type locality, i.e. Assegai Bos, at Source of Berg River, Lamotte Forest Station, Fransch Hoek Mtns., C.P.

Remarks: Types in the Transvaal Museum, Pretoria.

PACHYDACTYLUS MACULATUS MACULATUS Gray.

(Plate XV, fig. 1).

Spotted Gecko or Puff Adder Lizard.

- Pachydactylus maculatus* Gray, 1845, Cat. Liz., p. 167 (Type locality: South Africa). A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 4 (Southern Africa). Boulenger, 1885, Cat. Liz., I, p. 206 (Cape Colony; Port Elizabeth; Karroo). Boettger, 1889, Ber. Senck. Naturf. Ges., p. 291 (Pondoland). Werner, 1896/98, Jahresb. Ver. Magdeburg, p. 140 (Cape Colony, prob. Grahamstown?). Boulenger, 1908, Ann. Nat. Mus., I, p. 223 (Junct. Umfolosi Rivers; Entendweni; Thornybush. Natal). Odhner, 1908, Ark. Zool. Stockholm, IV, No. 18, p. 3 (Umfolosi; Entendweni; Lake Sibayi). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 462 (Cape Peninsula; Little Namaqualand; Beaufort West; Worcester; Robertson; Graaff-Reinet; Port Elizabeth; Kingwilliams-town; Kentani, Transkei; Albany Dist.; Bulawayo). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 84 & 87 (Kowie River; Bashee Riv.; Jansenville; Helpmekaar; Ladysmith), and 1911, III, p. 45. Essex, 1927, Rec. Alb. Mus., III, p. 336, and 1927, P.Z.S. Lond., p. 929 (Amato's Mts.; Fort Beaufort; Grahamstown; Port Elizabeth; Hermanus). Hewitt, 1927, Rec. Alb. Mus., III, p. 399, and 1932, Ann. Natal Mus., VII, p. 122 (Grahamstown; Fort Brown; Carlisle Bridge; Teafontein; Brak Kloof; Alicedale; Dunbrody; Witteklip; Walmer; Redhouse; Jeffreys Bay; Helpmekaar; Beaufort West; Jansenville; Klerksdale; Schurftberg; Graaff-Reinet; Peddie; Line Drift; Port Alfred; East London; Port. St. Johns; Middledrift; Healdtown; Alice; Debe Nek; Gleniffer; Cofimvaba; Tarkastad; Queenstown; Indwe; Braam Nek; St. Matthews; Somerville nr. Tsolo; Mquanduli; Weenen). Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 18, pl. VI, fig. 2 & pl. XXII, fig. 5 (Abbotsbury, nr. Letts Kraal; St. Croix I.).
- Pachydactylus maculosa* Brock, 1932, S. Afr. Journ. Sci., XXIX, p. 508 & 16 text-figs. (Development of skull).

Description: Head not depressed, only slightly longer than broad. Snout very short, obtuse and convex, about $1\frac{1}{5}$ times distance between eye and ear-opening, and $1\frac{1}{2}$ times diameter of eye. Nostril pierced between a large nasorostral and a number of small scales; nasorostrals widely separated from one another by 2-4 small granules. Rostral pentagonal, not more than $1\frac{1}{3}$ times as broad as deep, widely separated from nostril. Upper labials 7-8, lower 8-9. Mental subequal in length to, but a little narrower than adjacent labials, narrowing but feebly behind. Scales on snout and back of head small and granular, subequal in size; back covered with small subequal granules, intermixed with scattered, enlarged, smooth or keeled, subconical tubercles, which are two to three times the size of the intervening granules and most densely arranged posterolaterally; a few distinctly enlarged conical tubercles on upper surface of tibia (exceptionally tubercles not much enlarged and inconspicuous). Gular scales minutely granular, those adjoining mental and anterior labials smallest; scales on belly smooth, equal-sized and subimbricate or imbricate. Digits short, with three to four transverse adhesive lamellae under the distal expansions; median row of subdigital scales not enlarged. Tail thick, rounded, tapering somewhat abruptly towards the tip and covered with smooth, subequal, subimbricate scales, which are much larger than granules on back; indistinctly segmented in young, with 4-5 scales to each segment above, and 6-7 below. (Tails generally reproduced in adults). A series of 3-4 enlarged, subconical or compressed, and sharply-pointed scales (posteriormost largest) on either side base of tail in males.

Colour: Above, grey to greyish-brown, with four longitudinal series of large elongate or rounded, dark brown to blackish spots over back (occasionally these spots are confluent into broad cross-bands); a broad, irregular, dark streak along either side of head, passing through eye and converging towards, but not quite meeting, its fellow on back of head. Below, creamy white, uniform or more

often flecked with brown. Tail with broad dark bands in young; reproduced tails usually spotted or blotched above and below with dark brown or black.

Dimensions: Female (T.M. 13371—Ft. Brown), H. & B. 47, (tail reproduced), length head 11.5, breadth head 10.3 mm.

Field notes: Terrestrial and found living in holes in the ground, under stones and decayed logs or among dead leaves and brushwood, often in association with *Cordylus cordylus cordylus* and scorpions. These little geckos, like most of the members of the family, are often mistakenly regarded as being poisonous, whereas in actual fact they are timid, harmless little creatures, which make the friendliest of pets. When alarmed by rough handling they emit distinct squeaks of protest. The eggs are usually laid in pairs, and often clusters of 12 or more may be found together; they average 10×7.5 mm., while the newly hatched young are usually about 20 mm. in total length. The tails are discarded very easily and it is seldom that an adult is found with a normal tail; normal tails are slender, but the reproduced ones are short and very fat, giving a somewhat cumbersome appearance to what is otherwise a beautifully formed little creature.

Distribution: From south and south-central Cape Province, eastwards and northwards into Zululand and southern Swaziland. Recorded localities: Cofimvaba; Port Alfred; Karreedouw; Tarkastad; Alice; Jansenville; Alexandria; Indwe, Braam Nek, nr. Imvani; Middledrift; Jeffreys Bay; Klerksdale; St. Mathews; Schoenmakerskop; Healdtown; Mquanduli; Peddie; Line Drift, nr. Peddie; Cape St. Francis; Tsolo; Hamburg; Queenstown; Brakklouf; Witteklip; Coldspring; Somerset East; Walmer; Debe Nek; Teafontein; Port St. Johns; Fort Grey; Middleton; Cala; Gleniffer, nr. Kei Rd.; St. Croix Island; Helpmekaar-Ladysmith (A.M.). Grahamstown (A.M., K.M., P.E.M. & T.M.). East London (A.M., K.M. & T.M.). Dunbrody (A.M. & R.M.). Graaff-Reinet; Redhouse; Beaufort West (A.M. & S.A.M.). Port Elizabeth (A.M., P.E.M., S.A.M. & T.M.). Fort Brown (A.M., S.A.M. & T.M.). Alicedale; Weenen (A.M. & T.M.). Inyamanzi, Umfolosi Riv. (B.M.). Pinetown; N'Gxwala Hill, nr. Ubombo (D.M.). Empangeni (D.M. & T.M.). Kingwilliamstown (K.M. & S.A.M.). Thornybush Rd.; Nongoma; Hluhluwe (N.M.). Junct. Umfolosi Rivs. (N.M. & T.M.). Slanghoek; Aberden Rd.; Hanover; Steynsburg; Coega; Bashee Riv.; Kentani; Inyalazi River, Zululand (S.A.M.). Fish River Valley, Albany Dist.; White Umfolosi; Mahlabatini; Goedgegun (T.M.).

Remarks: Type in the British Museum of Natural History, London. Two records of this species, from Cape Peninsula and Little Namaqualand, by Boulenger (1910) are extremely doubtful and cannot be accepted without further confirmation; the Bulawayo record (also by Boulenger, 1910), is probably referable to specimen in Rhodesian Museum (see under *microlepis*).

PACHYDACTYLUS MACULATUS ALBOMARGINATUS Hewitt.

Pachydactylus maculatus albomarginatus Hewitt, 1932, Ann. Nat. Mus., VII, p. 121, pl. VI, figs. 6 & 7 (Type locality: Norvals Pont, on Orange River, Cape Province).

Description: Distinguished from typical *maculatus* on the following: Nasorostrals larger and only narrowly separated from one another behind the rostral by one or two small granules; snout rather longer, more flattened and pointed, with a slight swelling on loreal region; mental narrow, not or but very slightly narrowed behind; scales on dorsolateral surface of snout distinctly larger than those over interocular region, (in *maculatus* subequal); scales on back some-

what conical and unequal, more distinctly so towards sides; a fairly large area in front of vent covered with enlarged, flattened scales (the area and individual scales smaller in *maculatus*); an oblique series of 3 enlarged pointed scales on either side base of tail, the lowermost being the smallest; tail a little shorter than head and body.

Colour: Markings similar to those found in typical *maculatus*, but the large, dark, dorsal spots or blotches are all clearly margined with white; tail, above, with a double series of large, dark, white-edged spots, sides more or less vertically banded with dark and light.

Dimensions: (Type, A.M. No. 6368), H. & B. 40, tail (reproduced) 27.3, length head 10.5, breadth head 9, forelimb 13.4, hindlimb 17.8 mm.

Distribution: North-central Cape Province, just south of Orange River. Recorded localities: Norvals Pont (A.M.). Colesberg; Hanover (S.A.M.).

Remarks: Types in the Albany Museum, Grahamstown.

PACHYDACTYLUS SCUTATUS Hewitt.

(Plates VIII, fig. 4, and XV, fig. 2)

Armoured Gecko.

Pachydactylus sacutatus Hewitt, 1927, Rec. Alb. Mus., III, p. 395, pl. XXIII, fig. 2 (Type locality: Kowaris = Kowares, Kaokoveld), and p. 401. FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 178 (Kamanyab, Paderburn & Huab, Kaokoveld).

Description: Head fairly large, flattened, about $1\frac{1}{4}$ times as long as broad, distinct from neck. Snout long and pointed, about $1\frac{2}{3}$ times diameter of the rather large eye and $1\frac{1}{2}$ times the distance between eye and ear-opening; latter elliptic, oblique or almost horizontal. Nostril pierced between three nasals, rostral and first upper labial; nasorostrals in contact with one another. Rostral rectangular, about twice as broad as deep. Upper labials 9—10, lower 7—8 (usually 9 & 7 respectively). Mental elongate, over twice as long as broad, narrowing slightly behind, narrower than adjacent lower labials in front, but subequal in breadth behind. Scales on snout more or less flattened, subequal, much larger than any on back of head, which is covered with small subgranular scales plentifully intermixed with larger, keeled, subconical scales; on temporal region scales slightly larger and keeled, while on nape enlarged scales predominate; with only a few very small, barely discernible, intervening granules. Back and sides of body covered almost exclusively with enlarged strongly keeled scales, which are largest dorsolaterally on lumbar region; along a narrow median strip, extending over posterior half of back, scales are much smaller and smooth. Upper surfaces of limbs covered with enlarged keeled scales. Scales on chin and throat very small; on belly smooth, imbricate, smaller than on back, largest preanally. Digits dilated distally with 5—7 subdigital adhesive lamellae (fingers I & V with 5 lamellae, II to IV with 6; toes I & II with 6 lamellae, III to V with 7); infero-median row of scales on basal portion of digits transversely enlarged and arranged as follows: Fingers I & II with 5 scales, III with 7, IV & V with 8; toes I & II with 6 scales, III & V with 8 and IV with 9. Tail cylindrical, slightly longer than head and body, distinctly segmented above, each segment made up of 2—3 rows of small, smooth scales followed by a transverse row of strongly enlarged, keeled scales (8 basally, reducing to 4 distally); below, scales smooth, flat and imbricate with no trace of segmentation; a pair of enlarged, smooth scales on either side base of tail near vent.

Colour: Above, light greyish-brown, with a few indistinct irregular dark brown spots and blotches on back; a dark brown to blackish streak on each side of head from nostril through eye, passing above ear-opening and curving in round back of head to meet its

fellow (widest on temporal region and narrowing behind); this dark streak is bordered above, from nostril to a point above ear-opening, by a white stripe, and below by another white stripe (arising below eye), which is itself again bordered below and behind by a narrow dark streak; a pale band across middle of snout intersecting upper pale side stripes, and thus isolating a dark triangular spot anteriorly. Lower surfaces dirty white to greyish. Juveniles are light olive to olive brown above, without dark spots; dark and pale markings on head distinct; labials dark spotted; tail olive yellow.

Dimensions: Male (T.M. 17302—Paderburn), H. & B. 36, tail 38, length head 10.5, breadth head 8.3 mm. Fully adult specimens attain to about 42 mm. for head and body.

Field notes: Found only in rocky localities, where they live in cracks and crevices or under loose flakes on large boulders. The eggs, usually four in number, are deposited in pairs under any suitable rock flake; they are white, oval and measure from 7—7.4 × 5.4—5.6 mm.

Distribution: Kaokoveld, S.W. Africa. Recorded localities: Kowares (A.M. & S.A.M.). Ugab (A.M.). Kamanyab; Paderburn & Huab, on Huab River, Kaokoveld (T.M.).

Remarks: Types in the South African Museum, Cape Town.

PACHYDACTYLUS MONTANUS MONTANUS Methuen & Hewitt.

Namaqua Mountain Gecko.

Pachydactylus montanus Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 129 (Type loc.: Lord Hill's Peak, Great Karas Mts., Great Namaqualand).

Description: Head and body depressed; head rather large, only slightly longer than broad. Snout obtusely pointed, about $1\frac{1}{4}$ times distance between eye and ear-opening, and $1\frac{1}{2}$ times diameter of eye. Ear-opening elliptic and only slightly oblique. Rostral twice as broad as deep, subrectangular, with a projection at upper corner entering nostril. Latter pierced between rostral, 1st upper labial and three nasals, the anteriormost of which (nasorostral) is in contact with its fellow behind rostral. Upper labials 9—10, lower 9. Mental narrow and elongate, not or but slightly narrowed behind, over twice as long as broad, slightly shorter and distinctly narrower than adjacent lower labials; posterior margins of mental and two anterior lower labials on each side, form a more or less straight transverse line. Granules on snout enlarged, at least twice as large as those on the back; a few small rounded tubercles scattered over back of head; granules on back intermixed with moderate-sized somewhat flattened, keeled tubercles, which are well-separated from one another by granules and arranged in more or less regular longitudinal series; on the flanks the tubercles tend to be more closely aggregated, irregularly dispersed and less flattened; a narrow strip along vertebral line free of tubercles; enlarged, smooth, subconical tubercles on upper surface hindlimbs. Scales, below, flattened and subimbricate, larger over middle of belly than on sides. Digits dilated distally, with 7 adhesive lamellae under median digits and 6 under outer; infero-median row of scales transversely enlarged, 8—9 under median toes. Tail subequal in length to head and body, distinctly segmented, each segment above with 4—5 rows of flattened imbricate scales together with a single row of 6 flattened, moderately enlarged, feebly keeled tubercles; below, scales much larger, flat, imbricate, each segment with 3—4 rows.

Colour: Above, purplish-grey, inclining to olive on flanks and between eyes; a dark, horseshoe-shaped band round back of head;

a number of reddish-brown, broken up bands across back, some forming ocelli while others are vermiculate; a pale streak from behind upper lip to above ear; a yellowish streak from anterior border of eye to snout; eye bordered anteriorly and posteriorly with yellow; lips pale. Limbs and tail more olive than body; tail irregularly barred with reddish-brown. Lower surfaces grey.

Dimensions: (Type, T.M. No. 3080), H. & B. 43.2, tail 43.5, length head 11.2, breadth head 9.6 mm.

Field notes: Very shy, and found in rock crevices on steep mountain slopes up to an altitude of over 7000 feet.

Distribution: Known only from the type locality, viz. Lord Hill's Peak, Great Karas Mts., Great Namaqualand.

Remarks: Type in Transvaal Museum, Pretoria.

PACHYDACTYLUS MONTANUS ONSCEPENSIS Hewitt.

(Plate VIII, fig. 5, and XV, fig. 3).

Pachydactylus montanus onscepens Hewitt, 1935, Rec. Alb. Mus., IV, p. 318 (Type locality: Onsephans = Onseepkans, on Orange River). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 173 (Maltahohe; Barby, E. of Helmeringshausen; nr. Konkiep; Seeheim; Brukkaros Mtn.; Goodhouse).

Pachydactylus purcelli part., FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 529 (Pofadder; Kakamas; Onseepkans).

Description: Apparently intermediate between *P. purcelli* and *P. m. montanus*, but owing to the presence of enlarged dorsal tubercles, probably close to the latter from which it may be distinguished on the following: Head and body depressed; head more elongate, from $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad; snout a little narrower and more pointed, from $1\frac{1}{2}$ to $1\frac{2}{3}$ times diameter of eye; ear-opening almost horizontally oval; the flattened scales on snout much larger than scales on back of head, but only slightly larger than scales on middle of back. Nasorostrals usually in contact, occasionally separated by a single small granule; 1st upper labial entering nostril or narrowly separated therefrom; mental very elongate, usually at least twice and often as much as $2\frac{1}{2}$ times as long as broad, narrowed considerably behind; 1st lower labial also strongly elongated, but narrowed only slightly behind, where it is much broader than mental, though subequal basally; 2nd lower labial elongate, with anterior margin longer than posterior; remaining lower labials broader than long. Enlarged dorsal tubercles present in varying degree (sometimes reduced to only one or two on either side), usually confined for the most part to the dorsolateral and lateral regions of back, being somewhat sparsely scattered anteriorly and more densely aggregated posteriorly; tubercles may be flattened or slightly raised, smooth or keeled. Ventral scales distinctly enlarged over pelvic region. Tail slender, a little longer than head and body, segmented, each segment above bearing a transverse row of 6 (usually 8 basally) enlarged, flattened, feebly keeled tubercles along its posterior border. Digital expansions large, there being 6 transverse adhesive lamellae under the median digits and 5 on outer; inferomedian row of scales on basal portion of digits transversely enlarged and well-developed.

Colour: Above, olive, light greyish-brown to olive brown, with numerous largish, oval or rounded, dark brown spots or blotches scattered irregularly over back or occasionally disposed into irregular transverse series; a dark band or streak on either side of head from nostril through eye to above and behind ear-opening, sometimes absent or incomplete, exceptionally continuing round back of head

to meet its fellow; often a pale olive yellow area behind head, enclosed between dark streak round occiput and a transverse bar on nape. Lower surfaces white to greyish-white, often finely stippled with brown. Enlarged tubercles on tail white or yellow.

Dimensions: Male (T.M. 17864—Goodhouse), H. & B. 45.5, tail (reproduced) 34, length head 11.6, breadth head 8.7 mm.

Field notes: Young specimens are often almost indistinguishable in colour markings from the young of *purcelli*. Habits in general similar to the latter.

Distribution: North-western Cape Province into Great Namaqualand. Recorded localities: Onseepkans; Kakamas (A.M. & T.M.), Bakputs, Gordonia (S.A.M.), Pofadder; Goodhouse; Seeheim; Barby, nr. Helmeringshausen; nr. Konkiep; Brukkaros Mtn. (T.M.).

Remarks: Type in the Albany Museum, Grahamstown.

PACHYDACTYLUS WERNERI Hewitt.

Werner's Gecko.

Pachydictylus capensis weneri Hewitt, 1935, Rec. Alb. Mus., IV, p. 315, pl. XXIX, fig. 3 (Type locality: Khan River, Damaraland).

Description: A slender form, with elongate depressed head, about $1\frac{1}{2}$ times as long as broad. Snout pointed, in length $1\frac{1}{2}$ times distance from eye to ear-opening and about $1\frac{1}{2}$ times the diameter of the rather large eye. Ear-opening oval, slightly oblique. Nostril pierced between three nasals and first upper labial; nasorostrals in good contact with one another behind rostral; latter pentagonal, a little over $1\frac{1}{2}$ times as broad as deep. Upper labials 9—10 (usually 9), lower 7—8. Mental elongate, narrower than adjoining lower labials, about twice or a little more times as long as breadth at base, narrowing slightly behind. Scales on snout slightly convex; occiput finely granular, with a few scattered, small, rounded tubercles, which are smaller than scales on snout. Tubercles on back oval, moderately large, regularly but not closely spaced, in about 16 longitudinal series, well keeled over most of back (especially posteriorly), feebly keeled to smooth anteriorly between shoulders, outermost 2—3 rows on sides distinctly smaller, smooth and rounded. No tubercles on forearm, tubercles on hindlimbs few, small, conical and smooth. Scales on chin and throat all uniformly small and granular; on belly smooth, flat, cycloid, imbricate, enlarging posteriorly and there at least twice as large as those anteriorly.

Colour (in spirit): Pale greyish- to yellowish-brown above, with about 6 dark brown incipient crossbars, which are all broken in the middle (dark bars continuous in juvenile); a dark band from nostril, through eye, passing above ear-opening and round back of head, where it joins its fellow. Tail with dark crossbars (at least on basal half of tail) much narrower than pale interspaces. Lower surfaces a uniform creamy white.

Dimensions: (Type, A.M. No. 6613), H. & B. 39, tail 35, length head 10.3, breadth head 7.9 mm.

Distribution: Known only from the type locality, i.e. Khan River, Damaraland.

Remarks: Types in the Albany Museum, Grahamstown.

PACHYDACTYLUS ROBERTSI FitzSimons.

(Plate XV, fig. 4).

Roberts' Gecko.

Pachydictylus robertsi FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 177 (Type locality: Farm 'Kraikluft,' Great Karas Mtns., Great Namaqualand).

Description: Head elongate, depressed, a little over $1\frac{1}{2}$ times as long as broad, not much broader than neck; snout pointed, $1\frac{1}{2}$ times diameter of the fairly large eye, which is about equal to its distance from ear-opening; latter oval, elongate and almost horizontal. Nostril pierced between first upper labial and three nasal scales, of which the uppermost or nasorostral is the largest and in long contact with its fellow behind the rostral; latter rectangular, twice as broad as deep and distinctly lower than adjacent upper labials. Upper labials 12 (8th and 9th lying below eye), lower 6—7. Mental elongate (about twice as long as broad), narrowing behind to about half anterior breadth, much narrower than adjoining lower labials both in front and behind. Scales on snout convex, largest on canthal region just in front of eye, where they are subhexagonal and at least twice as large as any on middle of snout. Occiput minutely granular, with scattered, larger, rounded, smooth, subconical tubercles, which are smaller than scales on middle of snout. Back covered with large flattened keeled tubercles, intermixed sparsely with small granules, which form a narrow median strip down back; enlarged tubercles for the most part contiguous or at most separated by a single granule; on sides of body tubercles smaller and more conical; tubercles on hindlimbs large, conical and keeled but not contiguous. On chin and throat scales very small, enlarging posteriorly towards chest; scales on belly flat and imbricate, larger posteriorly, where they are still smaller than the much enlarged scales on antero-inferior surface of thighs. Body slender, moderately depressed; limbs and digits moderately long; median row of subdigital scales on basal portion of digits enlarged, fingers I and V with 4, II—IV with 5; toes I with 5, II, III and V with 6, IV with 7; distal dilatations only slightly broader than proximal portion of digits and bearing subdigital adhesive lamellae as follows: Fingers with 5; toes I with 4, II with 5 and III—V with 6. Tail slightly depressed, more or less cylindrical, distinctly segmented, covered above with small flat subimbricate scales (4 rows to each segment) and a transverse row of 8 (basally, reducing to 2 near tip) enlarged, keeled scales to each segment; below, scales much larger and imbricate, median row enlarged, with two scales to each segment. Two moderately enlarged tubercular scales on either side base of tail near vent.

Colour: Above, light olive brown, with a series of about 8 small dark spots down vertebral line from nape to rump, and a few smaller irregular specks scattered over back; a dark streak from nostril through eye, passing above ear and encircling back of head, bordered below and behind (from angle of jaw) by a pale olive yellow band, which in turn is edged behind by a broken up dark streak arising on last lower labial and passing through ear; a pale streak along canthal region, bordering dark lateral streak above; labials wholly or partly suffused with dark brown. Chin, throat and sides of belly greyish-white, middle of belly and under side limbs white. Tail olive brown above, with enlarged scales yellow; below, light greyish-brown.

Dimensions: (Type, T.M. 17854), H. & B. 42, tail 48, length head 11.2, breadth head 8.2, forelimb 11.7, hindlimb 16.5 mm.

Field notes: Rupicolous.

Distribution: Known only from the type locality, viz. Farm 'Kraikluft,' Great Karas Mtns., Great Namaqualand.

Remarks: Type in the Transvaal Museum, Pretoria.

PACHYDACTYLUS FASCIATUS Boulenger.

(Plate IX, fig. 1).

Pachydactylus fasciatus Boulenger, 1888, Ann. Mag. N. H. (6) II, p. 138 (Type locality: 'Namaqualand'), and 1890, P.Z.S. Lond., p. 78. Sclater, 1899, Ann. S. Afr. Mus., I, p. 103. Boulenger, 1910, Ann. S. Afr. Mus., V, p. 461. Hewitt, 1910, Ann. Tvl. Mus., II, pp. 83 & 87. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 15, and Mitt. Zool. Mus. Berlin, V, p. 397 (Neu Barmen). Hewitt, 1927, Rec. Alb. Mus., III, p. 400.

?*Pachydactylus weberi* (non Roux) part., Werner, 1915, in Michaelsen. Land- u. Süßwasserfauna Deutsch-S.W. Afrikas, I, p. 334 (Karibib).

Description: Head distinct from neck, about $1\frac{1}{2}$ times as long as broad. Snout rounded, about $1\frac{1}{2}$ times diameter of eye and $1\frac{1}{4}$ times distance from eye to ear-opening. Nostril pierced between three nasals, the uppermost (or nasorostral) largest and in contact with its fellow. Rostral pentagonal, almost twice as broad as deep. First upper labial usually with an upward prolongation just entering nostril. 7—9 (Usually 8) upper and 7—8 (usually 7) lower labials. Mental about twice as long as broad, narrowing behind to half or less anterior breadth, as broad as or narrower at base than adjoining labials, which do not narrow behind. No chin shields, but scales adjoining lower labials from 3rd (which is well set back from 2nd) backwards, distinctly flattened and larger than the minute, flattened, rounded granules on chin and throat. Scales on snout large, granular, smooth and oval to subpolygonal in shape; back of head covered with minute granules intermixed with evenly-spaced, round to suboval, smooth or feebly keeled, button-like tubercles which extend forwards to between the eyes and are subequal in size to scales on snout. Back covered with very small even-sized granules, intermixed with large, oval or rounded, keeled (usually strongly so and trihedral) tubercles, forming about 18 regular longitudinal series; similar tubercles on upper surfaces hindlimbs, smaller ones on forearm. Scales on belly flat, smooth, imbricate and a little larger than scales on snout. Digits moderate, with 6—9 transverse adhesive lamellae below distal dilatations, and an infero-median row of transversely enlarged scales on basal portion of each digit. Tail segmented, covered with smooth, subquadrangular, subimbricate scales (5 rows to each segment), together with transverse rows of 6 (reducing to 4 distally) enlarged, flattened, keeled, pointed tubercles (a single row on each segment); below, scales larger than above, smooth and imbricate, the median series being largest and consisting of a single large scale followed by a pair of smaller ones, alternating thus on each segment throughout length of tail. A single feebly enlarged flattened tubercle on either side base of tail near vent.

Colour: Above, light brown to yellowish-brown, with 3 regular dark brown (often darker-edged) transverse bands on back, the first between the shoulders, the second about midway down back and the last across sacrum; of these dark cross bands, the first two are much broader than the last, though narrower than pale interspaces; a brown streak completely encircling back of head, usually somewhat indented behind, reaching forwards through eye to midway between latter and nostril; labials usually minutely speckled with dark brown. Lower surfaces dirty white. 8—10 Dark bands on tail, slightly narrower than the pale interspaces. Colour markings more distinct in the young than in adults.

Dimensions: Cotype (S.A.M. 1052—Namaqualand), H. & B. 49, tail 58, length head 14, breadth head 10.5 mm.

Field notes: Rupicolous and apparently of rare occurrence.

Distribution: Great Namaqualand and Damaraland. Recorded localities: Namaqualand; Karibib (S.A.M.).

Remarks: Cotypes in South African Museum, Cape Town and British Museum of Natural History, London. There is a specimen (No. 1155) in the South African Museum, recorded from Natal; this specimen is identical to the cotype, (in structure, state of preservation etc.) and in all probability came from the same locality; its occurrence in Natal is otherwise unknown and beyond the bounds of possibility. Werner (1915, p. 334) records a specimen from Karibib as *weberi*, but as there is in the South African Museum a specimen from the same locality which is undoubtedly *fasciatus*, it appears probable that Werner's record is also *fasciatus*.

PACHYDACTYLUS WEBERI WEBERI Roux.

(Plate IX, fig. 2, and Plate XV, fig. 5).

Weber's Gecko.

Pachydactylus weberi Roux, 1907, Zool. Jahrb. Syst., XXV, p. 408, pl. XIV, figs. 4 & 5 (Type locality: Klipfontein, L.N.). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 461. Hewitt, 1910, Ann. Tvl. Mus., II, p. 83, and 1927, Rec. Albany Mus., III, p. 401.

Pachydactylus weberi part., Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 14 (Klipfontein).

?*Pachydactylus weberi* Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 14 (Windhuk), and Mittl. Zool. Mus. Berlin, V, p. 397 (Windhuk & Gobabis). Parker, 1936, Novit. Zool., XL, p. 130 (Windhoek & Hoffnung).

Pachydactylus weberi weberi FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 180 (Klipfontein; 20 miles E. of Port No'loth; O'okiep—Springbok; Springbok—Kamaggas; Kamaggas).

Pachydactylus fasciatus (non Boul.) Werner, 1910, Jena. Denkschr., XVI, p. 311, text-fig. 8 (Kamaggas).

Pachydactylus capensis gariesensis FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 528 (Soebatsfontein).

Description: Head oval, strongly depressed, about $1\frac{1}{4}$ times as long as broad, broader than neck. Snout somewhat pointed, distinctly swollen on either side just anterior to eyes, from $1\frac{1}{2}$ to $1\frac{2}{3}$ times diameter of eye and about $1\frac{1}{4}$ times distance from eye to ear-opening; latter oval and oblique. Nostril pierced between three nasal scales and 1st upper labial, sometimes latter narrowly separated from nostril; nasorostrals usually in moderate to short contact with one another, sometimes narrowly separated by a small granule. Rostral well separated from nostril, pentagonal, obtusely angled above, from $1\frac{1}{2}$ to $1\frac{3}{4}$ times as broad as deep. Upper labials 8—10 (usually 9), lower 7—9. Mental elongate, narrower at base than adjoining lower labials, from $1\frac{3}{4}$ to a little over twice as long as broad, narrowing behind to $\frac{1}{2}$ or $\frac{1}{3}$ anterior breadth. No chin-shields. Scales on snout enlarged, granular, convex, largest towards sides just above loreal region; back of head covered with minute granules intermixed with smooth, rounded, button-like tubercles (smaller than larger scales on snout), which extend forwards to a point almost midway between the eyes; tubercles on temporal region larger, subconical and equal to or a little larger than largest scales on snout; on nape tubercles increase in number, enlarge and are keeled. Back covered with small rounded granules and fairly closely arranged, enlarged, keeled tubercles which, mesially, are oval, flattened and distinctly smaller (about half the size) than those dorsolaterally, where they are rounded more strongly keeled, raised and practically contiguous; on sides, tubercles decrease in size again, becoming more or less smooth and subconical; tubercles in about 22 longitudinal series on back, down the middle of which is a narrow granular strip quite free of tubercles.

On hindlimbs tubercles very large, conical and feebly keeled, on forearm much smaller, smooth and subconical. Scales on throat very small, granular and flattened; on chest and belly enlarged, flat, imbricate, largest posteriorly (scales on middle of belly subequal in size to largest scales on snout). Body strongly depressed; limbs moderate; digits somewhat slender, not strongly dilated, fingers each with 5 transverse adhesive subdigital lamellae below, first toe with 5 and remaining toes with 6; median row of subdigital scales on basal portion of digits enlarged, there being on fingers 4—5 scales on digits I, II & V and 6—7 on II & IV, on toes 4—5 on digit I, 5—6 on II, 6—9 on III, 8—10 on IV and 6—8 on V. Tail somewhat depressed basally, longer than head and body, segmented, covered above with small unequal-sized imbricate scales (3—4 rows to each segment) and regular transverse rows of 8—6 (8 basally and 6 distally) enlarged, keeled, pointed tubercles (largest on sides), edging each segment behind; below, scales much larger than above, smooth, imbricate, largest along median line, where over anterior half of tail there is a pair of scales followed by a single scale to each segment, and thereafter only single transversely enlarged scales (two to each segment); sometimes inferomedian row made up of only single enlarged scales (double scales being absent) from 3rd segment backwards. Two to three feebly enlarged tubercles or scales on either side base of tail.

Colour: Above, grey to greyish-brown, with dark brown to reddish-brown spots and markings which usually form 5—6 irregular or broken up crossbands on back; a dark streak on either side of head (edged above with white from nostril to eye) from 2nd upper labial through eye, widening on temple and often linked up with its fellow round back of head by a dentated or zigzag band; a few irregular dark spots on back of head; tail banded basally with dark brown (sometimes indistinctly), distally often distinctly banded with black and white; the bands completely encircling tail towards the tip; lower surfaces, creamy white to greyish-white. In juveniles markings resemble somewhat those of *fasciatus*, the transverse barring being well-marked and more or less regular, usually arranged in three pairs, one on nape and two on back, the six dark transverse bars corresponding to the edges of the three broad bands found in *fasciatus*.

Dimensions: Male (T.M. 17914—Klipfontein), H. & B. 44, tail. (partly reproduced) 44, length head 11, breadth head 9 mm.

Field notes: Rupicolous, living in rock cracks and crevices. Stomach contents consist mainly of the remains of moths, together with spiders and homopterous larvae.

Distribution: Northern part of Little Namaqualand. Recorded localities: Klipfontein; Klipfontein—Port Nolloth; O'okiep—Springbok; Springbok—Kamaggas; nr. Kamaggas; Soebatsfontein (T.M.). Lekkersing (S.A.M.).

Remarks: Types in the Amsterdam Museum. Specimens from Windhoek and Gobabis, which, according to Sternfeld (1911, p. 397), have nasorostrals narrowly separated, no tubercles on forearm, tubercles on back small, flattened, keeled and closely aggregated, and body spotted above, would appear to be subspecifically distinct. The specimen from Kamaggas, described and figured by Werner (1910, p. 311) as *P. fasciatus*, is indistinguishable from the young of *weberi weberi*.

PACHYDACTYLUS WEBERI GARIESENSIS Hewitt.

(Plate IX, fig. 3).

Pachydactylus capensis gariesensis Hewitt, 1932, Ann. Nat. Mus., VII, p. 124, pl. VI, figs. 8 & 9 (Type locality: Garies, L.N.).

Pachydactylus capensis fasciatus (non Boul.) FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 528 (nr. Vredendal).

Pachydactylus fasciatus (non Boul.) FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 170 (at foot of Hantamsberg).

Pachydactylus weberi gariesensis FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 179 (Garies).

Description: Enlarged tubercles for the most part smaller, fewer in number and much less conspicuous than in typical *weberi*; rounded tubercles on back of head small and very few or absent, on temples and nape flattened and sparsely scattered; over middle of back tubercles at most very small and flattened, sometimes a considerable mesial area practically free of tubercles; towards the sides tubercles enlarge appreciably, becoming more conical and closely aggregated, but never to nearly the same extent as in typical *weberi*; tubercles on hindlimb feebly enlarged and convex, absent on forearm; enlarged tubercles on tail more flattened and not projecting. Nasorostrals usually in good contact; upper labials 8—10, lower 6—8; fingers with 5 transverse adhesive lamellae under digit I and 5—6 under II—V; toes with 5—6 lamellae under digit I and 6—7 under II—V.

Colour: Similar to typical *weberi*, but in general the dark markings above are denser and more closely aggregated.

Dimensions: Male (T.M. 18151—Garies), H. & B. 49, tail 58, length head 11.7, breadth head 10 mm.

Distribution: Southern half of Little Namaqualand, southwards to the Calvinia-Clanwilliam Districts. Recorded localities: Garies (A.M., S.A.M. & T.M.). Nieuwerust (A.M.). Bitterfontein (A.M. & S.A.M.). Bowesdorp; Kamieskroon; Leliefontein (S.A.M.). Nr. Vredendal; Hantamsberg; Pakhuis Pass (T.M.).

Remarks: Types in the Albany Museum, Grahamstown. Specimens from Vredendal and Hantamsberg recorded as *P. fasciatus* by FitzSimons (1935, p. 528, and 1938, p. 170), prove on re-examination to be *P. w. gariesensis*.

PACHYDACTYLUS WEBERI ACUMINATUS FitzSimons.

?*Pachydactylus weberi* part., Werner, 1915, in Michaelsen, Land u. Süswasserfauna Deutsch-S.W. Afr., I, p. 334 (Keetmanshoop).

Pachydactylus weberi weberi? FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 181 (Aus; nr. Konkiep).

Pachydactylus weberi acuminatus FitzSimons, 1941, Ann. Tvl. Mus., XX, p. 274.

Description: Distinguished from typical *weberi* on the following: Head and body generally, more slender; snout much more pointed, about $1\frac{1}{2}$ times diameter of the larger eye, and $1\frac{1}{3}$ times distance from eye to ear-opening; nasorostrals in more or less long contact with one another; rostral subrectangular, almost twice as broad as deep; rounded, button-like tubercles on back of head much smaller than scales on snout; tubercles on back in more regular longitudinal rows, 16—18 in number, more strongly keeled, those down middle of back distinct and not so clearly differentiated in size from those dorso-laterally, which are less conspicuous and decrease more rapidly in size laterally; tubercles on limbs not so conspicuously conical.

Colour: Above, pale olive grey, with reddish-brown irregular crossbars (similar to, but narrower than in typical *weberi*), some-

times edged with pinky-brown and often with patches of the same colour between; a dark streak on side of head from nostril through eye (edged above with yellow between nostril and eye) and over ear, often encircling occiput behind; upper eyelid yellow; eye reddish; head tinged with pink. Lower surfaces creamy to greyish-white. Tail usually a pale pinkish- to yellowish-brown, with narrow barring of dark brown, the dark bars being less than half as broad as pale interspaces; enlarged scales yellow.

Dimensions: Male (T.M. 17722—Konkiep), H. & B. 42, tail reproduced, length head 11.2, breadth head 8.7 mm.

Field notes: Habits similar to typical *weberi*; eggs oval, averaging 10×6.5 mm. As found with many other geckos, the eggs are often laid in communal depositories under a suitable rock flake, and accumulations of up to 50—60 eggs and eggshells have been recorded.

Distribution: Great Namaqualand. Recorded localities: Aus, and near Konkiep (T.M.).

Remarks: Types in the Transvaal Museum, Pretoria.

PACHYDACTYLUS RUGOSUS A. Smith.

(Plates IX, fig. 6, and XV, fig. 6).

Rough-scaled Gecko.

Pachydactylus rugosus A. Smith, 1849, III. Zool. S. Afr. Rept., pl. LXXV, figs. 2 & 2a (Type locality: 'Interior of Southern Africa'). Boulenger, 1885, Cat. Liz., I, p. 204, and 1910, Ann. S. Afr. Mus., V, p. 462 (Little Namaqualand). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 84 & 87. Sternfeld, 1911, Mitt. Zool. Mus. Berlin, V, p. 397 (Karasberge; Churutabis), and Fauna Deutsch. Kolon., IV, 2, p. 15, text-fig. 11 (Walvis Bay). Hewitt, 1911, Ann. Tvl. Mus., III, p. 45 (Rietfontein; Gordonia). Lampe, 1911, Jahrb. Nassau. Ver. Naturk., LXIV, p. 157 (Rietmond; Kuibis). Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 150 (Ky Ky, S. Kalahari). Nieden, 1913/14, Sitzber. Ges. Naturf. Freunde Berlin, No. 10, p. 450 (Rehoboth; Kuibis). Parker, 1936, Novit. Zool., XL, p. 130 (Naukluft Mts.). FitzSimons, 1941, Ann. Tvl. Mus., XX, pl. XII, fig. 4 (Kakamas).

Pachydactylus rugosus part., Werner, 1910, Jena. Denkschr., XVI, p. 312 (Kubub).

Pachydactylus rugosus frater Hewitt, 1935, Rec. Alb. Mus., IV, p. 316, pl. XXIX, fig. 6 (Heichamchab = Haigamchab; Kakamas; Rietfontein; Onseepkans). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Windhuk).

Description: Head oviform, not or but slightly depressed, about $1\frac{1}{5}$ times as long as broad, much broader than neck. Snout moderate, obtuse, a little less than $1\frac{1}{2}$ times distance between eye and ear-opening, from $1\frac{2}{3}$ to $1\frac{3}{4}$ times diameter of eye. Nostril pierced between three nasal scales, of which the anteriormost is the largest and narrowly to fairly widely separated from its fellow behind rostral by 1—4 granules. Rostral and first upper nasal separated from nostril. Rostral subpentagonal, from $1\frac{2}{15}$ to $1\frac{2}{3}$ times as broad as deep. Mental usually quadrangular (sometimes subtriangular), a little broader than, subequal to or a little narrower than adjoining lower labials, not or but slightly narrowed behind, posterior border rounded or squared. No chin shields. Upper labials 9—11 (usually 10), lower 8—10 (usually 9). Scales on snout conical and striated, somewhat unequal, decreasing in size towards interorbital region, but enlarging again on occiput, where they are well intermixed with granules. Back covered with unequal, small, often subconical and striated granules, intermixed with large (much larger than on snout), sharply conical tubercles, which are striated or ribbed (with one strong keel in front), and arranged in more or less irregular longitudinal series, the largest dorsolaterally; enlarged tubercles on forearm and hindlimb similar to

those on back. Scales on chin and throat small, granular, subconical to conical, more or less striated, smallest anteriorly but usually enlarging somewhat on middle of throat; scales on chest subconical or more or less flattened and juxtaposed; scales on belly smaller than scales on middle of throat, granular, subconical to subpyramidal or somewhat flattened and often subimbricate posteriorly; a small area of minute granules immediately anterior to vent. Body not or but feebly depressed. Limbs rather long; digits short, moderately dilated distally, each with 5 transverse adhesive lamellae below; median row of scales on basal portion of digits below, not or but very feebly enlarged. Tail shorter than head and body, segmented, covered above with small, keeled, imbricate, unequal-sized scales and regular transverse rows of 8—6 (8 basally and 6 distally) large, conical, sharply pointed or lanceolate tubercles (often recurved laterally), one row of tubercles to each of the somewhat narrow segments; below, first segment of tail covered with minute granules and thereafter with elongate, imbricate, smooth or feebly keeled and striated scales. A longitudinal series of 3—4 upwardly directed, very large, pointed, conical, striated scales or tubercles on either side-base of tail near vent; below again, scales small, conical and closely set.

Colour: Above, head greyish-brown, often clouded with blackish; a curved dark brown to blackish band round back of head from behind eyes, broadest posteriorly and somewhat denticulate below; a dark streak on either side of snout; back dark brown to blackish-brown, with four dentated, transverse, white to yellowish-white crossbars, which are usually narrower than the dark interspaces; the two anterior pale crossbars are usually joined up dorsolaterally, thus isolating an elongate dark spot between the shoulders. Tail with narrow white crossbars and enlarged scales or tubercles also white. Below, greyish-white, speckled with greyish-brown, especially on sides of belly. Labials usually spotted or partly infused with dark brown.

Dimensions: Male (T.M. 11962—Junct. Oup and Nosop Rivs.), H. & B. 51, tail reproduced, length head 14.6, breadth head 12.3. Largest specimen examined measured 56 mm. for H. & B.

Field notes: Terrestrial, living under stones, logs etc. and sometimes found in crevices of the softer rock formations.

Distribution: From the northern parts of Little Namaqualand and the north-west Cape Province, northwards through South West Africa to the Kaokoveld. Recorded localities: Onseepkans; Kakamas; Rietfontein, Gordonia; Haigamchab; Karib (A.M.). Ky Ky; Aus (K.M.). Keetmanshoop (K.M. & S.A.M.). Naroep; Kraaiwater; Klein Novi Sabies, L.N.; Kalkfontein south; Kowares (S.A.M.). Junction Oup & Nosop Rivs.; Outjo (T.M.).

Remarks: Type in the British Museum of Natural History, London. A somewhat variable species; both in structure and arrangement of colour markings; specimens showing every gradation from the typical form to the subspecies *frater* Hwt. occur haphazardly without any geographical significance, and appear to preclude the recognition of the latter as a separate form.

PACHYDACTYLUS MENTALIS Hewitt.

Pachydactylus mentalis Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 475, pl. XLIV, fig. 1 (Type locality: Farm 'Longhope', Great Fish River, E. Cape Province), and 1927, Rec. Alb. Mus., III, p. 400.

Pachydactylus capensis mentalis Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 20, pl. VIII, fig. 3 (Tarkastad; Graaff-Reinet).

Description: Resembling *P. capensis* in scutellation and *maculatus* in colour markings. Snout rather obtuse, not depressed; rostral a little broader than deep, six-sided; nasorostrals separated by a single fairly larged flattened scale (or sometimes by two smaller scales); ear-opening almost vertically elliptic; scales on snout and between eyes comparatively large and flattened, largest and almost regularly hexagonal on sides of snout; a few low rounded tubercles on back of head; upper labials 6—8, lower 6—7. Back covered with small flattened scales intermixed with fairly well-developed, rounded, keeled tubercles, which are not arranged in regular longitudinal series. Mental as broad as or slightly narrower than adjoining lower labials, not or but slightly narrowed behind; a well-defined row of 5—6 chin shields behind mental and anterior labials, well differentiated by their larger size from the following gular scales, which are small and flattened and gradually diminish in size towards base of throat, where they are almost granular. Digits short, slightly expanded distally, with 4 subdigital, transverse, adhesive lamellae; infero-median row of subdigital scales on basal portion of digits not or but very slightly enlarged, except distally. Tail not depressed, tapering, more or less distinctly annulate, with some large scales near base slightly keeled; two enlarged tubercles on either side base of tail near vent.

Colour: Above, light greyish-brown, with dark blotches on nape and back, sometimes referable to four longitudinal rows, the two median of which are largest and often merging with one another posteriorly; a dark curved band on either side of head, from nostril backwards to occiput, where it does not quite meet its fellow; a V-shaped dark marking on snout, with apex just behind rostral and terminating between the eyes. Tail dark spotted or barred. Lower surfaces creamy white.

Dimensions: (Type, A.M. 5008), H. & B. 36, tail reproduced, length head 10, breadth head 8.2 mm. (A.M. 7587—Graaff-Reinet) has H. & B. 51, length head 12, breadth head 10 mm.

Distribution: Karroid areas of south-eastern Cape Province. Recorded localities: "Longhope," Great Fish River Valley; Tarkastad; Graaff-Reinet (A.M.).

Remarks: Type in the Albany Museum, Grahamstown.

PACHYDACTYLUS CAPENSIS CAPENSIS A. Smith.

(Text-figs. 27 and 28; Plate XVI, fig. 1).

Common Cape Gecko; Smith's Cape Gecko.

Pachydactylus capensis A. Smith, 1846, Ill. Zool. S. Afr. Rept., pl. I, fig. 2 (Type locality: 'Interior of Southern Africa'. Note: Described under *Tarentola*, but corrected to *Pachydactylus* in Index). Boulenger, 1885, Cat. Liz., I, p. 202 (Karoo; Orange River). Boettger, 1889, Ber. Senck. Naturf. Ges., p. 287 (Botschabelo, nr. Middelburg, Tvl.). Bocage, 1896, Journ. Sc. Lisb. (2) IV, p. 115 (Modder River, O.F.S.). Boulenger, 1903, A.M.N.H. (7) XII, p. 217 (Deelfontein, C.P.). Roux, 1907, Rev. Suisse Zool., XV, p. 81 (Rikatla). Boulenger, 1908, Ann. Nat. Mus., I, p. 223 (Junct. Umfolosi Rivs.; Kosi Bay; Bergville). Odhner, 1908, Arkiv. Zool. Stockholm, IV, No. 18, p. 2 (Umfolosi; Entondweni). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 461 (Beaufort West; Burghersdorp; Hanover; Modder River; Clanwilliam; Matjesfontein; Port Elizabeth; Kroonstad; Smithfield; Johannesburg; Irene; Pietersburg; Middelburg; Modderfontein; Barberton; Kuruman; Bulawayo; Delagoa Bay). Hewitt, 1910, Ann. Tvl. Mus., II, pp. 83 and 87 (Kimberley; Richmond District; Mafeking), and 1911, III, p. 44. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 14 (Windhoek; Gobabis). Hewitt and Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 150 (Mafeking; Kraaipan; Taungs; Kuruman; Ky Ky; Kimberley; Kalk Bay). Methuen and Hewitt, 1914, Ann. Tvl. Mus., IV, p. 135. Power, 1927, Trans. Roy. Soc. S. Afr.,

XIV, p. 406 (Lobatsi). Hewitt, 1927, Rec. Alb. Mus., III, p. 399. Power, 1931, Trans. Roy. Soc. S. Afr., XX, p. 41 (Linokana), and 1933, XXI, p. 214 (Orange River Stn.). FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 265.

Pachydactylus capensis capensis FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 528 (Kuruman; nr. Dikgatlon; Oup River), and XVI, p. 337 (Lobatsi; Kuke, Gomodimo, Kaotwe, Gembok and Damara Pans, Kalahari; Chukudu; Okwa River; Machumi Pan-Mabeleapudi). Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 19 (Kimberley; Aliwal North; Victoria West; Beaufort West; Middelburg, C.P.). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 168, text-fig. 8 (Van Zylsrust, Kuruman Riv.).

Pachydactylus elegans A. Smith, 1849, III. Zool. S. Afr. Rept. App., p. 5.

Pachydactylus capensis part., Roux, 1907, Zool. Jahrb. Syst., XXV, p. 408 (Pretoria Dist.). Werner, 1910, Jena. Denkschr., XVI, p. 309 (Vlei Topan and Sevrelala, Kalahari).

Pachydactylus leopardinus Sternfeld, 1911, Mittl. Zool. Mus. Berlin, V, p. 418 (Bethany, O.F.S.; West Griqualand).

Description: Head oviform, not or but feebly depressed, usually about $1\frac{1}{2}$ times as long as broad, a little broader than neck. Snout obtusely pointed, a little longer than distance from eye to ear-opening, from $1\frac{1}{2}$ to almost twice diameter of eye. Ear-opening oval, oblique. Nostril pierced between three nasal scales, well separated from rostral and 1st upper labial; nasorostrals in contact with one another behind rostral (sometimes just separated by a small granule in young specimens). Rostral pentagonal, a little broader (usually

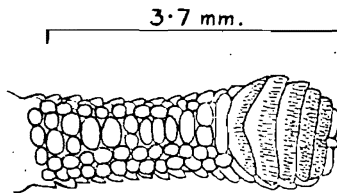


Fig. 27.

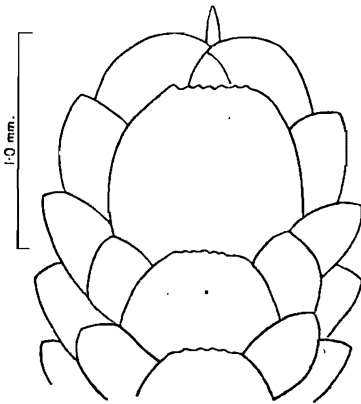


Fig. 28.

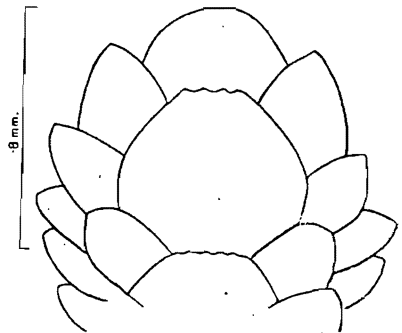


Fig. 29.

Fig. 27. *Pachydactylus c. capensis* (T.M. No. 16730—Fauresmith), underside of 3rd toe.

Fig. 28. *Pachydactylus c. capensis* (T.M. No. 14941—Waterpoort), tip of 4th toe as seen from above.

Fig. 29. *Pachydactylus capensis labialis* (Type, T.M. No. 18055), tip of 4th toe as seen from above.

not more than $1\frac{1}{2}$ times) than deep. Upper labials 7—8 (usually 7), lower 6—7 (usually 6). Mental as broad as or slightly narrower than adjoining lower labials, about $1\frac{1}{2}$ times as long as broad, narrowing somewhat behind and not extending as far as adjacent lower labials; scales adjoining mental and anterior lower labials behind, slightly

larger and more flattened than the minute granular scales on throat. Snout covered with enlarged, smooth or keeled, slightly convex scales; on back of head scales small (much smaller than on snout) and granular, intermixed with large, rounded to oval, smooth or keeled tubercles, which are subequal in size to scales on snout. Body somewhat depressed, covered above with very small granules, intermixed with large, keeled, rounded to suboval tubercles, arranged in longitudinal series over back; below, scales smooth, flat and imbricate, increasing gradually in size from throat to groin. Limbs moderate; digits short and rather slender, dilated distally with 5—6 (usually 5) transverse adhesive lamellae inferiorly; infero-median row of scales on basal portion of digits not or but feebly enlarged. Tail somewhat depressed, slightly longer than or subequal in length to head and body, segmented, covered above with small, smooth subimbricate scales (5—6 rows to each segment) and transverse rows of large, more or less flattened, feebly keeled tubercles of which there is a row on each segment; below, scales large, irregular in size, smooth and imbricate; reproduced tails are usually more strongly depressed and swollen laterally, covered with smooth, subequal, imbricate scales above and below. An oblique row of 2—3 enlarged scales on either side base of tail near vent.

Colour: Above, dirty cream, light grey to greyish-brown, spotted and variegated with white and dark brown to blackish, sometimes in the form of indefinite crossbars; a dark streak on either side of head, from nostril through eye to above ear-opening; labials often suffused with dark brown or black. Lower surfaces uniformly white to creamy or dirty white.

Dimensions: Male (T.M. 16839—Van Zyl's Rust), H. & B. 60, tail 59, length head 14.3, breadth head 11.5 mm.

Field notes: Usually found living under stones and in rock crevices, but where these are not available in rotten logs, under loose bark of trees or in the rubble and undergrowth of bushes and shrubs. Comparatively sluggish in movement, and easy to capture; the tails are very readily shed and it is seldom that an adult specimen is seen with the original tail intact. The eggs, which are deposited in pairs (often with their longer axes at right angles to each other) under stones or in any other suitable sheltered nook or cranny, are oval and measure from 10—11 × 7—8 mm. The newly hatched young are about 30 mm. in total length.

Distribution: Throughout the central areas of South Africa, extending into Natal, Zululand and southern part of Portuguese East Africa in the East, and through the Kalahari into Damaraland and Southern Angola in the West. Apparently absent from Pondoland and Southern Rhodesia, and rare or absent from southern and western coastal areas of the Cape Province. Recorded localities: Victoria West; Meadows; Rydal Mtn., nr. Witzieshoek; Masite; Leeuwdoornstad; Doornkop nr. Belfast; White River; Newington; Komatipoort (A.M.). Griquatown (A.M. & K.M.). Vryburg (A.M., K.M. & S.A.M.). Kuruman (A.M., K.M., S.A.M. & T.M.). Pretoria (A.M., R.M. & T.M.). Middelburg, C.P. (A.M. & S.A.M.). Johannesburg (A.M., S.A.M. & T.M.). Campbell; Potchefstroom; Beaufort West; Okahandja (A.M. & T.M.). Niekerkshoop; Verkeerde Vlei; Winburg Dist.; Deelfontein. Bethulie Dist.; Avalon; Wolmaransstad; Lydenburg; Umsinene Drift (B.M.). Fauresmith (B.M. & T.M.). Postmasburg; Danielskuil; Warendale; Delpportshope; Douglas; Mafeking; Genesa; Taungs; Ky Ky; Junct. Oup-Nosop Rivs.; Ababas Nauzerus; Cape Peninsula; Thabanchu; Bloemfontein; Ficksburg; Glen; Mahalapye; Premier Mine; (K.M.). Kimberley; Lobatsi (K.M. & T.M.). Telle Junction; Junction

Umfolosi Rivers; Entendweni; Ingwavuma; Kosi Bay; Pepworth; Colenso (N.M.). Nelspoort; Burghersdorp; Clanwilliam; Port Elizabeth; Kroonstad; Smithfield; Modderfontein; Delagoa Bay; Pietersburg; Mochudi; Kalkfontein north; Aminuis; Uwuthya, Ovamboland (S.A.M.). Hanover; Matjesfontein; Irene (S.A.M. & T.M.). Jamestown; Fourteen Streams; Oup River; Dikgatlon & Van Zylsrust, Kuruman Riv.; Nazana on White Umfolosi; Magut; Athol, nr. Ermelo; De Deur, nr. Evaton; Warmbaths; Schweizer Reneke; Nylstroom; Maquassi; Delarey; Koster; Vereeniging; Benoni; Delmas; Zeerust; Krabbefontein; Haenertsburg; Louws Creek; Middelburg, Tvl.; Naboomspruit; Leydsdorp; Blinkwater; Vaalwater; Saltpan nr. Waterpoort; Gomodimo Pan, Chukudu, Kaotwe Pan, Okwa River, Damara & Gemsbok Pans, Kalahari (T.M.).

Remarks: Types in the British Museum of Natural History, London.

PACHYDACTYLUS CAPENSIS VANSONI FitzSimons.

Van Son's Gecko.

Pachydactylus capensis vansoni FitzSimons, 1933, Ann. Tvl. Mus., XV, p. 274 (Type locality: Between Entabeni and Lake Fundusi, Zoutpansberg, N. Tvl.).

Description: Distinguishable on the following characters: Head on the average a little broader and more depressed than in typical *capensis*, from $1\frac{1}{5}$ to $1\frac{1}{4}$ times as long as broad; snout from $1\frac{2}{3}$ to $1\frac{3}{4}$ times diameter of eye and about $1\frac{1}{5}$ times distance from eye to ear-opening; scales on snout much enlarged, slightly convex and usually obtusely keeled; small granular scales on back of head intermixed with smooth or feebly keeled tubercles, which are usually smaller than scales on snout; upper labials 7—8, lower 7; nasorostrals usually in contact, exceptionally separated by a small granule; mental narrower than 1st lower labial and somewhat narrowed behind; tubercles on back closely set, strongly keeled and often trihedral, usually not in regular longitudinal series as in *capensis* and, in general, smaller and more heterogeneous than in latter; towards sides tubercles become much larger and more densely aggregated, intervening granules being few or absent; digits with 4—5 transverse subdigital adhesive lamellae and a median row of feebly enlarged scales on basal portion inferiorly. Tail equal to or slightly shorter than H. & B.

Colour: Above, light grey to greyish-brown, with dark brown spots and blotches on back often transversely arranged; a distinct white streak on each side of head from angle of jaw, completely encircling occiput posteriorly, and a second semicircular white line on top of head, arising from upper posterior corner of eye, often present; a narrow white vertebral stripe on back (arising from back of head) and 6—7 narrow wavy transverse stripes, which together give a harnessed effect (white stripes usually well-marked on forepart of back, indistinct or absent posteriorly); a dark streak or band on side of head from nostril, through eye and above ear-opening, sometimes curving in behind head to almost meet its fellow; labials each with a dark spot; lower surfaces white to greyish-white. Juveniles light brown above, with a series of 7—8 narrow, white, dark-edged, wavy, transverse bars between occiput and root of tail (the first two or three linked up by a vertebral white stripe); similar crossbars on tail, encircling latter completely over proximal half; a white, dark-edged bar across snout just anterior to eyes, (often persisting somewhat indistinctly in adults).

Dimensions: Female (Type, T.M. 14179), H. & B. 48, tail regenerated, length head 12.2, breadth head 10 mm.

Field notes: A mountain form, found living under stones on upper mountain slopes, often within the mist belt. The eggs are laid in pairs, and measure 7×5.5 mm.

Distribution: Apparently confined to the mountainous parts of the northern and eastern Transvaal. Recorded localities: Entabeni; Entabeni—Lake Fundusi; Farm 'Newgate,' Zoutpansberg just above Louis Trichardt (T.M.). 40 miles E. of Lothair; Sabie (6000 ft.); White River (A.M.). Barberton (A.M. & T.M.). Lochiel (N.M.).

Remarks: Types in the Transvaal Museum, Pretoria.

PACHYDACTYLUS CAPENSIS LABIALIS FitzSimons.

(Text-fig. 29; Plate XVI, fig 2).

? *Pachydactylus capensis* part., Roux, 1907, Zool. Jahrb. Syst., XXV, p. 408 (Steinkopf). Werner, 1910, Jena. Denkschr., XVI, p. 309 (Steinkopf).

? *Pachydactylus capensis* Sternfeld, 1911, Mitt. Zool. Mus. Berlin, V, p. 397 (Luderitzbucht).

Pachydactylus capensis labialis FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 168; text-fig. 7 (Type locality: Steinkopf, L.N.).

Description: Head small, not or but very slightly broader than neck, about $1\frac{2}{5}$ times as long as broad; snout short, about $1\frac{1}{2}$ times diameter of eye and $1\frac{1}{5}$ times distance from eye to ear-opening; nostril pierced between three nasals, well-separated from rostral and first upper labial; nasorostrals well-separated from one another by a moderately large granule; mental not more than $1\frac{1}{2}$ times as long as broad, subequal to or a little narrower at base than adjoining labials, not, or but slightly narrowed behind; upper labials 5—7, with 5th lying below eye; lower labials 5—6; labials all distinctly deeper than in typical *capensis*; scales on snout enlarged, especially on canthal region, slightly convex and faintly keeled; over interorbital region and occiput, scales minutely granular and intermixed with conical keeled tubercles, which are smaller than large scales on snout; over back granules small and equal-sized, tubercles large, with strong simple keels or trihedral, arranged in about 16 more or less regular longitudinal series and evenly spaced, being 2—4 granules apart; on tibia, tubercles large and trihedral; below, scales on chin and throat minutely granular, enlarging over chest and belly, where they are smooth, flat, subcircular and subimbricate. Head and body not or but very feebly depressed; limbs and digits short and stout; distal dilatation not or only slightly broader than proximal portion of digit, with 5 transverse adhesive lamellae under each digit, the most proximal being deeply nicked in the middle and often completely divided in two; median row of subdigital scales not or but feebly enlarged; fingers and toes above, each with a moderately large, single median scale distal to the large nail-like scale. Tail cylindrical, a little longer than head and body, segmented, covered above with small imbricate, irregular scales (4 rows to each segment) and regular transverse rows of 6 enlarged, somewhat flattened, pointed, keeled scales; scales below are larger than above, imbricate, pointed behind and not transversely enlarged along middle line; two enlarged, flattened, sharp-edged scales one behind the other on either side base of tail near vent.

Colour: Above, grey to greyish-brown, with dark brown to blackish markings arranged irregularly in transverse series or in longitudinal streaks over back; sometimes a thin pale vertebral stripe present; a dark streak on side of head from second upper labial,

through eye and ear and then curving inwards round back of occiput, but not quite meeting its fellow behind; a dark streak from nostril to just above eye; labials spotted or densely infused with dark brown; lower surfaces uniformly creamy white to greyish. Tail more or less distinctly barred with dark brown to blackish; reproduced tails spotted. Juveniles often uniformly dark brown above with enlarged tubercles paler.

Dimensions: Male (Type, T.M. 18055), H. & B. 44, tail (partly reproduced) 38, length head 10.5, breadth head 7.5, forelimb 11, hindlimb 15 mm.

Field notes: Found in open country, living under stones.

Distribution: Little Namaqualand, and perhaps also Great Namaqualand. Recorded localities: Steinkopf (T.M.). Pakhuisberg; Kamieskroon; Port Nolloth; Kleinzee (S.A.M.).

Remarks: Types in the Transvaal Museum, Pretoria. The specimen of *capensis* from Luderitzbucht, recorded by Sternfeld (1911, p. 397), appears from the author's brief notes, to be the subspecies *labialis*, which is known from Kleinzee & Port Nolloth on the same coast further south.

PACHYDACTYLUS CAPENSIS FORMOSUS A. Smith.

(Plates X, fig. 1 and XVI, fig. 3).

Pachydactylus formosus A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 4 (Type locality: "Interior of South Africa, near Tropic of Capricorn"). Note: Incorrect, known only from western Cape Province). Boulenger, 1885, Cat. Liz., I, p. 203, pl. XVI, fig. 2, FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 265.

Pachydactylus formosus part., Boulenger, 1910, Ann. S. Afr. Mus., p. 461 (Ceres; Clanwilliam; Calvinia). Hewitt, 1910, Ann. Tvl. Mus., II, p. 87.

Pachydactylus capensis formosus Hewitt, 1927, Rec. Alb. Mus., III, p. 400. FitzSimons, 1941, Ann. Tvl. Mus., XX, pl. XII, fig. 5 (Ceres).

Pachydactylus mento-marginatus A. Smith, 1849, Ill. Zool. S. Afr. Rept. App., p. 5 (Interior of S. Africa). Boulenger, 1885, Cat. Liz., I, p. 207, pl. XVI, fig. 5. Hewitt, 1910, Ann. Tvl. Mus., II, pp. 84 and 87.

Pachydactylus obscurus Thomillot, 1889, Bul. Soc. Philom. (8) I, p. 22.

Description: Head distinct from neck, about $1\frac{1}{5}$ times as long as broad. Snout rounded, from $1\frac{1}{2}$ to $1\frac{2}{3}$ times diameter of eye, and $1\frac{1}{5}$ to $1\frac{1}{3}$ times distance from eye to ear-opening; latter small, oval and oblique. Nostril pierced between three nasal scales, the anteriormost (or nasorostral) by far the largest and usually separated from its fellow by a single granule (sometimes by two small granules), exceptionally nasorostrals in short contact. 1st. Upper labial usually separated from nostril, sometimes just entering. Rostral well-separated from nostril, pentagonal and about $1\frac{1}{2}$ times as broad as deep. 9—10 Upper and 8 lower labials. Mental as broad as or a little narrower at base than adjoining lower labials, not or but slightly narrowing behind, distinctly longer than broad (at least $1\frac{1}{2}$ times), but not extending as far backwards as adjacent labials. Scales on snout granular, slightly convex and keeled, largest on canthal region; back of head covered with minute granules intermixed with a few rounded, smooth or feebly keeled tubercles, which are subequal in size to largest scales on snout; back covered with small, unequal-sized, keeled, granular scales, intermixed with enlarged tubercles, which are somewhat flattened towards their edges but strongly keeled and often trihedral, especially posteriorly, arranged in more or less longitudinal series and fairly closely set. Enlarged keeled tubercles present on upper surfaces of hindlimbs, similar to but more elevated than those on back; small conical tubercles on forearm. No chin.

shields; chin and throat covered with minute, convex, granular scales; scales on belly smooth, flat, imbricate and smaller than scales on snout. Digits shorter than in typical *capensis*, with 4—5 transverse adhesive lamellae below distal dilatation; inferomedian row of scales not enlarged. Tail feebly segmented, with about 5 rows of small, keeled scales to each segment together with a transverse row of 6 enlarged, flattened, keeled and pointed tubercles; below, scales a little larger than above, smooth and imbricate. Two much enlarged, keeled and sharply-edged tubercles on either side base of tail near vent.

Colour: Brown to reddish brown above, with 5 white to pale yellowish, dentated, transverse, dark brown-edged crossbands, which are much narrower than the dark interspaces; the anteriormost pale band completely encircles back of head, which bears a semi-circular series of pale spots on occiput (from behind the eyes) and a pale streak on either side of snout from rostral to eye; a pale vertebral stripe sometimes present; labials often feebly spotted with dark brown; tail banded; lower surfaces dirty white. In juveniles the colour markings are more distinct, being dark reddish-brown and white above; dark spotting on labials well-marked; lower surfaces greyish-white and finely speckled with dark brown, especially on chin and throat.

Dimensions: Male (S.A.M. 2108—Ceres), H. & B. 48, tail 44, length head 12.8, breadth head 10.8 mm. (Fully adult specimens attain to about 56 mm. for length H. & B.).

Field notes: Similar in habits to typical *capensis*.

Distribution: Western Cape Province, from Ceres District to southern boundary of Little Namaqualand. Recorded localities: Olyvenhouts-kraal; Nieuwoudtville (S.A.M.). Ceres; Pakhuis Pass (S.A.M. & T.M.). Klaver (T.M.).

Remarks: Types in the British Museum of Natural History. *Pachydactylus mentomarginatus*, described by Smith (1849) and figured by Boulenger (1885), is merely the young of *formosus*.

PACHYDACTYLUS CAPENSIS BARNARDI FitzSimons.

(Plates IX, figs. 4 & 5, and XVI, fig. 4).

Barnard's Gecko.

Pachydactylus formosus part., Boulenger, 1910, Ann. S. Afr. Mus., V, p. 461 (Concordia).

Pachydactylus rugosus part., Werner, 1910, Jena. Denkschr., XVI, p. 312, fig. 9 (Kamaggas).

Pachydactylus rugosus (non A. Smith) FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 178 (btwn. Port Nolloth and Klipfontein).

Pachydactylus capensis barnardi FitzSimons, 1941, Ann. Tvl. Mus., XX, p. 273, pl. XII, fig. 6 (Garies; Concordia; Kamieskroon; Kleinzee; 15 mls. E. of Klipfontein).

Description: Intermediate between *P. formosus* and *P. rugosus*, somewhat resembling the former in structure and the latter in colouring. Head not or but feebly depressed, very distinct from neck, from $1\frac{1}{5}$ to $1\frac{2}{5}$ times as long as broad. Snout rounded, its length about $1\frac{1}{2}$ times diameter of eye and $1\frac{1}{4}$ times distance from eye to ear-opening; latter moderately large, oval and slightly oblique. Nostril pierced between 3 nasals, the nasorostrals separated from one another by 1 or 2 small granules. Rostral pentagonal, from $1\frac{1}{3}$ to $1\frac{1}{2}$ times as broad as deep. Upper labials 8—10 (usually 9), lower 8. Mental usually a little narrower than adjoining lower labials, a little less than $1\frac{1}{2}$ times as long as broad, not or but slightly narrowed behind. Scales on snout granular; subequal, keeled and subconical;

back of head covered with minute granules fairly densely intermixed with rounded, conical, striated tubercles, which are a little larger than scales on snout; back covered with small unequal-sized granules and closely set (usually only one granule apart), large, trihedral tubercles arranged in more or less longitudinal series; enlarged, conical, keeled and striated tubercles on hindlimbs, similar but smaller tubercles on forearm. Chin and throat covered with very small, equal-sized; convex to subconical granules; scales on belly flattened and strongly imbricate, larger than granules on throat, smaller than or subequal to scales on snout. Digits each with 5 transverse adhesive lamellae (distalmost divided) below; no enlarged subdigital scales on basal portion of digits. Tail much shorter than head and body, segmented, covered above with unequal-sized, flattened, keeled, spinose, strongly imbricate scales and whorls (one to each segment) of 8—6 (8 basally and 6 distally) enlarged, flattened, conical tubercles or scales, which are strongly keeled, spinose and often much elongated and recurved; below, covered (except for basal segment which is minutely granular) with elongate, strongly imbricate, spinose scales, larger than those above. On either side base of tail near vent are 2—3 enlarged, sharply-edged tubercles, below which are minute granules.

Colour: Dark brown to blackish above, with white to pale brownish-white spots and markings on head arranged as follows: a short streak on either side from rostral to upper anterior edge of eye, joined up with a transverse streak just anterior to orbits, thus isolating a small triangular dark spot on middle of snout; 5 spots on back of head, viz. two on each side of occiput (one behind the other) and a median one posteriorly; a well-defined white streak, dark-edged below and strongly dentated above and below, arising on posterior labials, passing through ear and completely encircling back of head. Four dentated transverse white bars on back, much narrower than the dark interspaces, which are usually divided up into more or less symmetrical elongate, oval spots or blotches by thin longitudinal projections from the pale transverse bars. Tail with narrow white crossbands. Labials dark-spotted. Lower surfaces creamy to greyish-white, chin and throat with dark vermicular spots, chest and belly speckled with dark brown.

Dimensions: Male (Type, S.A.M. 18055), H. & B. 53, tail (incomplete) 38, length head 15.1, breadth head 12.8 mm.

Field notes: Usually found living under rocks and stones, but not a truly rupicolous form as for instance *weberi*, which lives in rock cracks and crevices.

Distribution: Little Namaqualand. Recorded localities: 15 miles E. of Port Nolloth (T.M.). Concordia; Garies; Kamieskroon; Kleinzee (S.A.M.).

Remarks: Types in the South African Museum, Capetown. This form has a strong superficial resemblance to *P. rugosus*, with which it has been sometimes confused. The specimen in the South African Museum (from Concordia) recorded as *P. formosus* by Boulenger (1910, p. 461), proves now to be *barnardi*.

PACHYDACTYLUS CAPENSIS O'SHAUGHNESSYI Boulenger.

(Plate X, fig. 2).

O'Shaughnessy's Banded Gecko.

Pachydactylus o'shaughnessyi Boulenger, 1885, Cat. Liz., I, p. 204, pl. XVI, fig. 3 (Type locality: Lake Nyassa), and 1891, P.Z.S. Lond., p. 306. Hewitt, 1910, Ann. Tvl. Mus., II, pp. 84 and 87 (Que Que and Gatooma, S. Rhodesia), and 1927, Rec. Alb. Mus., III, p. 399.

Pachydactylus capensis levyi FitzSimons, 1933, Ann. Tvl. Mus., XV, p. 273 (Wankie, S.R.).

Description: Head about $1\frac{1}{2}$ times as long as broad, a little broader than neck. Snout obtuse, up to $1\frac{3}{4}$ times diameter of the rather small eye, covered above with large (largest on canthal ridge), smooth, flat or feebly convex, subhexagonal scales, which are much larger than the granular scales on back; back of head covered with fine granules, intermixed with rounded tubercles, which are as large as or a little smaller than scales on snout. Nasorostrals in contact. Upper labials 8—9, lower 7—8. Mental elongate and narrow, about twice as long as broad and narrowing behind, broader or narrower at base than adjacent lower labials. Back covered with small granules intermixed with enlarged, keeled, subconical to conical tubercles, which may be arranged somewhat irregularly or in more or less regular longitudinal series; sometimes tubercles closely set and separated from one another only by a single granule. Enlarged conical tubercles usually present on upper surface of femur and tibia, absent on forelimb. Tail a little shorter than head and body, not or but feebly depressed, strongly tapering distally and ending in a thin point, covered with large subequal, strongly imbricate, smooth, cycloid scales, which are often faintly serrated along their posterior borders below; no transverse rows of enlarged scales nor tubercles present on tail; an oblique series of 3 scallop-like scales on either side base of tail near vent.

Colour: Above, head yellowish-white to pale brownish, with a dark brown to blackish band on either side from nostril, through eye, widening behind and completely encircling occiput, bordered below and behind by a cream-coloured band which is broadest and usually somewhat pointed posteriorly; back and tail dark brown to blackish, the former with two (one across middle of back and other on rump) large, irregular-edged, cream-coloured, transverse blotches or bands, and the latter with 5—7; pale bands much narrower than dark interspaces, which are usually a deep black along their borders with the former. Limbs and lower surfaces uniform creamy white. In young specimens, belly greyish-white with greyish-brown infusions along the sides; tail often dark above and below, with the last 2—3 pale bands completely encircling it. A colour variety from M'Kushi, N. Rhodesia (A.M.), has 3 pale crossbands on back.

Dimensions: Male (T.M. 19167—Wankie), H. & B. 43 mm., tail 39, length head 11.9, breadth head 9 mm. A specimen from the Zambesi, nr. Zumbo (S.A.M. 8069), measures 56.5 mm. from snout to vent.

Distribution: From Nyasaland and Northern Rhodesia to Southern Rhodesia. Recorded localities: Gatooma (R.M.). Que Que (A.M. & R.M.). Bindura; nr. Zumbo, on Zambesi River (S.A.M.). Matetsi; Bulawayo; M'Kushi; Victoria Falls (A.M.). Wankie (T.M.).

Remarks: Type in the British Museum (N.H.). *P. capensis levyi* does not appear to be separable from *P. c. oshaughnessyi*, as the characters used to distinguish the former are now found to fall well within the range of variation of the latter.

PACHYDACTYLUS CAPENSIS OCULATUS Hewitt.

Pachydactylus capensis oculatus Hewitt, 1927, Rec. Alb. Mus. III, p. 394, pl. XXII, fig. 1 (Type locality: Farm 'Cyrilhurst', near Tarkastad, Cape Province), and 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 20, pl. VII, fig. 1.

Description: Intermediate between *Pachydactylus c. capensis* and *m. maculatus*, but distinguishable on the following: Nasorostrals separated by a single granule, similar to others on snout which are small and granular, becoming subconical just anterior to eye; over

back of head scales very small and mainly granular, larger and subconical towards sides; on back there are large and small granules closely intermingled, the former being definitely conical (almost tubercular), each more or less completely encircled by a ring of small granules, which are not strongly flattened but tend also to become subconical; a line down middle of back quite free of enlarged granules; enlarged subconical tubercles present on upper surface of tibia and thigh, those on the latter being slightly larger; mental a little narrower than adjoining labials, not or but feebly narrowed behind; no chin shields, but scales adjoining mental and anterior labials minutely granular and smaller than granules on throat; scales on belly smooth, flattened, imbricate, enlarging over preanal region; upper labials 8—9, lower 7—8; 5 subdigital transverse adhesive lamellae to each digit distally; infero-median rows of subdigital scales on basal portion of digits not enlarged; two enlarged, subconical tubercles on either side base of tail.

Colour: Above, light brown, with 4 longitudinal series of elongate, oval, chocolate-brown blotches on nape and back; these blotches are darker towards their edges and conspicuously bordered with creamy white, the two median series (which are larger than outer) are usually arranged in pairs, often with their inner white borders coalescing with one another; a dark band on either side of head from nostril to above ear, almost touching the obliquely arranged anteriormost pair of dark blotches behind head; upper surface of head and limbs pale brown, with small irregular dark spots; labials infuscated; eyelid white. Lower surfaces brownish-white, speckled with dark brown along sides of throat, belly and thighs. Tail (reproduced) light brown, with dark brown blotches above and below. In juveniles markings much as in adults, but dark blotches above without white margining; labials dark spotted; tail (normal) with a regular series of paired dark brown blotches over basal half above, thereafter blotches coalesce to form crossbands; below, with fairly large dark brown spots.

Dimensions: Male (Type, A.M. 5304), H. & B. 37.5, tail reproduced, length head 9.7, breadth head 7.6 mm.

Distribution: Tarkastad to Queenstown Districts, Cape Province. Recorded localities: Farm "Cyrilhurst," Tarkastad District (A.M.). Queenstown (T.M.).

Remarks: Types in the Albany Museum, Grahamstown.

PACHYDACTYLUS CAPENSIS AFFINIS Boulenger.

(Plates II, fig. 5, X, fig. 3 and XVI, fig. 5).

Pachydactylus affinis Boulenger, 1896, A.M.N.H. (6) XVII, p. 21 (Type locality: Rustenburg District), and 1898, P.Z.S. Lond., p. 914 (Transvaal), and 1902, II, p. 16 (Btwn.; Umtali and Marandellas). Chubb, 1909, P.Z.S. Lond., p. 593 (Matopos). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 461.

Pachydactylus formosus var. *affinis* Hewitt, 1910, Ann. Tvl. Mus., II, pp. 84 and 87 (Rustenburg Dist.; Krabbefontein; Mashonaland; Matopo Hills).

Pachydactylus capensis affinis Hewitt, 1927, Rec. Alb. Mus., III, p. 400.

Pachydactylus formosus (non A. Smith) Roux, 1907, Zool. Jahrb. Syst., XXV, p. 410 (Rustenburg, Transvaal).

Description: Related to typical *capensis*, but readily distinguishable on the following: Head, body and tail more strongly depressed; head covered with small, smooth and somewhat flattened granules, which are largest and subhexagonal on snout and minute on back of head; usually no enlarged tubercles on back of head, but a few slightly enlarged rounded granules are generally scattered over

temporal region. Nasorostrals in contact with one another behind the rostral or sometimes separated by a single granule. Upper labials 6—10 (usually 7—8), lower 5—7 (usually 6). Mental over $1\frac{1}{2}$ times as long as broad, a little narrower at base than first lower labial and narrowing more or less behind. Back covered with very small granules intermixed with rather small, keeled, irregularly disposed, oval tubercles, which are sometimes very feebly enlarged and inconspicuous over middle of back; towards the sides, tubercles are larger, more strongly keeled, subconical to conical and more densely disposed. Tail tapering to a fine point, subequal in length to head and body, feebly segmented, covered above with smooth, hexagonal, juxtaposed scales (4—5 rows to each segment) and below, with rounded subimbricate scales; reproduced tails much thickened laterally and usually strongly depressed, covered above and below with imbricate scales.

Colour: Above, grey to greyish-brown, or olive brown to reddish-brown, with scattered dark brown to blackish spots and blotches and sometimes smaller whitish spots; often 5—6 thin, dark-edged, white to pale lemon-yellow, wavy cross stripes or transverse series of spots on back; a dark streak on side of head from nostril, passing through eye, to above ear-opening; labials each bearing a dark spot; eyelid white. Tail dark spotted, and usually with narrow white dark-edged transverse stripes or series of spots. Lower surfaces creamy- to yellowish-white, turning in old specimens to pale brown or greyish-brown. In young specimens ground colour darker, with pale cross stripes continuous and well-marked. Reproduced tails may be uniform or dark spotted, with or without white cross stripes, sometimes with vertical dark barring on sides.

Dimensions: Male (A.M. 6583—Macheke), H. & B. 47.2, tail 47, length head 11.6, breadth head 9.8 mm.

Field notes: Largely rupicolous and usually found living in stony localities on rocky koppies. Adult specimens are seldom found with the original tails complete, either part or the whole being regenerated. The eggs are white and regularly oval, measuring on the average 9.5×7 mm.; they are laid during the summer and deposited in any suitable spot under stones and in rock cracks. The newly emerged young measure about 36 (18 + 18) mm.

Distribution: From the Rustenburg and Pretoria districts of the Transvaal, northwards into Southern Rhodesia. Recorded localities: Mtoko; Monte Cassino, nr. Macheke; Musami, nr. Salisbury; Empandeni; Kutamas, nr. Makwiro; Plumtree; Driefontein & Chilimanzi, nr. Gwelo; Makumbi; Bikita; Tsessebe Sdng. (A.M.). Matopos; Essexvale (A.M. & R.M.). Nr. Umtali (S.A.M.). Bulawayo (S.A.M. & T.M.). Bleskop, nr. Rustenburg; Pretoria; De Kroon; Brits; Hartebeestpoort; Rietspruit, nr. Nylstroom; Vygeboompoort, Geelhoutkop & Palala Riv., Waterberg Dist., Potgietersrust; Pietersburg (T.M.).

Remarks: Type in the British Museum of Natural History. As *formosus* is restricted to the western Cape Province, there can be no doubt that specimens from the Transvaal, recorded by Roux (1907, p. 410) under *formosus*, are referable to *affinis*.

PACHYDACTYLUS CAPENSIS TIGRINUS Van Dam.

(Plates X, fig. 4, and XVI, fig. 6).

Pachydactylus capensis tigrinus van Dam, 1821, Ann. Tvl. Mus., VII, p. 244, pl. V (Type locality: Blinkwater, on Brak River, Zoutpansberg District, N. Tvl.). Hewitt, 1927, Rec. Alb. Mus., III, p. 400. Fitz-Simons, 1939, Ann. Tvl. Mus., XX, p. 27 (nr. Devuli River Bridge, S. Rhodesia).

Description: Head and body depressed. Snout more pointed than in typical *capensis*, covered above with flattened or feebly convex, smooth or slightly keeled scales, which are subequal in size to tubercles on back. Back of head covered with small smooth or feebly keeled granules, intermixed with smallish rounded tubercles. Granular scales absent or nearly so on back, which is covered with irregular-sized, smooth or feebly keeled tubercles, which are small and subequal along middle of back but enlarge dorsolaterally, being much larger on sides. Digits short and slender, with 4—5 transverse adhesive lamellae below distally, the most proximal being dumbbell-shaped or completely divided in two; an infero-median row of feebly enlarged scales on basal portion of each digit. Scales on chin and throat minute and granular, on belly moderately enlarged, smooth, flat and imbricate. No enlarged tubercles on upper surfaces of limbs. Tail usually depressed and thickened laterally, covered with imbricate scales, smaller above than below, without enlarged scales or tubercles.

Colour: Above, dark greyish- to purplish-brown, with 5—7 well-defined creamy white to pale yellow, narrow, transverse bands (sometimes broken up into series of spots) on back, the first on nape, just behind the head and the last on rump just anterior to base of tail; a dark bar on side of head from nostril through eye to above ear-opening; a small elongate pale spot on upper temporal region, and other pale spots on tail, limbs and along sides of body. Below, greyish-white to greyish-brown, usually paler on belly. Reproduced tails a uniform dark greyish- to purplish-brown.

Dimensions: Male (Type, T.M. 4301), H. & B. 51, tail (reproduced) 40, length head 12.4, breadth head 9.5 mm.

Field notes: Rupicolous, usually found living among rocks and boulders in bushveld country, often in association with *Oedura transvaalica* and its subspecies *platyceps*.

Distribution: From the northern Transvaal (Zoutpansberg District) into Southern Rhodesia. Recorded localities: Blinkwater, on Brak River; Blaauwkop, nr. Lilliput Stn.; Devuli River Bridge (T.M.). N'Jelele River Drift (A.M., K.M. & T.M.). Messina (A.M. & S.A.M.). S. Rhodesia (N.M.).

Remarks: Types in the Transvaal Museum, Pretoria.

PACHYDACTYLUS NAMAQUENSIS (Slater).

(Plates III, fig. 1, X, figs. 5 & 6, and XVII, fig. 1).

Namaqua Gecko.

Elasmodactylus namaquensis Slater, 1899, Ann. S. Afr. Mus., I, p. 109, pl. V, fig. 2 (Type locality: Little Namaqualand). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 459. Hewitt, 1910, Ann. Tvl. Mus., II, p. 88. *Pachydaactylus namaquensis* Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 128 (Kraikluft, Gt. Karas Mts.). Hewitt, 1927, Rec. Alb. Mus., III, p. 401, and 1932, Ann. Nat. Mus., VII, p. 122 (Garies). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 174 (Farm 'Barby,' west of Helmeringshausen; nr. Konkiep; Brukkaros Mtn.; Goodhouse; Klipfontein; Garies).

Description: Head depressed, slightly longer than broad, distinct from neck. Snout obtuse, about $1\frac{1}{2}$ times the distance between eye and ear-opening, from $1\frac{1}{4}$ times to twice diameter of eye. Ear-opening slightly oval, its greatest diameter being about half that of the eye. Rostral from $1\frac{1}{2}$ to $1\frac{1}{4}$ times as broad as deep, upper margin distinctly indented or scalloped, the projecting horn on either side entering nostril. First upper labial just entering nostril or well-separated therefrom. Nostril pierced between three nasals, the anteriormost of which (nasorostral) is usually in short contact with its fellow behind

rostral, sometimes separated by 1—4 small granules. Scales on snout small and granular just behind nasals and subequal to those between the orbits, larger and more flattened on loreal and canthal regions; back of head covered with small granules sparsely intermixed with scattered tubercles. Upper labials 10—12 (usually 11 or 12), lower 9—11 (usually 9 or 10): Mental large, rectangular, not or but very slightly narrowed behind, variable in breadth being either narrower than, equal to or a little broader than adjacent labials. No chin shields; chin and throat covered with small granules. Back covered with granules, intermixed with longitudinally oval or rounded, somewhat flattened, smooth or faintly keeled tubercles of unequal size: on lumbar region tubercles more strongly keeled and conical, denser and more rounded on sides of body, absent along median dorsal line. Tubercles on thighs rounded and subconical. Belly covered with subgranular, or flattened, smooth, imbricate scales; on underside thighs scales often much enlarged. Body stout; limbs short. Digits moderate, with distal expansions well-developed and subdigital adhesive lamellae arranged as follows: Fingers with 9—10 (usually 10) lamellae on digit I, 10—11 (usually 10) on II, 10—11 (usually 11) on III & V, and 11—12 (usually 11) on IV. Toes with 10—11 (usually 10) lamellae on digit I, 10—11 (usually 11) on II, 11—12 (usually 12) on III and V and 12—13 (usually 12) on IV; the first (i.e. most proximal) lamella often divided into two. Median row of subdigital scales on basal portion of digits, often more or less enlarged and rounded except the distalmost 2—3 which are somewhat transversely elongate. Tail usually shorter than head and body, very broad basally and tapering rather rapidly, distinctly segmented, each segment above with about 6 rows of scales together with a transverse row of 6—8 enlarged pointed tubercles, of which the outermost ones are largest, more sharply pointed, often lanceolate and slightly recurved; below, scales large and imbricate, there being three rows to each of the first three or four segments, thereafter median row of scales transversely enlarged, with two scales (the second larger) to each segment. An oblique series of 3 or more enlarged, flattened tubercles on either side base of tail near vent.

Colour: Variable from pale pinkish-brown, pinkish-olive, light greyish-brown, reddish-brown, chocolate brown to velvety olive brown above, with usually indistinct paler and darker markings; in the darker-hued specimens the dark markings are often arranged to form five somewhat irregular zig-zag crossbands on back and more or less regular bands on tail, while in paler specimens dark markings are usually indistinct and often limited to scattered spots. Eye golden brown to reddish-brown. Lower surfaces creamy to yellowish-white or greyish-white, throat and sides of belly sometimes yellowish-brown and underside thighs yellow.

Dimensions: Female (T.M. 17596—Barby), H. & B. 82, tail 75, length head 20, breadth head 19.5 mm. (Breadth of tail at base 18 mm.).

Field notes: Rupicolous, ranging in habitat from the sides of rocky ravines, outcrops and koppies on the flats to high mountain slopes between five and six thousand feet. Largely diurnal and often seen, especially in the early morning hours, basking in the sunshine in secluded nooks. The eggs, which are firmly affixed to rock faces in cracks and crevices (often in communal batches up to 30 or 40 in number), are large and white, more or less rounded and measure approximately 16 mm. in diameter. The skin is soft and extremely loose, and is easily torn when the animal is at all roughly handled.

Distribution: Little Namaqualand, southwards to the western Karroo and northwards into the southern half of Great Namaqualand. Garies—Kamiesberg (A.M.). Kamieskroon (S.A.M. & T.M.). Wittebergen nr. Matjesfontein; Klipfontein; Goodhouse; Kraikluft, Gt. Karas Mtns.; Konkiep; Barby; Brukkaros Mtn. (T.M.).

Remarks: Types in the South African Museum, Cape Town.

PACHYDACTYLUS BIBRONII A. Smith.

(Text-fig. 30; Plates III, fig. 2, V, fig. 3, XI, fig. 1, and XVII, fig. 2).

Bibron's Gecko. Blinkogie.

Pachydactylus bibronii A. Smith, 1846, Ill. Zool. S. Afr. Rept., pl. L, fig. 1 (Type locality: Southern Africa. Note: Described under *Tarentola*, but corrected to *Pachydactylus* in Index). Peters, 1869, Oefvers. K. Vetensk.—Akad. Forh., Stockholm, p. 657 (Damaraland), and 1882, Reise n. Mossamb., III, p. 25 (Tette & Boror, Portu. E. Afr.; Otjimbingue = Neu Barmen, Damaraland). Boulenger, 1885, Cat. Liz., I, p. 201. Boettger, 1886, Ber. Senck. Naturf. Ges., p. 15 (Angra Pequena), and 1887, p. 140 (Aus, G.N.). Fischer, 1888, Mittl. Mus. Hamburg, p. 12 (Aus; Suibes = Kuibis?). de Jude, 1895, Notes Leyden Mus., XVI, p. 227 (Junct. Komati & Crocodile Rivs., E. Tvl.). Bocage, 1895, Herp. Angola, p. 15 (Angola localities), and 1896, Journ. Sc. Lib. (2) IV, p. 115 (Colesberg & Lorentz River, C.P.; Modder River, O.F.S.). Werner, 1896, Jahrb. Ver. Magdeburg, p. 140 (Transvaal), and 1902, Verh. Zool.—bot. Ges. Wien, LII, p. 338 (Windhuk). Boulenger, 1905, P.Z.S. Lond., II, p. 252 (Klipfontein, L.N.), and 1907, p. 484 (Zoutpansberg, Tvl.). Roux, 1907, Zool. Jahrb. Syst., XXV, p. 407 (Jakhalswater; Klipfontein; Prince Albert Rd.; Pretoria). Chubb, 1909, P.Z.S. Lond., p. 593 (Maçabeleland). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 460 (Little Namaqualand; O'okiep; Garies; Cape Flats; Matjesfontein; Burghersdorp; Clanwilliam; Calvinia; Hanover; Montagu; Caledon; Swellendam; Bredasdorp; Bechuana-land). Hewitt, 1910, Ann. Tvl. Mus., II, p. 87 (Grahamstown; Colesberg; Cradock; Witmoss; Belmont; Kimberley). Werner, 1910, Jena. Denkschr. XVI, p. 308 (Hereroland; Okahandja; Luderitzbucht; Bethanien; Kubub; Keetmanshoop; Koviesberge; Chamis, G.N.). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 13, text-figs. 9 & 10 (Karasberge), and Mittl. Zool. Mus. Berlin, V, p. 396 (Windhuk—Okahandja), and p. 416 (Tette). Lampe, 1911, Jahrb. Nassau. Ver. Naturk., LXIV, p. 157 (Rietmond and Kuibis). Hewitt, 1911, Ann. Tvl. Mus., III, p. 43. Hewitt & Power, 1913, Trans. Roy. Soc. S. Afr., III, p. 150 (Eldorado; Francistown; Ky Ky; Upington; Taungs; Kimberley; Fort Richmond). Nieden, 1913, Sitzber. Ges. Naturf. Fr. Berlin, No. 10, p. 450 (Kuibis). Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 129 (Gt. Karas Mts.; Quibis = Kuibis). Werner, 1915, in Michaelsen, Land- u. Süswasserfauna Deutsch-S.W. Afr., I, p. 333 (Karibib; Windhuk; Tsumeb; Penguin I., nr. Luderitzbucht; Seeheim; Okahandja; Keetmanshoop; Swakopmund; Rehoboth). Hewitt, 1927, Rec. Alb. Mus., III, p. 401. Rose, 1928, Nature Notes, No. 57, p. 2, and 1929, Veld & Vlei, p. 119. Power, 1933, Trans. Roy. Soc. S. Afr., XXI, p. 214 (Orange Riv. Station; De Aar; Prieska; Kenhardt; Upington). Cott, 1934, P.Z.S. Lond., p. 148 (Charre, Portu. E. Afr.; Mortimer, C.P.). Parker, 1936, Novit. Zool., XL, p. 128. Hewitt, 1937, Guide Vert. Fauna E. Cape Prov. S. Afr., II, p. 19, pl. VI, fig. 1, pl. VIII, fig. 1, and pl. XIV, fig. 4. FitzSimons, 1937, Ann. Tvl. Mus., XVII, p. 265.

Homodactylus bibronii Gray, 1865, P.Z.S. Lond., p. 612.

Pachydactylus elegans (non Gray) F. Muller, 1885, Verh. Naturf. Ges. Basel, VII, p. 709.

Pachydactylus bibronii bibronii FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 527 (Dikgatlon, on Kuruman R.; Oup River; Soebatsfontein). and XVI, p. 336 (Titumi; Kalakamati; Molepolole; Gaberones; Machumi Pan—Mabeleapudi; Mabeleapudi; Mabeleapudi—Lake Ngami; Motlhatlogo; Maun; Figtree), and 1938, XIX, p. 164, text-fig. 3 (Klipfontein; nr. Port Nolloth; O'okiep—Springbok; Calvinia).

Description: Head very broad, covered with small flattened convex or bluntly keeled scales, largest on the occiput; temporal region swollen and covered with large keeled tubercles. Snout obtuse, convex, equal to or a little greater than distance from eye to ear-

opening, over twice diameter of eye. Ear-opening narrow and almost vertical. Nostril more or less lateral and directed outwards, pierced between three scales, the anteriormost (or nasorostral) being the largest and usually in contact with its fellow behind the rostral, which may be as much as $1\frac{1}{2}$ times as broad as deep. Upper and lower labials 8—10 (usually 9). Mental $1\frac{1}{2}$ times to twice as long as broad, narrowing posteriorly. No chin-shields. Body depressed, covered above with small, flattened, granular, keeled scales, intermixed with much enlarged; rounded, strongly keeled shields or tubercles, arranged in 14—16 more or less regular longitudinal series; these dorsal tubercles may be simply keeled or trihedral and in addition often have radiating keels on their posterior facets. Tubercles on the sides of body conical and usually sharply pointed and stellate; stellate tubercles also present on back of head. Ventrally, abdominal scales smooth and imbricate, becoming larger towards the sides and posteriorly; gular scales very small and subgranular, being slightly larger adjacent to mental and anterior lower labials, becoming minute and imbricate towards base of throat, where they enlarge again over the chest. Limbs short and stout, enlarged tubercles on hind limbs conical and multi-pointed; digits short, much dilated distally, with 10—12 transverse adhesive lamellae below; claws absent on fingers, minute on toes. Preanal and femoral pores absent. Tail slightly longer or shorter than head and body, somewhat depressed, tapering and distinctly segmented; covered above and on the sides with keeled imbricate scales and regular transverse rows of large, strongly keeled, spinose (spines directed posteriorly) scales, one row to each segment; scales below, flat, smooth and subhexagonal, median row transversely enlarged, somewhat interruptedly so basally but continuously distally. An oblique row of 3—4 scallop-like scales or tubercles on either side base of tail near vent.

Colour: Above grey, purplish-grey to greyish-brown, with 4—5 more or less distinct, curved, wavy, dark brown to blackish bands across the back; isolated tubercles white; a dark streak on side of head, arising just above third upper labial and passing through eye and round back of head; a second dark streak from nostril to upper border of eye; head often rufous-brown. Lower surfaces creamy to greyish-white. Tail usually with 8—10 dark bands above, often faint in adults but distinctly marked in young.

Dimensions: Male (T.M. 15741—Soebatsfontein), H. & B. 100, tail 105. length head 25, breadth head 23.5 mm.

Field notes: One of the commonest geckos of the interior and northern parts of South Africa and found in the greatest variety of situations, in crevices and cracks of rocks, under stones and loose bark on trees, in deserted termite hills, cracks in walls and in the thatch-roofing of houses and huts. Quite a social species, often as many as a dozen to twenty or more found occupying the same crack, crevice, anthill, etc. In spite of its sluggish appearance, it is alert and active, dodging to cover with great rapidity when disturbed. Lives for the most part on ants, (Pheidole), termites, grasshoppers, beetles and flies, which it catches largely during the early morning and evening hours, though known also to hunt for its food in bright sunlight. When annoyed or molested will bite vigorously, and having once obtained a good hold, will hang on most tenaciously, a large specimen being quite capable of drawing blood; in the country districts, erroneously regarded as poisonous and accused of biting small stock with fatal results. When handled will often give vent to its feelings with shrill whistling squeaks. The eggs, measuring on the average 16×13.5 mm., are, as is usual with geckos, soft when laid, but soon

become brittle on exposure, and are deposited in any convenient dark sheltered hole or crevice.

Distribution: (Including variety *turneri*), Southern Africa (excluding the central Kalahari, the eastern areas of the Cape Province and Orange Free State, Basutoland, Natal and most of Zululand), extending northwards into Angola and Southern Rhodesia and thence to Tanganyika Territory. Recorded localities: Avoca; Schoombie; Klipplaat; Abbotsbury; Colesberg; Dry Harts Sdng.; Rietfontein; Windhuk; Omatjenne; Ndumu, Zululand; Bikita, Empandeni & Plumtree, S. Rhod. (A.M.). Kimberley (A.M., D.M., K.M., S.A.M. & T.M.). Molopo River (A.M. & K.M.). Graaff-Reinet; Serowe (A.M. & S.A.M.). Beaufort West (A.M., S.A.M. & T.M.). Okahandja, Karub; Louis Trichardt (A.M. & T.M.). Doornberg nr. Winburg (B.M.). De Aar; Upington; Belmont; Witputs; Niekerkshoop; Koegas; Orange Riv. Bridge; Kenhardt-Upington; Taungs; Towani; Longhope; Prieska; Vryburg; Campbell; Britstown; Barkly West; Rudesheim & Ababas Nauzerus, S.W. Afr.; Swart Modder; Kuboos; Maltman; Rooilaagte; Honeynekloof; Francistown; Lobatsi; Maltahohe; Potgietersrust; Battlefields (K.M.). Mahalapye (K.M. & R.M.). Kalkfontein south; Oup & Nosop River junct. (K.M. & S.A.M.). Aus (K.M., S.A.M. & T.M.). Molepolole (K.M. & T.M.). Anenous (N.M. & S.A.M.). Barberton (N.M. & T.M.). Leydsdorp (P.E.M. & T.M.). Figtree (R.M.). Bulawayo (R.M. & T.M.). Knysna; Burghersdorp; Montagu; Cape Flats; Hanover; Uniondale; Aughrabies Falls; Junction Mashoning &

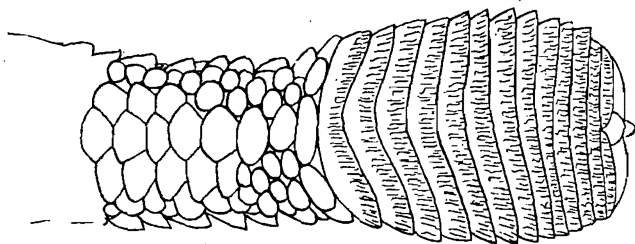


Fig. 30.

Fig. 30. *Pachydactylus bibronii* (T.M. No. 18185—Calvinia), underside of 4th toe.

Molopo Rivs.; Port Nolloth; Ograbis; Concordia; Steinkopf; O'okiep; Kamieskroon; Naroep; Jakhalswater; Aminuis; Tsumeb; Narebis; Waterberg and Grootfontein, Damaraland; Heirabis; Warmbad, Kaokoveld; Mafa; Messina; Insiza (S.A.M.). Matjesfontein; Pakhuis Pass; Fort Brown; Garies; Namutoni; Kamanyab (S.A.M. & T.M.). Nelspoort—Murraysburg; Hopetown; Welbedacht; Kakamas; Dikgatlon—Van Zylsrust, Kuruman Riv.; Witdraai; Oup River; Van Wyksvlei; Brandvlei; Bros Pan; Calvinia; Soebatsfontein; Van Rhynsdorp—Garies; Klipfontein—Port Nolloth; O'okiep—Springbok; Springbok—Kamaggas; Titumi; Kalakamati; Machumi Pan—Mabeleapudi; Mabeleapudi; Lake N'Gami; Maun; Gt. Karasberg; Kuibis; Keetmanshoop; Luderitzbucht; Aus—Kubub; Sukses—Otjiwarongo; Kalkveld; Oshikango; Helmeringshausen; Barby; Brukkaros Mtn.; Narubis; Bridgewater; Pietersburg; Vygeboompoort; Nylstroom; Moorddrift; Waterpoort; Rustenburg; Palala Riv.; Pretoria; Brits; De Kroon; N'Wanedzi, N'Jelele & Brak Rivs., Zoutpansberg; Zondagfontein; Wilhanshohe; Shilowane; Griffin Mine; Letaba Drift; Gravelotte; Mokeetsi; Punda Maria; Olifants & Brak Rivs., E. Tvl.; Louws Creek; Hectorspruit; Malelane; Machebezane; Wankie; Birchenough Bridge; Mazambo on Limpopo River, Portu. E. Afr. (T.M.).

Remarks: Types in the British Museum of Natural History, London. The separation of *turneri* as a subspecies on the greater degree of stellation of the dorsal tubercles is quite impossible, as specimens exhibiting every stage between the two extremes occur in the same localities and even in the same rock outcrops, so that even its retention as a variety is doubtful.

PACHYDACTYLUS BIBRONII var. *TURNERI* (Gray).

- Hemodactylus turneri* Gray, 1864, P.Z.S. Lond., p. 59, pl. IX, fig. 2 (S.E. Africa). Gunther, 1864, P.Z.S. Lond., p. 307.
Pachydactylus bibronii var. *stellatus* Werner, 1910, Jena. Denkschr., XVI, p. 309 (Great Namaqualand).
Pachydactylus bibronii stellatus Hewitt, 1927, Rec. Alb. Mus., III, p. 401. FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 528 (Luderitzbucht; btwn. Aus & Kubub).
Pachydactylus stellatus Schmidt, 1933, Ann. Carnegie Mus., XXII, p. 5 (Mulundo, Angola).
Pachydactylus bibronii turneri Parker, 1936, Novit. Zool., XL, p. 129 (Otjosongombe; Otavifontein; Lake Otjikoto; Maltahohe). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Malelane; Satara), and 1937/38, Veröff. Deutsch. Kolon.- u. Uebersee Mus. Bremen, II, hft. 1, p. 11 (Luderitzbucht). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 165, text-fig. 4 (Witdraai; Sukses-Otjiwarongo; Oshikango; Kamanyab; Kalkveld; Karub; Helmeringshausen; Farm 'Barby'; nr. Aus; Brukkaros; Narubis; nr. Kamaggas; Brandvlei; Van Wyksvlei).

Description: This variety is distinguished from typical *bibronii* mainly on the fact that strongly stellate tubercles are not restricted to the back of the head and flanks, but occur all over the upper surfaces. The radiating keels on these stellate tubercles are present on the lateral as well as the posterior facets of the majority. The tubercles are often more elevated and more widely spaced than is usual in typical *bibronii*. Intermediate specimens in regard to the amount of stellation of the tubercles are frequently encountered, while juveniles are usually indistinguishable on this character.

Distribution: Largely corresponding to that of typical *bibronii*, although in South Africa at least, *turneri* appears to preponderate in the West, while eastwards *bibronii* is the dominant form.

PACHYDACTYLUS LAEVIGATUS LAEVIGATUS Fischer.

(Plates V, fig. 4 and XVII, fig. 3).

- Pachydactylus laevigatus* Fischer, 1888, Jahrb. Hamburg. Wiss. Anst., V, p. 15, pl. II, fig. 3 (Type locality: Aus, Great Namaqualand). Boulenger, 1890, P.Z.S. Lond., p. 78 (Namaqualand). Boettger, 1894, Ber. Senck. Naturf. Ges., p. 88 (Rehoboth; Okwa, Kalahari). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 460 (Little Namaqualand). Hewitt, 1910, Ann. Tvl. Mus., II, p. 87. Schmidt, 1933, Ann. Carnegie Mus., XXII, p. 5 (Angola). Parker, 1936, Novit. Zool., XL, p. 130 (Windhoek; Hoffnung; Bullspoort; Rehoboth; Satansplatz). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 6 (Windhuk).
Pachydactylus laevigatus laevigatus FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 172, text-fig. 5 (Kalkveld; Nonidas—Namib Stn.; Neudamm; Kobos; Barby; Konkiep; Seeheim; Brukkaros Mtn.; Kochena, Gt. Karasberg Dist.; Goodhouse).
Pachydactylus bibronii laevigatus Methuen & Hewitt, 1914, Ann. Tvl. Mus., IV, p. 128, text-fig. (Kraikluft, Narudas Süd and Kraikluft—Alt Wasserfall, Gt. Karasberg Dist.). Hewitt, 1927, Rec. Alb. Mus., III, p. 401. FitzSimons, 1935, Ann. Tvl. Mus., XV, p. 527 (Kuboos; nr. Kakamas; nr. Pofadder).

Description: Similar in general appearance to *bibronii*, but distinguishable on the following: Nostrils directed almost vertically upwards; enlarged dorsal tubercles rounded or suboval and button-like, for the most part smooth but sometimes obtusely keeled on

posterior part of back, in general a little smaller than in *bibronii*; scales on top of head more flattened and smoother; stellate tubercles absent, or confined to a few just above and behind ear-opening; gular scales usually flattened and juxtaposed (occasionally subimbricate over posterior two-thirds of throat, exceptionally subgranular), about half the size of the small imbricate ventrals. Head as broad as long. Subdigital transverse adhesive lamellae well-developed and arranged as follows: Fingers with 8—9 lamellae on digit I, 9—10 on II & III, 10—11 on IV and 9—10 on V. Toes with 9—10 on digit I, 9—11 (usually 10) on II, 9—11 (usually 10—11) on III, 10—12 (usually 11—12) on IV and 10—11 on V.

Colour: Above, pale creamy olive to olive grey or olive brown, with 3—4 blackish, wavy crossbands, each edged posteriorly with a series of white spots; dark streaks on head similar to those found in *bibronii*. Lower surfaces uniform white to creamy white.

Field notes: Very similar in habits to *P. bibronii*, though not so ubiquitous, being usually confined to rocky localities where they live under the loose flakes or in cracks.

Dimensions: Male (T.M. 17883—Goodhouse), H. & B. 91, tail (partly reproduced) 72, length head 25, breadth head 25 mm.

Distribution: Little Namaqualand and north-west Cape Province, northwards through South West Africa into Southern Angola. Recorded localities: Kam River; Namib; Kuibis; Rehoboth; Karib (A.M.). Niekerkshoop (B.M.). Koegas; Upington; btwn. Kenhardt & Upington; Lower Molopo (K.M.). Jakhalswater; Kraaiwater; Aggenys; Naroep; Steinkopf; Bakputs, Gordonia; Aughrabies Falls; Ababis; Maltahohe; Usakos (S.A.M.). Kuboos; Goodhouse (S.A.M. & T.M.). Kakamas; Pofadder; Narudas Süd, Kochena, Kraikluft and Kraikluft-Alt Wasserfall, Gt. Karasberg Dist.; Konkiep; Seeheim; Barby; Brukkaros Mtn.; Kobos; Neudamm; Nonidas-Namib Stn.; Kalkveld; Khan River; Erongo Mtn.; Karibib (T.M.).

Remarks: Types in Hamburg Museum?

PACHYDACTYLUS LAEVIGATUS TESSELLATUS FitzSimons.

(Plates V, fig. 5 and XVII, fig. 4).

Pachydactylus laevigatus tessellatus FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 172, text-fig. 6 (Type locality: Kamanyab, Kaokoveld, S.W. Africa).

Description: Distinguished from typical *laevigatus* on the following: The entire upper surfaces of head and body are covered with smooth, flat, juxtaposed, polygonal, somewhat unequal-sized scales or shields, giving a pavement-like appearance (no granular interspaces present). On sides of head just anterior to and behind ear-opening there are a few smooth conical tubercles, while on flanks there are subconical tubercles with small granular interspaces; on upper surface hindlimb tubercles are strongly conical but not keeled. Chin scales flat, polygonal, juxtaposed, larger than imbricate scales over middle of throat, which become smaller towards base of throat; scales on belly large, flat, hexagonal, imbricate, not more than twice the size of largest chin scales. Upper labials 10, lower 8—10. Digits short and stout, strongly dilated distally, bearing subdigital adhesive lamellae as follows: Fingers, digit I with 8—9 lamellae, II, III and V with 9, IV with 10; toes, digit I with 9 lamellae, II, III and V with 10, IV with 11.

Colour: Above, olive yellow, with 4—5 irregular, zig-zag, black crossbars (one on nape, 2—3 on back and one on rump) and scattered white spots, which are usually aggregated along posterior edges of

dark crossbars; irregular longitudinal vermiculate black streaks on head. Below, white to creamy white, underside limbs pinkish, and pads of feet a pinkish-grey.

Dimensions: (Type, T.M. 17202), H. & B. 80, tail 70, length head 21.7, breadth head 21.7, forelimb 25, hindlimb 34 mm.

Field notes: Rupicolous and usually found living in rock cracks and crevices.

Distribution: Kaokoveld and north-western Damaraland, South West Africa. Recorded localities: Kamanyab (S.A.M. & T.M.). Kowares, Kaokoveld; Outjo (S.A.M.).

Remarks: Types in the Transvaal Museum, Pretoria.

COLOPUS Peters.

Colopus Peters, 1869, Monatsb. Ak. Wiss. Berlin, p. 57 (type: *wahlbergii*). Boulenger, 1885, Cat. Liz., I, p. 208. Hewitt, 1909, Ann. Tvl. Mus., II, p. 39, and 1910, p. 81. Boulenger, 1910, Ann. S. Afr. Mus., V, pp. 456 & 463. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 16.

Digits free, fingers slightly dilated and clawless, toes somewhat narrowed distally and minutely clawed; all digits with a median series of slightly enlarged, serrated, imbricate scales above, terminating distally in an enlarged nail-like scale; below, with two enlarged transverse adhesive plates or lamellae at extremity, and basal portion covered with small granular scales. Body covered above with small granules, below with imbricate scales. Pupil vertical, eyelid distinct only in front and above eye. No preanal nor femoral pores.

Endemic to South Africa and represented by a single species. Distribution: Kalahari and Damaraland.

COLOPUS WAHLBERGII Peters.

(Text-figs. 31—34; Plates XI, fig. 2 and XVII, fig. 5).

Colopus wahlbergii Peters, 1869, Monatsb. Ak. Wiss. Berlin, p. 57, pl. . . . fig. 1 (Type locality: Damaraland). Boulenger, 1885, Cat. Liz., I, p. 208, and 1910, Ann. S. Afr. Mus., V, p. 463. Hewitt, 1910, Ann. Tvl. Mus., II, p. 88. Werner, 1910, Jena. Denkschr., XVI, p. 315 (Kgakong = Kukong, Kong and Vlei Topan, Kalahari). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 16.

Colopus kalaharicus FitzSimons, 1932, Ann. Tvl. Mus., XV, p. 36, and 1935, XVI, p. 340, text-figs. 11—14 (Matapa Pan nr. Kuke, Kuke—Gomodimo, Gomodimo and Kaotwe Pans, Kalahari).

Description: Head short, convex, about $1\frac{1}{5}$ times as long as broad, distinct from neck. Snout obtusely pointed, convex, about $1\frac{1}{2}$ times diameter of eye, up to $1\frac{1}{5}$ times distance from eye to ear-opening, covered above with slightly convex or flattened, sub-hexagonal scales which are a little larger than scales on back. Ear-opening small, oval, oblique. Rostral about $1\frac{1}{2}$ times as broad as deep, $\frac{1}{3}$ breadth of mental. Nostril pierced between three nasal scales, of which the anteriormost or nasorostral is by far the largest and separated from its fellow mesially by a single enlarged, somewhat elongate scale. Upper labials 8—9, lower 7—8, of which the first is much the largest. Mental a little longer than broad, narrower than adjoining labials, narrowing but slightly behind, where it is rounded and extends slightly beyond labials. Scales on chin subhexagonal, subequal to those on back; scales on throat very small and sub-imbricate, passing on neck to the larger, imbricate, cycloid scales on chest and belly, largest over preanal region. Scales on back much smaller than on belly, smooth, slightly convex and subimbricate; on anterior surface of thighs scales large and similar to those on belly.

Digits short and free, with, above, a median series of slightly enlarged, imbricate scales with serrated distal edges, terminating in a larger nail-like scale, and below small granular scales basally and two enlarged transverse adhesive lamellae distally; fingers slightly dilated distally and clawless, toes somewhat narrowed distally, with minute claws and lamellae smaller than on fingers. Tail cylindrical, unsegmented, tapering to a sharp point, slightly depressed at base, a little longer or shorter than head and body, covered above with uniform, smooth, subquadrangular, subimbricate scales arranged in more or less regular transverse series, much larger than on belly; scales below, a little larger than above, somewhat irregular in shape, imbricate. Femoral and preanal pores absent. On either side base of tail in males, is a series of 4—5 (usually 4) enlarged scales arranged fanwise, with their pointed apices directed upwards.

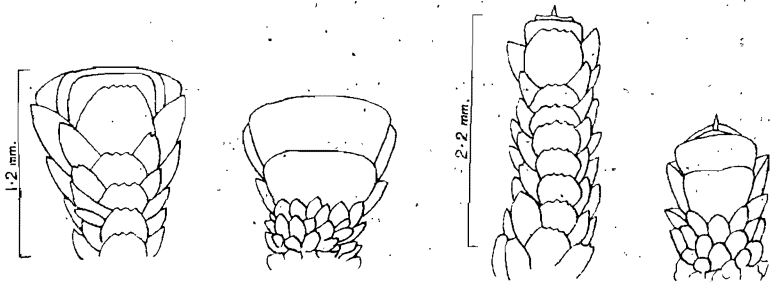


Fig. 31.

Fig. 32.

Fig. 33.

Fig. 34.

- Fig. 31. *Colopus wahlbergii* (Type, T.M. No. 14552), tip of 3rd finger from above.
 Fig. 32. *Colopus wahlbergii* (T.M. No. 14552), tip of 3rd finger from below.
 Fig. 33. *Colopus wahlbergii* (T.M. No. 14552), 4th toe from above.
 Fig. 34. *Colopus wahlbergii* (T.M. No. 14552), tip of 4th toe from below.

Colour: Above, pale olive to olive brown, with large irregular spots or mottlings of chalky yellow, usually edged with chocolate-brown; these markings are often confluent into irregular crossbands on back and tail; a mesial yellow streak from rostral to crown of head, and another on each side from angle of jaws over shoulder and breaking up on flanks into a series of yellow spots. Lips and under surfaces pale creamy yellow. Occasional specimens are uniformly pale olive brown above, with no yellow markings except on tail; a yellow vertebral streak sometimes present from occiput to base of tail.

Dimensions: Male (T.M. 14552), H. & B. 52, tail 47, length head 12.3, breadth head 10, forelimb 15, hindlimb 20 mm.

Field notes: This somewhat rare gecko is strictly nocturnal in habits, living in holes under small bushes during the day. It is essentially a creature of the sandveld and is most frequently found abroad after rain. With its somewhat sluggish movement and generally pale colouring, it is distinguished with difficulty on the sandy ground. Diet consists exclusively of small insects and termites.

Distribution: From the south and south-central Kalahari, north-west into Damaraland. Locality records: Matapha Pan, btwn. Kuke and Gomodimo Pans, and Kaotwe Pan, Kalahari (T.M.). Gomodimo Pan, Kalahari (A.M. & T.M.).

Remarks: Types in the Stockholm Museum. Peters in his original description, followed by Boulenger, Sternfeld and Werner at later dates, made no mention of the minute claw present on all the digits of the hindlimb. This claw, due to its small size and retractibility, was in all probability overlooked, and there seems to be little doubt that *C. wahlbergii* and *C. kalaharicus* are one and the same.

RHOTROPUS.

Rhotropus Peters, 1869, Monatsb. Ak. Wiss. Berlin, p. 58 (type: *afer*).
 Boulenger, 1885, Cat. Liz., I, p. 217. Hewitt, 1909, Ann. Tvl. Mus.,
 II, p. 39.

? *Dactylichilikon* Thominot, 1878, Bull. Soc. Philom. Paris, (7), II, p. 254.

Rhotropus part., Boulenger, 1910, Ann. S. Afr. Mus., V, pp. 456 & 463.
 Hewitt, 1910, Ann. Tvl. Mus., II, p. 81. Sternfeld, 1911, Fauna
 Deutsch. Kolon., IV, 2, p. 17.

Digits slender, very unequal, free, dilated distally where each bears a flat nail-like scale above and a series of transverse adhesive lamellae below (the distalmost one being smaller and divided); infero-median row of scales on basal portion of digits enlarged; a small, slender, retractile claw present on all digits; innermost digit smallest, but not rudimentary; middle (i.e. 3rd.) digit longest. Nostril tubular and pierced between three nasal scales which form a raised swelling. Pupil vertical; eyelid distinct all round the eye. Body covered above with granular scales, below with cycloid, juxtaposed to subimbricate scales. Preanal pores present or absent; no femoral pores.

Endemic to South Africa and Southern Angola, and represented by five species.

Distribution: The northern part of South West Africa, extending northwards into southern Angola and eastwards into N'Gamiland.

Key to the South African Species of *RHOTROPUS*.

- | | |
|--|---|
| 1 Digits long and slender; median digits with 5—6 transverse adhesive lamellae below distally | 2 |
| Digits short and moderately stout; median digits with 7—13 transverse adhesive lamellae below distally | 3 |
| 2 Three enlarged chin-shields present, forming a pentagonal group; scales on back very small and hexagonal; thigh $1\frac{1}{4}$ times length of tibia | |

R. braconnieri Thom., p. 114

No enlarged chin shields present; scales on back small and rounded; median gular scales larger than scales on belly; thigh and tibia subequal in length; no preanal pores; median row of subcaudal scales not transversely enlarged

R. afer Pet., p. 114

- | | |
|---|---|
| 3 A row of slightly elongate, subhexagonal chin-shields adjoining mental and anterior lower labials behind, distinctly larger than following gular scales; preanal pores present in males | 4 |
| No well-defined row of chin shields present; no preanal pores present in males; except for basal segment, there is a continuous median row of strongly enlarged, transverse, subcaudal scales; 11 transverse adhesive lamellae under 4th toe; dark above, with indistinct darker zig-zag crossbarring, dark below | |

R. bradfieldi Hwt., p. 116

- | | |
|--|--|
| 4 Dorsal scales slightly keeled and tubercled; larger ventrals with posterior borders perceptibly crenulated; median row of subcaudals not transversely enlarged; 8 transverse adhesive lamellae under 4th toe; variegated above, pale below | |
|--|--|

R. barnardi Hwt., p. 117

Dorsal scales more or less smooth, feebly tubercled only on sides; ventrals hexagonal and posterior borders not crenulated; median row of subcaudal scales transversely enlarged, at least over distal half of tail; 13 transverse adhesive lamellae under 4th toe; blackish above with dull reddish spots, dark below

R. *boultoni* Schmidt, p. 119

RHOTROPUS BRACONNIERI (Thominot).

Dactylchilikion braconnierei Thominot, 1878, Bull. Soc. Philom. Paris, (7) II, p. 254 (Type loc.: 'Environs of Lake N'Gami').

Description (after Thominot): Upper labials 7, lower 8. Three chin-shields present; so arranged as to form a pentagonal whole; gular scales smaller and diminishing in size posteriorly. Scales on belly and under side of thighs large and hexagonal. Back covered with very small, perceptibly hexagonal scales. Limbs long and slender; the arm and upper arm equal in length; thigh very long, $1\frac{1}{4}$ times length of tibia; digits dilated distally, each with 5 undivided transverse adhesive lamellae below. Tail slender, flattened at its extremity, as long as head and body.

Colour: Above, olive green marbled with blackish-brown; three transverse black spots on back between hind limbs; limbs each with a reddish-brown, chevron-shaped band; tail banded with black. Below, uniform yellowish-white.

Dimensions (after Thominot): H. & B. 56 mm.; tail 56; length head 16.6 (approx.).

Distribution: Known only from the type locality.

Remarks: Type in Paris Museum? Boulenger (1910, p. 463) placed this species as a synonym of *Rhotropus afer*; the presence of 3 chin shields, the small hexagonal scales on the back and the very long thigh, appear however to warrant its retention as a distinct species.

RHOTROPUS AFER Peters.

(Text-figs. 35—37; Plate XI, fig. 3).

Rhotropus afer Peters, 1869, Monatsb. Ak. Wiss. Berlin, p. 58, pl. . . . , fig. 2, and Oefvers. Vetensk. Ak. Forh., No. 7, p. 658 (Type locality: Damaraland). Boulenger, 1885, Cat. Liz., I, p. 217, and 1890, P.Z.S. Lond., p. 78 (Damaraland). Boettger, 1894, Ber. Senck. Naturf. Ges., p. 88 (Hereroland): Bocage, 1895, Herp. Angola, p. 16 (Angola localities). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 463 (Walvis Bay). Hewitt, 1910, Ann. Tvl. Mus., II, p. 88. Werner, 1910, Jena. Denkschr., XVI, p. 315 (Rooibank, nr. Walvis Bay). Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 17, text-figs. 13 & 14 (Scheppmannsdorf), and Mittl. Zool. Mus. Berlin, V, p. 398. Werner, 1915, in Michaelsen, Land- u. Süswasserfauna Deutsch-S.W. Afr., I, p. 336 (Luderitzbucht). Schmidt, 1933, Ann. Carnegie Mus., XXII, p. 7. Hewitt, 1935, Rec. Alb. Mus., IV, p. 306 (Swakopmund; Goanikontes; Kuisip River nr. Rooibank; Ausschieb—Cape Cross; 10 miles N. of Omaruru Riv.). Mertens, 1937, Abh. Senck. Naturf. Ges., 435, p. 7 (nr. Windhuk). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 183 (Nonidas-Namib Stn.).

Description: Head depressed, a little longer than broad. Snout broad and flattened, about $1\frac{1}{2}$ times distance from eye to ear-opening, over twice diameter of eye. Ear-opening moderately large, horizontal and partly covered above by a narrow dermal fold. Rostral 6-sided, about twice as broad as deep. Nostril pierced between 3 nasal scales, which form a well-raised swelling, separated from its fellow behind rostral by 2—4 (usually 3) granular scales. Upper labials 9—11 (usually 10 or 11), lower 7—9 (usually 8). Mental elongate and

narrowed behind, over twice as long as broad, narrower at base than adjacent lower labials, which are also elongate. Usually no chin shields present (occasionally there may be 1—3 enlarged scales), but submental region covered with small flat hexagonal juxtaposed scales, which are a little larger over middle of throat; over base of throat scales diminish in size, and then enlarge again to the flat imbricate

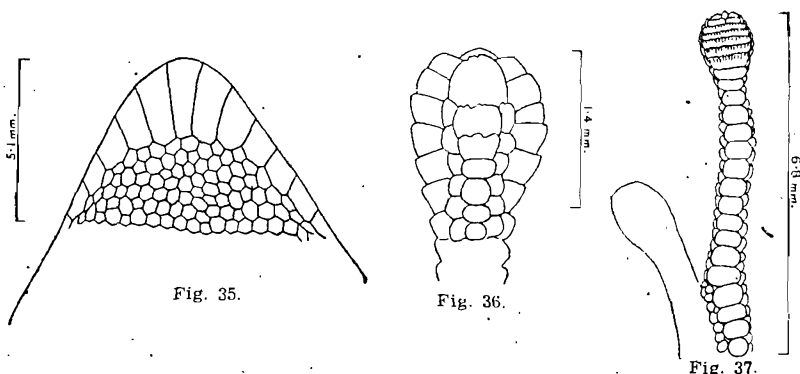


Fig. 35. *Rhotropus afer* (T.M. No. 17418—btwn. Nonidas & Namib Stn.), showing arrangement of scales on chin.
 Fig. 36. *Rhotropus afer* (T.M. No. 17418), tip of 3rd toe from above.
 Fig. 37. *Rhotropus afer* (T.M. 17418), underside of 3rd toe.

scales on chest and rounded juxtaposed scales on belly, where the largest are a little smaller than the larger throat scales; in males, a patch of enlarged, subhexagonal scales at base of belly, between hindlimbs. Upper surfaces covered with granular scales, those on snout being more or less flattened, polygonal and much larger than the rounded scales on back; scales smallest on back of head. Limbs elongate; digits very long and slender, distinctly dilated distally, each with a terminal nail-like scale and 2—3 slightly enlarged scales (with crenulate distal borders) proximal thereto above, and below with transverse adhesive lamellae arranged as follows: Hand with 6 lamellae on digits I & II, 7 on III—V; foot with 5 lamellae on digit I, and 6 on II—V; over basal portion of each digit below, there is a median series of enlarged subrectangular scales arranged as follows: Hand with 7 scales on digit I, 8 on II, 12—14 on III, 12—13 on IV and 10 on V; foot with 7 scales on digits I & II, 12 on III, 10 on IV and 8 on V. Tail a little shorter than head and body, obtusely pointed at end, not or but feebly segmented, covered with scales (smaller above than below) arranged in more or less regular transverse rows; no inferomedian row of transversely enlarged scales; scales on reproduced tails irregularly arranged.

Colour: Above, light olive grey to greyish-brown, with scattered spots of rich and varying shades of brown (sometimes arranged in irregular transverse series) and numerous pale dirty white to yellow spots; legs light yellowish brown above, usually paler than back; tail banded above with dark brown and dull yellow. Below, chin, throat, anal region, underside limbs and tail bright yellow, chest and belly, bluish-white. Eye light brown.

Dimensions: Male (T.M. 17411—btwn. Nonidas & Namib Stn.), H. & B. 49, tail 47, length head 14, breadth head 12.5, forelimb 22, hindlimb 35 mm.

Field notes: Usually confined to the dry open flats of gravelly sand and stones in the Namib Desert, and not apparently occurring in the finer dune-sand areas. Extremely active and, with the aid

of their long slender limbs, able to run with great rapidity for considerable distances; when pursued, specimens have been known to run for a distance of a hundred yards or more before disappearing into a hole or under a stone. The eggs are white, oval and measure 10.8—11.6 × 6.4—7.8 mm. and are deposited in pairs under stones or large rock flakes. Stomach contents: Ants, small wingless beetles, hymenopterous remains and small fossorial wasps, together often with sand grains and small pieces of stone, which are probably picked up accidentally with their prey.

Distribution: Confined to the coastal Namib Desert, extending from Great Namaqualand to southern Angola. Recorded localities: Rossing; Goanikontes; Ausschieb—Cape Cross; 10 miles N. of Omaruru Riv.; Sphinx-Pforte (A.M.). Swakopmund; Kuisip River, nr. Rooibank (A.M. & T.M.). Otjiwarongo (S.A.M.). Nonidas—Namib Stn. (T.M.).

Remarks: Types in the Stockholm Museum.

RHOTROPUS BRADFIELDI Hewitt.

(Text-fig. 38).

Rhotropus bradfieldi Hewitt, 1935. Rec. Alb. Mus., IV, p. 307 (Type locality: Messum River, S. W. Africa; also recorded from Ugab River; Haigamchab; Gt. Omaruru Riv., 50 miles N. of Swakopmund; Gorob). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 186 (Nonidas—Rossing).

Description: Snout somewhat flattened and obtusely pointed, about $1\frac{3}{4}$ times distance from eye to ear-opening, well over twice diameter of eye. Nostril pierced between three nasal scales, which form a strongly raised and conspicuous swelling, which is separated from its fellow behind the rostral by granular scales varying in size and number, from 1—3 in front and 2—4 in back row. (usually arranged 2 in front and 3 behind). A shallow pit present behind nostril on each side. Rostral about $1\frac{1}{2}$ times as broad as deep,

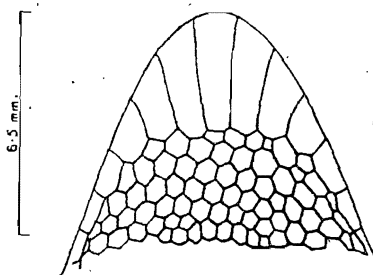


Fig. 38. *Rhotropus bradfieldi* (T.M. No. 17400—btwn. Nonidas & Rossing), scaling on chin.

projecting above between nasal swellings anteriorly. Upper labials 10—11, lower 7—8. Mental strongly elongate, not or narrowing but very slightly behind; 1st lower labial also much elongate, but distinctly narrowed behind; 2nd labial only moderately elongate. No well-defined row of chin shields, but shields adjoining mental and anterior labials, hexagonal and larger than the small rounded scales on middle of throat into which they pass gradually. Scales on snout granular, distinctly larger than on back; no keeled scales on canthal region. Scales on back granular and well rounded, slightly larger than on back of head, not or but feebly tubercled or keeled on sides. Scales on belly with rounded smooth hinder margins, not crenulate; on preanal region and underside thighs scales enlarged. No preanal nor femoral pores. Digits elongate, with median row of subdigital

scales enlarged and arranged as follows: Hand with 5 scales on digits I & II, 9 on III & IV and 6 on V; foot with 5 scales on digit I, 6 on II, 12—13 on III, 10 on IV and 8 on V. Transverse adhesive subdigital lamellae well-developed, and arranged as follows: Hand with 9 lamellae on digits I & II, 10 on III—V; foot with 9 lamellae on digits I & II, 10 on III and 11 on IV & V. Tail depressed and segmented, with 7—8 rows of scales to each segment above; below (except for basal segments 1—3) there is a continuous median row of transversely elongate scales, which may be as much as 4 times as broad as long and arranged three to a segment.

Colour: Above, sooty brown to blackish, with faint traces of narrow, dark, zig-zag or looped, crossbars on back; on tail, each segment narrowly edged with black. Lower surfaces, uniform slate to bluish-slate. Eye dark brown, with golden brown flecking and edging to pupil slit. Living specimens in their natural habitat, appear uniformly black.

Dimensions: Male (T.M. 17399—btwn. Nonidas & Rossing), H. & B. 60, tail 61.5, length head 17, breadth head 15, forelimb 26.5, hindlimb 34 mm.

Field notes: Essentially rupicolous in habits, and found on outcrops of dark-weathered rock in the Namib Desert, where their dark colouring matches the surroundings so well, that it is usually only by their movement that they are detected. Stomach contents mainly ants, together with small beetles and larvae.

Distribution: Apparently restricted to the Namib Desert, from Damaraland to the Kaokoveld, South West Africa. Recorded localities: Messum River; Haigamchab; Ugab; Gorob; Gt. Omaruru River (A.M.). Nonidas—Rossing (T.M.).

Remarks: Types in the Albany Museum, Grahamstown. Superficially very similar to *R. boultoni*, but readily separated by the absence of a distinct row of chin-shields, and preanal pores in males; also darker in colouring and lacking the dull brick-red spots characteristic of *R. boultoni*.

RHOTROPUS BARNARDI Hewitt.

(Text-fig. 39; Plates III, fig. 3 and XI, figs. 4 & 5).

Rhotropus barnardi Hewitt, 1926, Ann. S. Afr. Mus., XX, p. 413, pl. XXXV, figs. 1—3 (Type locality: Otjimbombe, nr. Eriksson's Drift, Kunene River, S. W. Africa). Schmidt, 1933, Ann. Carnegie Mus., XXII, text-fig. 2, pl. I (Mucungu, S. Angola). Hewitt, 1935, Rec. Alb. Mus., IV, p. 307 (Kamanyab; Messum River; Usakos; Ausschieb-Cape Cross). Parker, 1936, Novit. Zool., XL, p. 127 (Sissekab; Lake Otjikoto). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 183, pl. III, fig. 3 (Lake Guinas; Otjikondo—Kamanyab; Kamanyab; Farms 'Paderburn' & 'Huab,' on Huab River; Kalkveld).

Description: Head moderately depressed, slightly concave between orbits, a little longer than broad. Snout depressed, elongate and rather sharply pointed, a little over $1\frac{1}{2}$ times distance between eye and ear-opening, at least twice diameter of eye. Rostral large, almost twice as broad as deep, with a V-shaped median prolongation above, between the nasal swellings. Nasal swellings not so strongly raised as in *bradfieldi*, separated from one another by granules, usually two in number and placed one behind the other (sometimes only one elongate granule between nasal swellings, or 1—2, 2—1 and 2—2). A shallow depression on either side of snout behind nasal swellings. Scales on snout granular and often slightly keeled or tubercular, much larger than scales on back of head. Upper labials 9—12 (usually 9—10), lower 6—8. Mental and first two lower labials on

each side very elongate; mental usually a little narrowed posteriorly, exceptionally narrowing to a point, when first labial on either side may be in contact with one another. A transverse series of 6–9 chin shields, adjoining mental and anterior lower labials behind; these chin shields are considerably larger than following granular scales and extend obliquely backwards for some little distance on either side of gular region. Scales on back granular and more or less rounded, usually feebly keeled or tubercled, a little larger than those on back of head; towards sides of body scales much larger, tubercled and equal to or a little larger than on snout. Below, scales flattened, more or less imbricate on base of throat and chest, larger, subhexagonal, juxtaposed and with posterior margins crenulate on belly. Preanal pores present in males and arranged as follows: in two groups of 3 separated in the middle by one or two simple scales, or in a continuous row of 4–6 (exceptionally 7). Median row of subdigital scales on basal portion of digits enlarged and arranged as follows: Hand with 4–6 scales on digits I & II, 7–10 on III, 6–9 on IV and 5–7 on V; foot with 4–5 scales on digit I, 4–6 on II, 8–10 on III, 6–10 on IV & 5–7 on V. Distal expansions with transverse adhesive lamellae below as follows: Hand with 6–7 lamellae on digit I, & 7–8 on II–V; foot with 6–7 lamellae on

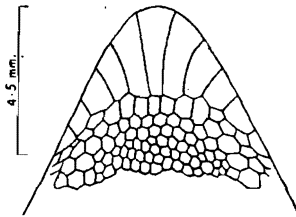


Fig. 39. *Rhotropus barnardi* (T.M. No. 17243—Kamanyab), scaling on chin.

digit I & 7–8 (usually 8) on II–V. Tail depressed, broad at base, segmented, with 6–7 rows of scales to each segment above; below, scales much larger than above, the largest in transverse pairs with one to three rows of smaller ones between, about three rows of scales to each segment; in reproduced tails, there is a single inferomedian row of transversely elongate scales.

Colour: Markings somewhat variable and roughly divisible into three types as follows: (1) Above, bluish-grey to slate, with scattered paler spots and transverse series of dark reddish-brown spots, which sometimes fuse to form irregular crossbars on back; below, chin throat and chest white to bluish-white, belly pale blue, underside limbs creamy white and tail pale grey to bluish-white. (2) Above, grey, greyish-brown to yellowish- or pinkish-brown, with a more or less symmetrical patterning of dull maroon, reddish-brown to dark brown or blackish, bearing pale and dark spots and enclosing large spots of the ground colour; tail banded with dark brown and light yellowish-brown; below, throat, chest and belly white, underside limbs and tail creamy yellow; sometimes a greyish infusion on chin and sides of belly. (3) Above, dark grey, greyish- to dark brown, with scattered small black spots and larger rounded pale spots; below, greyish-white, underside limbs and preanal region creamy yellow. Reproduced tails usually a uniform dull grey to greyish-brown.

Dimensions: Male (T.M. 17351—Huab), H. & B. 44, tail 42, length head 12.2, breadth head 11.5 mm.

Field notes: Rupicolous, and found living both on rocky koppies and among small outcrops on the flats. Unlike *boultoni*, which is often found in the same localities, these little geckos are able to match their colouring to the type of rock on which they happen to be living to a remarkable degree, and as a result are amazingly difficult to detect when at rest. The eggs are slightly oval and measure from 11—12 × 9—10 mm.; when laid they are soft, with a sticky surface, and are glued firmly on to rock surfaces in cracks and crevices or under loose flakes; on hardening they are dead white in colour, stand from 5—6 mm. high and are very difficult to detach without damage.

Distribution: Northern half of South West Africa to southern Angola. Recorded localities: Otjimbombe, nr. Eriksson's Drift; Kaross; Kaoko Otavi; Kowares; Outjo; Warmbad north (S.A.M.). Eriksson's Drift; Messum River; Ausschieb-Cape Cross; Usakos; Rehoboth; Kam River (A.M.). Kamanyab (S.A.M. & T.M.). Otjikondo-Kamanyab; 'Paderburn' & 'Huab,' on Huab River; Kalkveld; Erongo Mtn.; Lake Guinas (T.M.).

Remarks: Types in the South African Museum, Cape Town.

RHOTROPUS BOULTONI Schmidt.

(Text-figs. 40—42).

Rhotropus boultoni Schmidt, 1933, Ann. Carnegie Mus., XXII, p. 7, text-fig. 2, pl. I (Type locality: Pico Azevedo, Mossamedes, S. Angola). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 184 (Otjikondo—Kamanyab; Kamanyab; Farms 'Paderburn' & 'Huab,' on Huab River). Parker, 1936, Novit. Zool., XL, p. 127 (Bocoio, Benguela, Angola).

Description: Head depressed, a little longer than broad. Snout rather pointed, about $1\frac{1}{2}$ times distance between eye and ear-opening and over twice diameter of eye; a distinct depression on each side of snout just behind nasal swellings. Nostril pierced between three nasal scales forming a raised swelling, which is separated from its fellow usually by 2—3 granular scales, arranged 1 + 1 or 1 + 2, sometimes only a single elongate scale present. Rostral subpentagonal, almost twice as broad as deep, usually projecting above between the nasal swellings anteriorly. Scales on snout larger and flatter than scales on back. Upper labials 11—13 (usually 12 or 13), lower 8—10. Mental and first two lower labials strongly elongated; mental as least $2\frac{1}{2}$ times as long as broad, usually narrowing a little behind (exceptionally, strongly narrowed, with first labial on either side in contact behind); first lower labial strap-like, not more or less wedge-shaped as in *barnardi*. A transverse row of 8—9 chin-shields adjoining mental and anterior lower labials behind, distinctly larger than gular scales and extending obliquely backwards for some distance on either side of throat. Back covered with small, rounded to suboval, slightly convex juxtaposed, granular scales, which are subequal or slightly variable in size; towards the sides scales tend to become a little tubercular. Below, scales on throat flat, small and juxtaposed, enlarging, and becoming slightly imbricate towards base of throat and on chest; over belly large, smooth, flat, hexagonal and juxtaposed. No femoral pores. Preanal pores present in males and arranged as follows: in two series of 3 + 3 or 3 + 4, separated in the middle by a simple scale, or in a continuous straight transverse row of 5—8. Limbs long. A median row of enlarged subdigital scales on basal portion of digits as follows: Hand with 5 scales on digit I, 7 on II, 9 on III, 9 or 10 on IV, 8 on V; foot with 6 scales on digit I, 7 on II, 12 on III, 10 on IV and 8 on V. Distal expansions large, above with

2—4 transversely enlarged scales adjoining the large distal nail-like scale proximally, below with a series of transverse adhesive lamellae as follows: Hand with 10 lamellae on digits I & II and 11—12 on digits III—V; foot with 9 lamellae on digit I, 10 on II, 12 on III, 13 on IV and 12 on V. Tail strongly depressed and much broadened at base, distinctly segmented, with about 8 rows of scales to each segment above and 3 below; scales on tail above, in more or less regular transverse rows, subimbricate, larger and more flattened than those on back; below, median series of scales much enlarged from about the 3rd segment onwards and arranged more or less as follows: segments 3—7 with paired scales (the hindermost pair in each segment largest), segments 8 & 9 each with 2 pairs and a single transversely enlarged scale, segment 10 with one pair and two transversely enlarged scales; thereafter paired scales disappear and a single row of transversely enlarged scales extends to end of tail; in reproduced tails there is a single row of transversely elongate scales throughout.

Colour: Above, dark sooty grey to olive brown or blackish, with large, scattered, irregularly-shaped, dark-edged spots and markings of dull brick red; sometimes these spots are arranged in irregular,

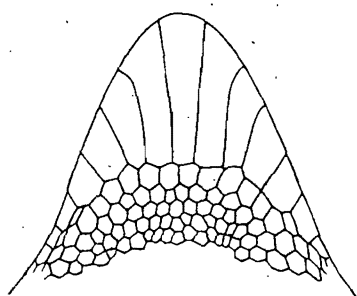


Fig. 40.

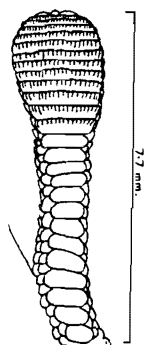


Fig. 41.

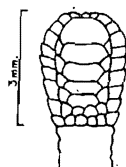


Fig. 42.

Fig. 40. *Rhotropus Boultoni* (T.M. No. 17199—Kamanyab), scaling on chin.

Fig. 41. *Rhotropus Boultoni* (T.M. No. 17199), underside of 3rd toe.

Fig. 42. *Rhotropus Boultoni* (T.M. No. 17199), tip of 3rd toe from above.

somewhat broken-up, transverse rows over back. Below, dull bluish-grey to slate, underside forelimbs and posterior surface of tibia often paler. Eye reddish-brown flecked with golden tints.

Dimensions: Male (T.M. 17358—Huab), H. & B. 65, tail 71, length head 17, breadth head 16, forelimb 23, hindlimb 35.3 mm. Another male (T.M. 17182—Otjikondo) with regenerated tail, measures 73 mm. for H. & B.

Field notes: Essentially rupicolous, living on the granitic rock and boulder strewn koppies which outcrop all over the areas where they occur. The dark colouring of these diurnal geckos renders them most conspicuous on the light-coloured rocks on which they live, and in this respect they differ from their near allies *R. Bradfieldi* and *R. Barnardi*, which match so well their environment. If approached quietly while basking in the sun, they are reluctant to move, and will often permit a very close approach before finally dashing off rapidly to cover. The males are aggressive and pugnacious and appear to spend much of their time chasing and fighting with one another; disabled or weakened specimens are immediately pounced on and mercilessly savaged by others. Females taken in

June each contained two eggs, the largest of which, with shell well developed, measured 11.5×8.5 mm. Stomach contents consist mainly of termites, ants and beetles, while remains of orthopterous and hymenopterous insects, spiders etc. are present in smaller numbers.

Distribution: Kaokoveld to southern Angola. Recorded localities: Kowares (S.A.M.). Kamanyab (S.A.M. & T.M.). Otjikondo—Kamanyab; Farms 'Paderburn' & 'Huab,' on Huab River (T.M.).

Remarks: Type in the Carnegie Museum, Pittsburgh.

RHOTROPELLA.

?*Phelsuma* (non Gray) Roux, 1907, Zool. Jahrb. Syst., XXV, p. 412.

Rhotropus part., Boulenger, 1910, Ann. S. Afr. Mus., V, pp. 456 & 463. Hewitt, 1910, Ann. Tvl. Mus., II, p. 81. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 17.

Rhotropella Hewitt, 1937, Ann. Natal Mus., VIII, p. 199 (type: *Rhotropus ocellatus* Boul.).

Closely related to *Rhotropus* but differing as follows: Digits clawless; inner digit rudimentary; distalmost transverse adhesive lamella of each subdigital expansion undivided; nostril not tubular, pierced in the first upper labial (which is fused with the anterior nasal) and bounded behind by a small postnasal; scales on belly all strongly imbricate; much enlarged, flattened scales present on under surface of thigh and tibia in males; femoral pores present, forming a long uninterrupted series across preanal region.

Endemic to South Africa and represented by a single species.

Distribution: Northern parts of Little Namaqualand.

RHOTROPELLA OCELLATA (Boulenger).

(Text-figs. 43—45; Plates III, fig. 5 & XVII, fig. 6).

Rhotropus ocellatus Boulenger, 1885, A.M.N.H. (5) XVI, p. 475 (Type locality: "Cape Town." Note: obviously incorrect, probably from Little Namaqualand), and 1887, Cat. Liz., I, p. 490. Roux, 1907, Zool. Jahrb. Syst., XXV, p. 412 (Klipfontein, L.N.). Boulenger, 1910, Ann. S. Afr. Mus., V, p. 463. Hewitt, 1910, Ann. Tvl. Mus., II, p. 88. Sternfeld, 1911, Fauna Deutsch. Kolon., IV, 2, p. 17. Schmidt, 1933, Ann. Carnegie Mus., XXII, p. 8.

Rhotropella ocellata Hewitt, 1937, Ann. Natal Mus., VIII, p. 200, pl. XII, figs. 1—7 (Steinkopf; Leliefontein, nr. Kamiëskroon). FitzSimons, 1938, Ann. Tvl. Mus., XIX, p. 182 (Klipfontein; Klipfontein—Port. Nolloth).

Description: Head depressed, a little over $1\frac{1}{4}$ times as long as broad. Snout rounded, moderately long, about $1\frac{1}{3}$ times distance between eye and ear-opening, at least twice diameter of eye. Ear-opening rather large, elliptical and oblique. Pupil of eye vertical; eyelids scaly and continuous round eye. Rostral trapezoidal, from $1\frac{1}{2}$ to $1\frac{2}{3}$ times as broad as deep, distinctly visible from above. Nostril pierced in 1st upper labial (which is produced upwards behind rostral by fusion with upper nasal) and bounded behind by a small postnasal scale; 3—4 (usually 3) small granular scales separating the nostril-bearing labials behind rostral. Upper labials 6—8 (usually 7—8), lower 5—7. Mental large, subtriangular to subpentagonal, about $1\frac{2}{15}$ times as broad as long, much broader at base than rostral and about twice as broad as adjacent lower labials; adjoining mental and anterior lower labials behind, is a series of well-defined polygonal chin shields; of which the median pair are the largest and in contact with mental, passing posteriorly into the much smaller gular scales.

Scales on snout granular and somewhat flattened, much larger than scales on back, which are small, juxtaposed, closely set and subequal to or a little larger than those on back of head. Scales on belly larger than those on snout, flattened, subhexagonal and imbricate; in males, scales along underside thigh and tibia enlarged and flattened. Limbs moderate; inner digit rudimentary, 4th longest; digits 2—5 strongly dilated distally, with 7—8 undivided transverse adhesive lamellae below, and above a median series of 3—5 enlarged scales, of which the third from the end is the largest and has a crenulated distal edge; median row of subdigital scales on fingers all enlarged and somewhat swollen, on toes, these scales may or may not be enlarged basally but are always enlarged and swollen distally towards the dilated portion. A long uninterrupted series of 24—31 femoral and preanal pores in males. Tail a little longer than head and body, slightly depressed at base, segmented, with 6—7 (usually 6) rows of scales to each segment above and 4—5 (usually 4) below; scales on tail flattened and in regular transverse rows, those above much larger than scales on back and subimbricate, below, larger than above and imbricate; on regenerated tails, scales irregular, subgranular above, flattened and much larger below.

Colour: Above, light brown to greyish-brown, or grey to greyish-black, with series of pale round spots and smaller dark spots over back, limbs and tail; the pale spots are sometimes absent, but when

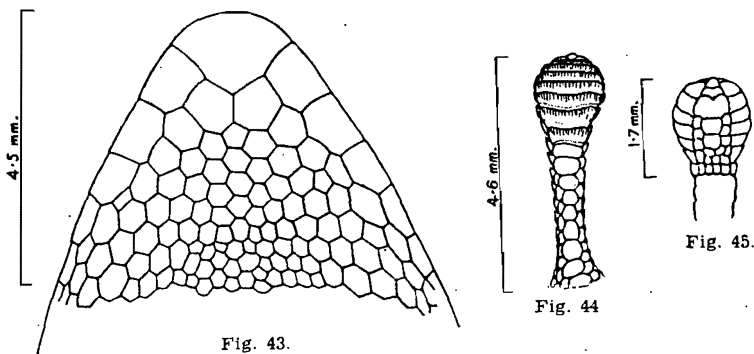


Fig. 43. *Rhotropella ocellata* (T.M. No. 17893—Klipfontein), scaling on chin.
 Fig. 44. *Rhotropella ocellata* (T.M. No. 17893), underside of 3rd toe.
 Fig. 45. *Rhotropella ocellata* (T.M. No. 17893), tip of 3rd toe from above.

present are larger and more conspicuous on sides of body; an inconspicuous dark stripe sometimes present on side of head from nostril through eye to ear-opening. Lower surfaces creamy-white to bluish-white, often tinged with pink; chin and throat usually suffused with grey. Fully adult specimens are often tinged with orangy-brown over lumbar region, groin and sides of tail at base.

Dimensions: Male (T.M. 17891—Klipfontein), H. & B. 37, tail 43, length head 9.7, breadth head 7.8 mm. Female (T.M. 17889—Klipfontein), H. & B. 38, tail (regenerated) 31.5, length head 10, breadth head 8.6 mm.

Field notes: A very active diurnal gecko, living among rocks and boulders on hillsides and outcrops on the flats. It runs over rock faces in short lightning-quick spurts, jumping across intervening distances of 6—10 inches with ease. The general colouring tones in well with the particular rocks on which it lives, and thus, unless carefully marked down when first seen, can very easily be lost sight of, especially as it usually favours inconspicuous close-

fitting flakes under which to hide. Females, taken in August, each contained two eggs, which were about ready for laying; these were oval and averaged 8.5×6.5 mm. Stomach contents consist mainly of small beetles and beetle larva, together with remains of small bombylid flies, aphids, hymenopterous and dipterous insects, crickets, spiders and sand grains.

Distribution: Apparently confined to the northern half of Little Namaqualand. Recorded localities: Steinkopf; Leliefontein; Klein-zee (S.A.M.). Kharkam Mts., L.N. (A.M.). Klipfontein; Klipfontein—Port Nolloth (T.M.).

Remarks: Types in the South African Museum, Cape Town and British Museum of Natural History. The types are recorded from Cape Town, but like many of the older records in the South African Museum, this is obviously incorrect, and the specimens in question may be presumed to have come from Little Namaqualand.