

Some New Species and Subspecies of South African Batrachians and Lizards

By

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With Plate VI and 1 Text-figure.

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BATRACHIA.

Heleophryne sylvestris *Hwitt.*

Heleophryne sylvestris *Hwitt.*, Ann. Natal Mus., v, p. 441, 1926.

Of this ill-known species, the Transvaal Museum has recently received an immature specimen from the Woodbush collected by Dr. Schweickerdt. It does not agree entirely with the description of the type, which is considerably smaller; for

instance, the head is rather strongly depressed, tympanum fairly distinct, tibio-tarsal joint of adpressed hind limb reaching just beyond the front of the eye, hinder portion of thigh without conspicuous granulation—this perhaps a matter of preservation. Other features are: Longer toes with very slight discs, finger discs small (compared with those of *regis* and *rosei*); sub-articular tubercles of fingers lacking except at the bases; second finger reaching as far as the base of the end phalanx of the fourth finger, or very nearly so; nostril much nearer to end of snout than to the orbit; snout in front blunt and well-rounded; the two groups of vomerine teeth rather widely separated mesially (in *regis* and *rosei* they nearly meet); dorsal and ventral surfaces of body smooth; femora with 4 or 5 more or less distinct dark cross-bars above. Length from snout to vent 41.5 mm.

This species is evidently quite distinct from either of the aforementioned Cape species, but its relation to *natalensis* will remain doubtful until adults of both are available.

Here it may be noted that several very interesting papers have recently been published on the anatomy of this genus in the 'South African Journal of Science,' vol. xxvii, 1930. In one of them Mr. A. C. Hoffman has reported an extraordinary range of variation in the shoulder-girdle (see figs. 1 and 3, p. 417); so much so that most herpetologists will conclude either that my *regis* is no *Heleophryne* or that Mr. Hoffman's specimen has been incorrectly identified. Recently the author has been good enough to advise me that the latter is the case.

Breviceps tympanifer *Hwitt.*

Breviceps tympanifer *Hwitt.*, Ann. Natal Mus., v, p. 190, pl. x, 1925.

I have examined the type of *rugosus* *Power* ('Ann. S. Afr. Mus.,' xx, p. 467) and am now referring it to *tympanifer*; the type is a small specimen, otherwise quite like *tympanifer* so far as I can see. Mr. H. W. Parker thinks that *rugosus* *Pwr.* is the same as *verrucosus* *Rapp.*, which indeed is possible on the geographical indication. But there are so many local forms and subspecies in this genus that *Rapp's* rather

imperfectly described species can never be identified exactly unless the type is still in existence.

The specimens referred to *rugosus* in Barbour and Loveridge's recent paper on the herpetological fauna of the Uluguru and Usambara mountains (in 'Memoirs of the Museum of Comparative Zoology,' vol. i, no. 2, p. 249) are not the same as the Natal species. A series of specimens has been sent to me by Mr. Loveridge, and I have also seen the large specimen of the same species now in the Kimberley Museum on which the identification was based by Mr. Power.

The metatarsal tubercles and pedal characters generally of the two species seem essentially different, being in the East African species more slender and typically frog-like than in any of the South African forms; in this respect these East African specimens agree with the two species described from that region by Barbour and Loveridge, and the several species seem to merit at least subgeneric distinction. I think, therefore, that Mr. Power was quite justified in excluding *ulugurensis* from the genus *Breviceps*.

Breviceps adpersus *Ptrs.* Pl. VI, fig. 1.

This species was very imperfectly described by Peters in his 'Reise nach Mossambique, Amphibien,' p. 177, and quite possibly two or more forms were confused together, for the locality was given as Damaraland and Transvaal, between latitudes 25° and 26° S. Two specimens recently received from Quickborn, near Okahandja, agree well with Peters's account, so far as it goes, being restricted to the colour characters. These specimens were presented to the Albany Museum by Mr. R. D. Bradfield.

In structural characters, the Quickborn specimens seem more or less intermediate between *mossambicus* *Ptrs.* of Mozambique, and *macrops* *Blgr.* of Little Namaqualand. The tubercles of the hands and feet are comparatively very poorly developed. On the palms there are no tubercles except for the large and flat basal pad and the single tubercle on its inner side. Subdigital tubercles of the fingers few and more or less distinctly doubled. The second finger has only a basal tubercle;

the third finger a basal tubercle and another, also doubled, more distally situated, whilst between the two is a very weak single tubercle. Fourth finger very much shorter than the second.

Soles without tubercles, toes with rather weak ones, the largest one under the fourth toe with a tendency towards doubling; between the latter and the smaller basal tubercle is a much smaller tubercle. The toes are rather short, the fourth being only very little longer than the two combined metatarsal tubercles. Inner metatarsal tubercle long, and with a sharp edge; outer one very small.

First toe very much shorter than the second, fifth toe hardly more than a rudiment. Dorsal surfaces porous, not granular, but with incipient flattened warts over the dorsal surface of the body. Eye rather large; length of upper eyelid, measured between the corners, contained about seven times in the total length. Length of anterior part of head (measured to a line joining posterior corners of the eyelids) contained in length of body nearly five times.

Between the eyes a pale transverse line; hinder portion of body with a pale mid-dorsal stripe not well defined; behind the head two elongate pale patches, one on each side of the mid-line; behind these several other pale patches more or less paired, but less distinct; some pale patches also at the sides of the body, and numerous small white spots. An oblique dark patch from below the eye to the base of the fore-limb, bordered both in front and behind by pale patches. Over the throat region an irregularly reticulate black patch on each side. Total length 32 mm.

Breviceps parvus *Hwitt.*

Breviceps parvus *Hwitt.*, Ann. Natal Mus., v, pl. x, p. 192, 1925.

Strictly speaking this form is not widely distributed, but appears to be limited to the neighbourhood of Grahamstown. The Transvaal specimens referred thereto in Power's monograph and in the recent papers by Messrs. V. Fitzsimons and G. van Dam, and by Prof. C. de Villiers in 'Annals Transvaal Museum,' vol. xiii, pt. 3, 1929, seem to me better placed under *mossambicus*.

I have examined the series of specimens in the Transvaal Museum from Kastrol Nek, near Wakkerstroom, taken at an elevation of 6500 ft., and find them distinguishable from *parvus* as follows: Snout a trifle longer and more pointed; anterior angle of outline of head in dorsal view more acute than in *parvus*; distance from anterior corner of eyelids to the nostril about equal to the distance between the nostrils—decidedly less than inter-nostril distance in *parvus*; lower eyelids rather better differentiated, throat region lightly infuscated, generally with some small white spots near the margin of the mouth—in *parvus* more strongly infuscated and no white spots near the mouth.

Breviceps parvus *Hutt. caffer* *subsp. nov.*

Recently a series of specimens has been sent to me from Gleniffer, near Kei Road, by Mr. G. A. Ranger. These differ in colour and very slightly also in structure from the Grahamstown specimens. The dorsal surfaces and throat are uniformly infuscated throughout. The lower eyelid is pale, and an ill-defined pale patch may or may not occur near the angle of the mouth; but there is no trace of an oblique black bar extending backwards from the eye towards the base of the forelimb, nor of the ill-defined pale bars which border it in *parvus*. The snout is slightly more projecting than in *parvus*; in profile view, the front of the snout is rather more oblique than in *parvus*; and in dorsal view the outline of the snout is more acute than in *parvus*. The nostrils are a trifle nearer together than in *parvus*; in the latter the distance between the nostrils decidedly exceeds the vertical distance from the nostril to the edge of the snout, but in Gleniffer specimens these two distances are more nearly equal. The outer and inner toes are very short, more or less as in *parvus*. Dorsal surfaces irregularly corrugate and roughened, sometimes more or less warty, but not closely granulate as in *tympanifer*.

Total length from snout to vent of adult male 28; distance between hind corners of eyelids, 9.2 mm. A Grahamstown specimen of *parvus* measures 10.5 between the hind corners of the eyelids, total length 33 mm.

Bufo fenoulheti *Hwtt. rhodesianus* *subsp. nov.*

Pl. VI. figs. 2, 3.

Bufo fenoulheti *Hwtt.*, Trans. Roy. Soc. S. Afr. iii, p. 108, 1913.

This is founded on a series of specimens collected by Rev. K. Tasman, S.J., on the farm Driefontein, near Gwelo, South Rhodesia.

There is some resemblance to *Bufo fenoulheti obtusum mihi* from the Rustenburg district¹—and to *Bufo vertebralis albiventris* *Power* from Lobatsi,² which is hardly separable from *obtusum*—but *rhodesianus* is distinguishable therefrom at a glance by the large size and shape of the white median spot immediately behind the head, by the more flattened and inconspicuous parotoids, and by the greater density of the minute warts and tubercles of the dorsal skin. From typical *fenoulheti* it differs in the form of the snout and in weaker parotoids; the snout of *fenoulheti*, so far as known from the type-specimen only, is distinctly pointed and its upper surface flat.

Head and body depressed; snout of moderate length, rounded or subtruncate, not projecting, with a distinct median groove or depression above; interorbital space about as broad as upper eyelid; a fairly distinct canthus which, however, is not sharp; tympanum well distinct, its diameter about $\frac{2}{5}$ — $\frac{2}{3}$ that of the eye; parotoids extensive, but very flattened and ill-defined, only prominent in a limited patch or small patches just above the base of the fore-limb and near the angle of the mouth. Fingers short, subarticular tubercles with a tendency to doubling; first and second equal in length, and in the adult male these are both covered dorsally by an extremely minute black granulation, which also occurs over the small pad on the palm at the base of the first finger. Toes webbed at the base and the longer ones edged with web; subarticular tubercles of fourth toe generally double, but not prominent, as there are also other tubercles under the phalanges, which are sometimes as big as the

¹ 'Records Albany Museum,' vol. iii, p. 363, 1925.

² 'Trans. Roy. Soc. S. Afr.,' vol. xiv, p. 418, pl. xxii, 1927.

subarticular tubercles; two metatarsal tubercles, the inner one always larger; no tarsal fold; numerous small tubercles on soles and on under-surface of the tarsi.

Upper surfaces densely covered with minute spinose warts almost throughout; these spinous warts occur over the parotoids as well as over the general dorsal skin; in *fenoulheti* the asperities on the parotoids are more granular. Upper lip and loreal region with scattered granules; end of snout minutely granulated in the male, with or without granules in female. Lower surfaces not quite smooth, being covered with the finest dust-like granulation only visible under a lens.

Colour: Dorsal surface conspicuously blotchy, having a number of whitish-grey patches on a dark grey background; a large white roughly six-sided patch just behind the occiput, bordered in front in the inter-orbital region by a dark patch, and behind by one or two smaller dark patches; it does not pass into a pale mesial streak posteriorly. About the middle of the back is a larger pale grey patch, but this is irregular and variable in shape, being sometimes transversely elongate, sometimes roughly square. Posteriorly just above the vent is generally another pale patch; this is sometimes triangular. A small but conspicuous whitish patch over a protuberant portion of the parotoid just above the base of the fore-limb. Limbs greyish, with dark patches or bands above. In most specimens the individual warts of the upper surfaces have a rufous or red tinge. Upper lip white with dark spots. Lower surfaces without dark markings.

Total length: Male, 32; female, 38 mm.

In some of these specimens, the parotoids are so depressed as to be nearly obsolete except in the small patch above the base of the fore-limb.

In the type of *fenoulheti* the parotoid is raised and well distinct over its whole area.

The characteristic white patch behind the occiput is smaller and more definitely rectangular in *fenoulheti*; also in that form a broadish white streak passes therefrom on each side up to the hinder corner of the upper eyelid; such white streak is

usually incomplete or imperfectly differentiated in *rhodesianus*. In *obtusum* the white patch is smaller and more or less triangular, but is ill defined, as the pale grey colour is in an extensive and continuous reticulation over the uppersurface. Under this latter subspecies I place specimens from the Bechuanaland Protectorate, from Lobatsi (J. H. Power), and Totomi (Transvaal Museum), although they are a trifle larger than the types of *obtusum*.

A series of specimens received more recently from Triashill Mission, near Rusape, S. Rhodesia (pres. Rev. K. Tasman, S.J.), agree well with the types of *rhodesianus*.

LACERTILIA.

Sepsina arnoldi sp. nov. Text-fig.

Type, a single specimen taken on the Vumbu Mountains, at 5600 ft. elevation near to Umtali and to the border of Portuguese East Africa; collected for the Rhodesian Museum by Dr. G. Arnold.

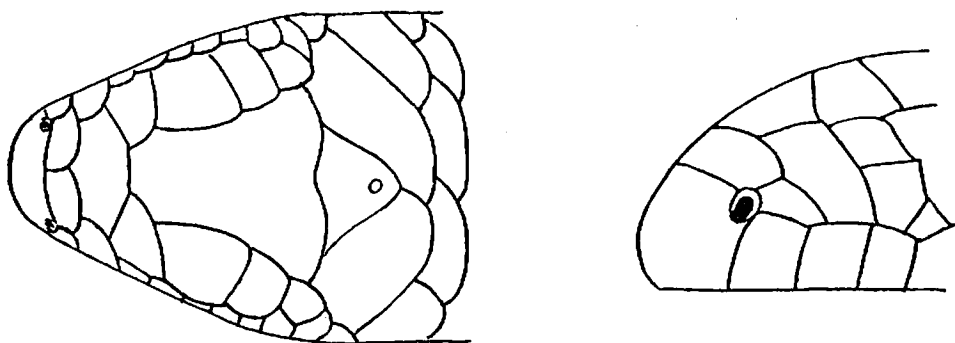
This species is referred to the genus *Sepsina* in spite of the fact that the palatines are in contact along the middle of the palate for a considerable distance. It is believed that the character of the interparietal shield is of greater taxonomic importance than the palatine character. However, all other known species of the genus have the palatines separated.

The characters are as follows: Snout obtuse, scarcely projecting beyond the labial margin; head a little depressed; eye of moderate size, lower eyelid scaly; ear-opening rather small. Nostril in hind corner of the rostral, partly surrounded by an imperfect ring-like nasal. A small post-nasal present; a loreal which is elongated upwards, not longitudinally; a preocular; fifth, upper labial is enlarged as subocular; a pair of prefrontals which are widely separated; frontonasal with an angle on each side; 3 supra-oculars, first the largest, and considerably larger than the prefrontal; 5 or 6 supraciliaries—on the left side 6, the pre-ocular being small, on right side 5, the pre-ocular being vertically elongated; a large more or less bell-shaped frontal,

hind margin sinuous, anterior corners cut off obliquely; interparietal much narrower than the frontal, its three sides subequal; parietals in contact behind, but junction not broad; each parietal bordered behind by two elongate scales, the median one transverse, the other oblique; the median pair is followed by another pair of transversely elongated scales, after which the ordinary neck scales commence.

Limbs very short. Anterior limb, with 5 short, stout digits. Claws strong; the first is very small, fifth a little larger, II-IV largest and almost subequal.

Hind-limb has III and IV subequal and largest; II slightly bigger than V; I is smallest.



Sepsina arnoldi sp. n. Head scaling.

Soles and palms with a few small rounded scales; these are pad-like and not at all spinose.

Around the middle of the body there are 22 scales.

Dorsal surface of body brown, sides infuscated, most strongly so dorsolaterally, thus sharply demarcating dorsal and lateral surfaces, especially anteriorly. Lateral scales with blackish centres. The dorsal portion is 7 scales wide. Ventral surfaces whitish. Head rather dark, upper and lower lips more or less mottled. Tail infuscated above and at the sides.

Measurements: Total length, 95 mm.; head and body, 42; fore-limb, 4.5; hind-limb, 8 mm.

The body-scales are of the *Scelotes* type; that is to say, the system of tubules on each osteoderm has three basal cells; this applies to the throat and ventral scales, and at any rate to some of the dorsals.

On the whole, the scaling resembles that of *S. alberti* *Hwitt.* ('Ann. Transvaal Mus.,' vol. xiii, p. 4), but there are differences, as follows :

In *alberti* the loreal is elongated longitudinally; in *arnoldi* the elongation is more vertical. The supra-oculars are different in number and proportions; it is, however, possible that the small scale here called prefrontal is actually the same as the first supra-ocular of *alberti*, which is a comparatively large scale, larger than any of the succeeding scales.

This character in *arnoldi* is more like that of *Scelotes capensis*, in which the so-called first supra-ocular is a little smaller than the second. There is also resemblance to *Scelotes* rather than *Sepsina* in the colour characters; but on the other hand, the stumpy digits of both hand and foot are quite different from any as yet found in *Scelotes*; species like *Scelotes caffer* in which limb degeneration has already well commenced have more slender toes, whilst distinct palms and soles are not differentiated. The modified scales on the palms and soles of *arnoldi* separate it definitely from *Scelotes*, but probably not from *Sepsina*, which, however, is only known to me from a single specimen.

Cordylosaurus trivittatus *Ptrs. australis*
subsp. nov. Pl. VI, fig. 5.

Cordylosaurus trivittatus *Ptrs.*, Mon. Berlin Ac., p. 18, 1862.

The types are two specimens collected at a locality between Garies and Kamiesberg in the Namaqualand district of Cape Province by Mr. B. Peers, who presented them to the Albany Museum.

There is considerable resemblance to the type of *trivittatus* *Ptrs.*, which came from German South-West Africa. This, as known to me by a specimen from Usakos, is larger than *australis*, has broader pale bands dorso-laterally (see Pl. VI, fig. 4) and the large parieto-occipital is quite entire.

The more important features of *australis* are as follows: Pale dorso-lateral band less than two scales broad at any part of the body, and not encroaching on a third scale, in the head region

only just fringing a single anterior temporal (in *trivittatus* encroaching on three scales over the back, and on both superior temporals on the head); upper and lower surfaces of all four feet reddish and limbs generally pink-tinged; the large parieto-occipital shield is sulcate mesially in front, and feebly so behind, the anterior sulcus being short and ending abruptly, so that the fronto-parietal and inter-parietal shields are not segregated; femoral pores 5 in female, 6 in male, all well-developed, and in addition two or three ill-developed ones distally (*trivittatus* has 8 well-developed pores); tympanic shield broad, much broader than the hinder superior temporal, nearly semicircular (thus decidedly broader than in *trivittatus*, where this shield is about the same width as the hinder superior temporal, which, judging from Smith's figure—'Ill. S. Afr. Rept.,' pl. xlii—is also the case in *subtessellatus*); head and body rather more depressed than in *trivittatus*, and the dorsal scales not so strongly keeled, the scales in the lumbar region, for example, being well carinate, but strongly emphasized central keels like those of *trivittatus* are not present; the carination of the dorsal scales varies with the sex, all from head to shoulders being smooth in the female, but multicarinate in the male; lower eyelid with divided transparent disc, the hinder half entire, the fore portion with a transverse septum.

The tongue has a pair of scales at the apex inferiorly.

Measurements: Length of head and body, 48 mm.; distance from occiput to tip of snout, 8.5; breadth of head, 6; length of tail, 74; of fore-limb, 12; of hind-limb, 20 mm.

It is possible that a number of distinct species of *Corylosaurus* occur. There is a young example from Kakamas in our collection which agrees tolerably well with *australis*, but has well differentiated inter-parietal and fronto-parietal shields; there is no trace of prefrontals, however.

A specimen from Steinkopf (C. de Villiers) agrees exactly with *australis* on the colour pattern; it also has inter-parietal and fronto-parietal shields, the former almost complete, the latter imperfectly differentiated; femoral pores 8. This and the Kakamas form may represent a distinct subspecies.

In *subtessellatus* *Smith*, there is, according to the original figure, an almost completely divided parieto-occipital shield with perhaps an imperfectly differentiated inter-parietal in the middle; a noteworthy character is the transparent lower eyelid, represented as subdivided by a series of vertical septa. On the latter character, if correctly represented, *subtessellatus* would seem to be a very distinct species.

Zonurus peersi *sp. nov.* Pl. VI, fig. 12.

This species is founded on two adult specimens, male and female, collected at Garies in Namaqualand by Mr. B. Peers. Types in the South African Museum.

These specimens have considerable resemblance to the black Cape Peninsula form of *cordylus*, but are distinguished therefrom on the characters of the nasal scale, on the strong keeling of the scales in the mid-dorsal region of the back, on the stronger keeling of the temporal scales, and on the scaling of the lateral fold.

Head strongly flattened; fronto-nasal well separated from rostral in one specimen, separated only by a granule in the other; nasal swollen, more or less rounded, the nostril pierced in its hinder portion; no supra-nasal; fronto-nasal a little broader than long; pre-frontals forming a median suture; scales of temporal region all strongly keeled, but not forming spines; interparietal small, well separated from the fronto-parietals; lower eyelid scaly; hinder labials more or less keeled, especially the lower ones; the larger scales in the row adjoining the lower labials more or less ribbed and sometimes keeled; gular scales small, rather irregular and flat, much smaller than the throat scales.

Dorsal scales in 22 or 23 transverse rows, the largest containing 16 well-developed scales, all well keeled, the lateral scales large, strongly keeled, those more dorsally situated being definitely spined; a very pronounced lateral fold, the scales on which are all minute and form a relatively broad band.

Ventral scales in 25 transverse rows from the axillary to the inguinal region; 10 scales in the largest row. Both fore and hind limbs covered with large, strongly spinose scales. Scales on sides of neck very strongly keeled and spinose. Tail with whorls of strongly keeled and spinose scales, the spines stronger on the sides, but not prominent. Base of tail rather strongly depressed. In the male a row of 11 or 12 femoral pores, and in front of them an elongated yellow patch composed of two rows of modified scales, 7 in the anterior row and 4 in the posterior one.

Colour: Black above and below, relieved only by the lemon-yellow ventral patches on the femur of the male.

Total length of female, 170 mm.; from snout to vent, male 77, female 78; length of head, male 2·25, female 23; breadth of head, male 18·5, female 18·2 mm.

Mr. Peers captured these specimens at a spot about a mile outside the dorp of Garies on the west side of the road. The weathered flakes from the round granite boulders take the form of saucers adhering to a large ball, and it is under these flakes that the lizards were found. They were difficult to secure, for when the heavy flakes were levered up they slid down, taking all that was under them to the ground.

A series of specimens obtained more recently by Mr. Peers includes several females; these have the femoral pores only feebly developed, and there are no modified scales in front of them. The head of the female is slightly narrower (17·5 mm.), but otherwise there seems nothing to distinguish the sexes in dorsal view.

Further specimens have been obtained at Nieuwerust, a locality about ninety miles south of Garies, separated from the former site by a vast stoneless plain; they were found high up under the weathered fragments of enormous granite boulders.

The common Cape Peninsula form of *Z. cordylus* is also black and more or less similar in scutellation to *peersi*, but the scales of head and body are almost everywhere smoother. The nasal scale seems, however, essentially different in the two

species, that of *cordylus* being always elongate, comparatively narrow and never swollen. The gular scales also are different, *cordylus* having a few longitudinally elongate scales instead of the rather many smaller ones of *peersi*, which are not markedly elongate.

It may be here noted that the black form of *cordylus* has recently been described by J. H. Power under the name of *atrus* ('Ann. Transvaal Mus.,' vol. xiv, p. 11), a name which is ante-dated by *niger* *Rose* ('Ann. S. African Mus.,' vol. xx, p. 492; also 'Veld and Vlei,' 1929, p. 217), and this again by *niger* *Cuv.* ('Reg. An.,' 2nd edit., vol. ii, p. 33) probably. It is, however, quite likely that *cordylus* itself was founded on Cape Peninsula material, and that the above are synonyms thereof: although both *Rose* and *Power* have regarded the yellow or yellow-brown specimens as typical *cordylus*. Actually this species has many colour varieties, and more probably than not the brown forms found near Capetown and Grahamstown are structurally distinguishable. The subspecific name *cordylus* can be arbitrarily restricted to any brown form that may occur in the immediate neighbourhood of the Cape Peninsula; in such case the validity of *niger* as a subspecies will rest solely on its structural characters. According to *Mr. Rose*, there is no intergrading of colour in the two Cape varieties.

Platysaurus capensis *Smith*.

Platysaurus capensis *Smith*, Ill. Zool. S. Africa, Rept., pl. xl.

Mr. B. Peers has kindly sent me two specimens of this rare species collected between *Garies* and *Kamiesberg* in the Western Cape Province. Although there is considerable resemblance to *guttatus* *Smith*, with which it was united by *Mr. G. A. Boulenger*, I think it quite worthy of specific separation. The differences are as follows: In *capensis* the scales on the anterior border of the ear-opening are small, like the other lower temporal scales, but *guttatus* has one or two enlarged and elongate ear-scales; *capensis* has no occipital scale, but in its place are 4-6 small scales mesially situated just behind the parietals;

guttatus has a well-developed occipital, which may or may not be in contact with the interparietal, but always extends forwards to some extent between the parietals; in *capensis* the enlarged gular scales do not form a well-defined single row as they normally do in *guttatus*. In one of the specimens of *capensis* a small scale separates the nasals from each other; in the other they are just in contact. In *guttatus* the nasals are generally separated by the meeting of the rostral and fronto-nasal; sometimes, however, the nasals are just in contact; femoral pores 20-22 in specimens from Driefontein, near Gwelo (Rev. K. Tasman), only 15 in the subspecies *minor* *Fitz.*, recently described from the Waterberg district; in *capensis* 17-18.

The Zululand species *wilhelmi* *Hwt.* is also a distinct form. It is characterized by small body size; unusually large occipital scale, which is always in broad contact with the interparietal and almost equal thereto in size, or even larger; nasal scales in good contact; a well-defined and long row of enlarged gular scales, throat scales small, but not entirely granular, the mesial ones larger than those more laterally situated; lower temporal region with only one or two granular rows; femoral pores 18. Of this species we have a series of specimens from Dientje gold mine near Pilgrims' Rest, presented by Mr. F. Preller. The type locality is Nelspruit, Barberton district, and it also occurs at Ubombo, Zululand. It may be added that *P. guttatus* also extends to the Barberton district, being known to us through a single example from White River (A. T. Cooke).

Phyllodactylus lineatus *Gray.*

Phyllodactylus lineatus *Gray*, *Cat. Liz. B.M.*, p. 150, 1845.

Three male specimens from the neighbourhood of Garies, collected by Mr. B. Peers, show that this species, like *essexi*, possesses pre-anal pores (4 or 5) in the male. The head is flattened, longitudinally striped, mental scale broad at the apex. It is probable that intermediates between the two species will be found, in which case *essexi* will have to be regarded as a subspecies.

Hemidactylus tasmani sp. nov.

The types are an adult male and adult female collected at Driefontein, near Gwelo, South Rhodesia; by Rev. K. Tasman, S.J., who presented them to the Albany Museum. Another example was taken at Holy Cross Mission, Chilimanzi, in the same region.

The species resembles *H. mabouia* *M. de J.* in many respects, but the dorsal tubercles are much larger and are well keeled. Digits not webbed at base, the free distal joints long; all the dorsal tubercles well keeled and moderately large; subcaudal scales transversely enlarged; femoral pores continuous.

The dorsal tubercles are in about 16 irregular rows. Their long diameter may equal or even exceed the length of the interspaces dorsally, and in places only two scales may separate two adjacent tubercles; at the sides, a tubercle may be separated only by a single granular scale from the succeeding tubercle. In the neck region the tubercles tend to be conical, especially so at the sides; elsewhere they are more or less flattened, rounded or broadly oval, and some are very faintly striate as well as keeled, but not so markedly striate as in *mabouia*. The small granular scales of the dorsal surface are also faintly striate but not keeled. Head depressed, snout rounded, longer than distance between eye and ear opening, the scales thereon of moderate size, and none so small as the granular scales on the occiput; from the large nasal scales to the line of the anterior margin of the orbit about 15 scales can be counted. There are 3 nasal scales, but the middle one of the three is not appreciably larger than the scales adjacent to it posteriorly. Occiput with granular scales and a few slightly enlarged tubercles. Upper labials 9, lower labials 8 or 9. Female with 4 large chin-shields, the hinder pair not meeting in the mid-line, although not very widely separated. Male with 8 chin-shields, referable to three pairs, the middle one meeting in the midline like the first pair, but divided on each side into two shields. The first pair in all three examples have a long mesial suture. The ventral scales are imbricate, and number about 33 in a transverse row. Male with

25 pores on each side, the whole series being uninterrupted. Subcaudals irregular in the three segments near the base of the tail, then with transversely dilated plates nearly up to the tip; above with small scales and large pointed tubercles in six longitudinal series; these pointed tubercles for the most part are not keeled. A pair of enlarged scales on each side of the vent.

Middle finger with 7 or 8 lamellæ under the digit, including the undivided one at apex and the still smaller basal one when present; fourth finger 8 or 9 lamellæ; middle toe also with 8 lamellæ, inner toe with 5 or 6 (the basal one being very small or lacking).

Above greyish with 5 transverse dark bands over the back and neck, each with a short backward mesial prolongation; each band in its lateral portion more or less bordered with white behind. Tail with irregular cross-bands above.

Total length of female, 143 mm.; of head and body 69, of tail 73, of head 21, breadth of head 15 mm.

This species has some resemblance to *H. brookii* Gray, which, like *H. mabouia*, is said to be very widely distributed; it differs from *brookii* in the flatter and weaker tubercles of the dorsal surface, which in that species are trihedral; the mental scaling also is different, in this respect agreeing better with *mabouia*.

Pachydactylus maculatus Gray *albomarginatus*
subsp. nov. Pl. VI, figs, 6, 7.

This subspecies is founded on three specimens from Norvals Pont, collected by Mr. B. Peers, who presented them to the Albany Museum.

The distinguishing characters are as follows: Larger nasals only slightly separated, a single granule intervening in two specimens, two granules in the third—in *maculatus* they are more widely separated, three or more granules intervening as a rule, but sometimes only two and very rarely one; scales over snout all small, but considerably larger dorsolaterally than those over the interocular region—in *maculatus* they are more equal:

in front of the vent a rather large area of enlarged flat scales, this area extending a little in front of the inguinal region—in *maculatus* the area is smaller, and so are the individual scales; the snout is rather long, flattened, and pointed, with a slight swelling in the loreal region, the symphysial shield narrow and almost parallel-sided; dorsal blotches of body all white-margined.

Measurements: From snout to vent 40 mm.; breadth of head 9 mm.

The typical form of *maculatus* is represented in our collection by specimens from Grahamstown, Fort Brown, Carlisle Bridge, Teafontein, Brak Kloof, Alicedale, Dunbrody, Witteklip, Walmer, Redhouse, Jeffreys Bay, Helpmakaar nr. Ladismith, Beaufort West, Jansenville, Klerksdale nr. Middleberg, Schurfteberg (Somerset East district), Graaff Reinet, Peddie, Line Drift (Peddie district), Pt. Alfred, East London, Port St. John's, Middeldrift, Healdtown, Alice, Debe Nek, Gleniffer nr. Kei Road, Cofimvaba, Tarkastad, Queenstown, Indwe, Braam Nek, St. Mathew's, Somerville nr. Tsolo, Mqanduli and Weenen, Natal; all except the last mentioned being in coastal or central districts of the Cape Province.

Pachydactylus namaquensis (*Sclat.*).

Elasmodactylus namaquensis *Sclat.*, Ann. S. Afr. Mus., i, p. 109, pl. v, 1898.

Of this rare species I have recently been able to examine four specimens taken near Garies by Mr. B. Peers. In all essential respects the digital structure seems to be that of a typical *Pachydactylus*. In his key, Boulenger remarked that in *Elasmodactylus*—to which he referred this western species—there is a minute claw fitting in a notch of the distal lamellæ of the digits, whilst *Pachydactylus* has the distal lamellæ undivided ('Ann. S. African Mus.', 1910, p. 456). But in the series now before me the claw is quite absent in some large specimens, present on the toes only in others; and the distal lamellæ of the digits are precisely similar to those of *Pachydactylus*, where actually they are generally if not invariably divided.

The tail is noticeably segmented, much as in *Pachydactylus bibroni*. It is broad at the base and tapers rather rapidly. Ventrally the mesial row of scales is enlarged, each segment having two such scales, of which the hinder one is larger and is transversely elongate; in each segment of the basal part of the tail the hinder row of scales ventrally includes 7 scales, the lateral one of which is conical and projects outwards conspicuously; more distally the number of scales becomes reduced to 5, 3 and 1; dorsally the scales are smaller, about 6 transverse rows per segment, and in each segment there are 4 enlarged pointed tubercles arranged in a transverse row about the middle of the segment and equally spaced thereon.

The tubercles over the occiput are small and rounded; those on the sides of the body are also rounded, but larger; those over the dorsal surface of the body are longitudinally oval and faintly keeled, but not definitely pointed or conical; those over the thighs are rounded and subconical. The nasal scales are all well raised, and the rostral, but not the first labial, enters the nostril. The larger nasals are separated by one larger granule or by several smaller ones; or in one example, the largest, they are in good contact. The form of the symphyisial shield is also variable, being either decidedly narrower or a trifle broader than the first labial posteriorly. Ventral scales all imbricate, except those over the chin and throat region, which are all granular.

I have compared these specimens with the type in the South African Museum, which came from Namaqualand, C.P., and with two from the Karasberg in the Transvaal Museum Collection. These are all co-specific; however, the Karasberg specimens are apparently worthy of subspecific distinction, but owing to poor state of preservation I feel compelled to await better material before describing. In these specimens the scales over the middle of the snout bordering on and between the nasal scales are few and of moderate size, larger than the scales in the interorbital region, which are more or less granular; in the Garies specimens the median scales in the nostril region are more

numerous and all more or less granular, resembling those in the interorbital region. In this respect the types agree better with the Garies series. Both of the Karasberg specimens have the enlarged nasals quite separated by a median scale.

Pachydactylus capensis (Smith) *gariesensis* *subsp. n.v.*
Pl. VI, figs. 8, 9.

This description is based on nine specimens collected at Garies by Mr. B. Peers; they are now no. 17953 in the collection of the South African Museum. The relationship is with *weberi Roux*, now regarded as a form of *capensis*.

They differ from the type of *weberi*—which came from Klipfontein, a more northern locality of the same region—in the following respects: Naso-rostrals in contact; occiput covered with small scales, but lacking enlarged tubercles; dorsal surface of body without definite cross stripes, but with numerous dark spots.

I have not been able to examine a series of typical *weberi*. There is, however, a specimen in the South African Museum from Karibib which differs greatly from the Garies series, in that the occiput has many tubercles which are quite as large as the flat scales on the snout; but this specimen has the naso-rostrals united.

The Garies specimens have the following characters: The flattened enlarged scales on the snout are very much larger than any of the scales on the occiput, the latter being all small and granular, and likewise those of the interorbital region, except anteriorly, where they merge with the enlarged scales on the snout; on the dorsal surface of the neck a few small tubercles; dorsal tubercles of body fairly large and keeled, but flat, those over the mesial area decidedly smaller and not so closely approximated as those more laterally situated, which are more tubercular and densely disposed; belly with rather large flat scales, those on the breast smaller, those on throat all very minute. Naso-rostrals sometimes broadly in contact, sometimes only narrowly so; in one young example only just meeting.

First labial either just entering the nostril or narrowly excluded therefrom. Symphysial shield narrowed behind, being there scarcely more than half the width of first labial. Toes with 5 complete subdigital lamellæ at the expanded tips; also a median row of somewhat enlarged scales under the digit.

The tail is round and tapering, strongly segmented, each segment having posteriorly an incomplete ring of large, strongly keeled scales dorsally and laterally, about 8 such scales per segment. Ventral scales of tail large, smooth and flat.

Dorsal surfaces of head, body and tail with numerous dark spots, some longitudinally elongated, others transversely elongate; in the adult these are scattered, but indistinct traces of cross-bands may occur. On each side of the occiput is a curved dark stripe starting from the orbit and posteriorly bending inwards towards its neighbour: this stripe may be broken in the middle.

Young with conspicuous dark cross stripes on hinder part of head, on neck, body and tail. On the tail these form complete rings except in the basal third of tail. On head and body there are about 7 such cross-stripes, some of them broken or imperfect; on the tail about 10 or 11 broad dark bands.

Head and body 42, tail 39 mm.

More recently Mr. Peers has sent to me a series of *Pachydactylus*, collected between Garies and Kamiesberg, also a single specimen from Van Rhynsdorp. These also I refer to *gariesensis*, although in the majority of specimens the nostril character is the same as in other forms of *capensis*; in a few examples only does the first labial enter the nostril, and even then only on one side.

In all cases the body and tail are depressed. The head and body-scaling shows much resemblance to *affinis* *Blgr.*, and the chief striking difference is in the tail character. In *affinis* the tail is not segmented, and has no enlarged or otherwise modified scales along the mid-ventral line; in *gariesensis* there is in young examples a continuous row of transversely enlarged scales midventrally, which now persists more or less distinctly in the adult, although near the base of the tail there

are a number of enlarged scales less definitely arranged. Thus, in the caudal characters *gariesensis* is more like *bibroni* than the Transvaal or Rhodesian forms of *capensis*. The tail of typical *capensis* is, however, distinctly segmented, but not so pronouncedly so as in *gariesensis*, and is not so depressed as in that subspecies.

The distinguishing features of *gariesensis* therefore are as follows: The tail as above described, the granular scales of the chin region, the elongate symphysial shield twice as long as its basal breadth, the pointed snout, the much flattened dorsal surfaces, the transversely enlarged row of subdigital scales, and the general lack of raised tubercles on the occiput, although flattened round tubercles do occur there and over the fore part of the neck. Any enlarged occipital scales that may be present are not so large as the scales over the snout.

The structural and geographical relationships of this form to *weberi* and *formosus*, which occur in the same region, cannot be fully understood until more collecting has been done; *weberi* is apparently more northern in distribution, but *formosus* is believed to extend widely.

Lygodactylus bradfieldi *sp. nov.* Pl. VI, fig. 10.

The types are a series of adult male and female specimens from the farm Quickborn near Okahandja, collected by Mr. R. D. Bradfield, and presented by him to the Albany Museum.

The relationship is with *L. stevensoni* *Hutt.*, from Khami Ruins, South Rhodesia ('Ann. Natal Mus.', vol. v, p. 445, 1926), and it may be that *bradfieldi* will ultimately have to be placed as a subspecies thereof. For the present, the two seem well separated on the following characters: *Bradfieldi* has 5 pre-anal pores, but *stevensoni* has apparently 8 or 9 (they are only faintly developed in the type-specimens); the snout is shorter and stouter in *bradfieldi* (for *stevensoni* see Pl. VI, fig. 11), longer toes with only 4 pairs of subdigital lamellæ; no dark lines on the throat in *bradfieldi*, or when present not extending far forwards as in *stevensoni*.

Other characters of this new species are as follows: Nostril bordered by two nasals, first labial and rostral; first labial a little elevated where it meets the smaller nasal; first nasal much bigger than the second; distance between eye and nostril about $1\frac{3}{5}$ times the diameter of the eye; larger nasals separated by one or two scales; scales on snout and head generally granular, not noticeably flattened; canthus rostralis rounded; first lower labial not elongated, scarcely if at all longer than deep (in *stevensoni* decidedly longer than deep); chin-shields fairly large, the diameter quite four times that of the smallest throat scale. Ventral surface of hind-limb with thickened and modified scales in most specimens, but not in all; there is a patch, 2 or 3 scales broad, along the hinder half of the thigh, and a patch of considerable size under the leg. Several thickened scales occur also immediately behind the pre-anal pores, and to a less extent some of the larger scales in front of the pre-anal pores are thickened.

Tail a little depressed, and indistinctly segmented, each segment having about 5 dorsal rows of scales; ventrally the segmentation is hardly traceable, but about 3 rows could be referred to each segment. The ventral scales are more or less of equal size and all a little thickened. Tip of tail with about 4 pairs of modified adhesive scales.

Dorsal surfaces brown with thin black streaks, which may be much broken up and indistinct; one of these extends from the nostril to the eye and thence dorso-laterally to the inguinal region; another black streak commences at the angle of the mouth, passes through the ear-opening to the axil; above the streak first mentioned a third streak extends from the neck to the lumbar region, this streak sometimes starting from the eye; there are also traces of a pair of streaks in the mid-dorsal region. On the top of the head, black streaks form an indistinct open network. There are also some white spots dorsally, the most distinct of which are 7 on each side dorso-laterally, between the two longest black streaks, and tending to form ocelli with the upper one. Throat sometimes immaculate, sometimes with faint dark spots and markings which occasionally form irregular

streaks, but do not extend forwards to the chin region. Lower labials with blackish spots.

Length from snout to vent 28 mm., tail 32.5 mm.

EXPLANATION OF PLATE VI,

Illustrating Mr. John Hewitt's paper, "Some New Species and Subspecies of South African Batrachians and Lizards."

FIG. 1.—× 1. *Breviceps adpersus* *Ptrs.*, from Quickborn, near Okahandja, S.W.A., showing pattern on throat.

FIGS. 2, 3.—× 1.45. *Bufo fenoulheti rhodesianus* *subsp. nov.* Adult male and female from Driefontein, S.R.

FIG. 4.—× 1. *Cordylosaurus trivittatus* *Ptrs.*

FIG. 5.—× 1. *Cordylosaurus trivittatus australis* *subsp. nov.* from Garies, C.P.

FIGS. 6, 7.—× 1. *Pachydactylus maculatus albomarginatus* *subsp. nov.* from Norval's Pont.

FIGS. 8, 9.—× 1.25. *Pachydactylus capensis gariesensis* *subsp. nov.* Adult and young from Garies, C.P.

FIG. 10.—× 3. *Lygodactylus bradfieldi* *sp. n.* from Quickborn, near Okahandja, S.W.A.

FIG. 11.—× 3. *Lygodactylus stevensoni* *Hutt.*

FIG. 12.—× 0.9. *Zonurus peersi* *sp. nov.* from Garies, C.P.

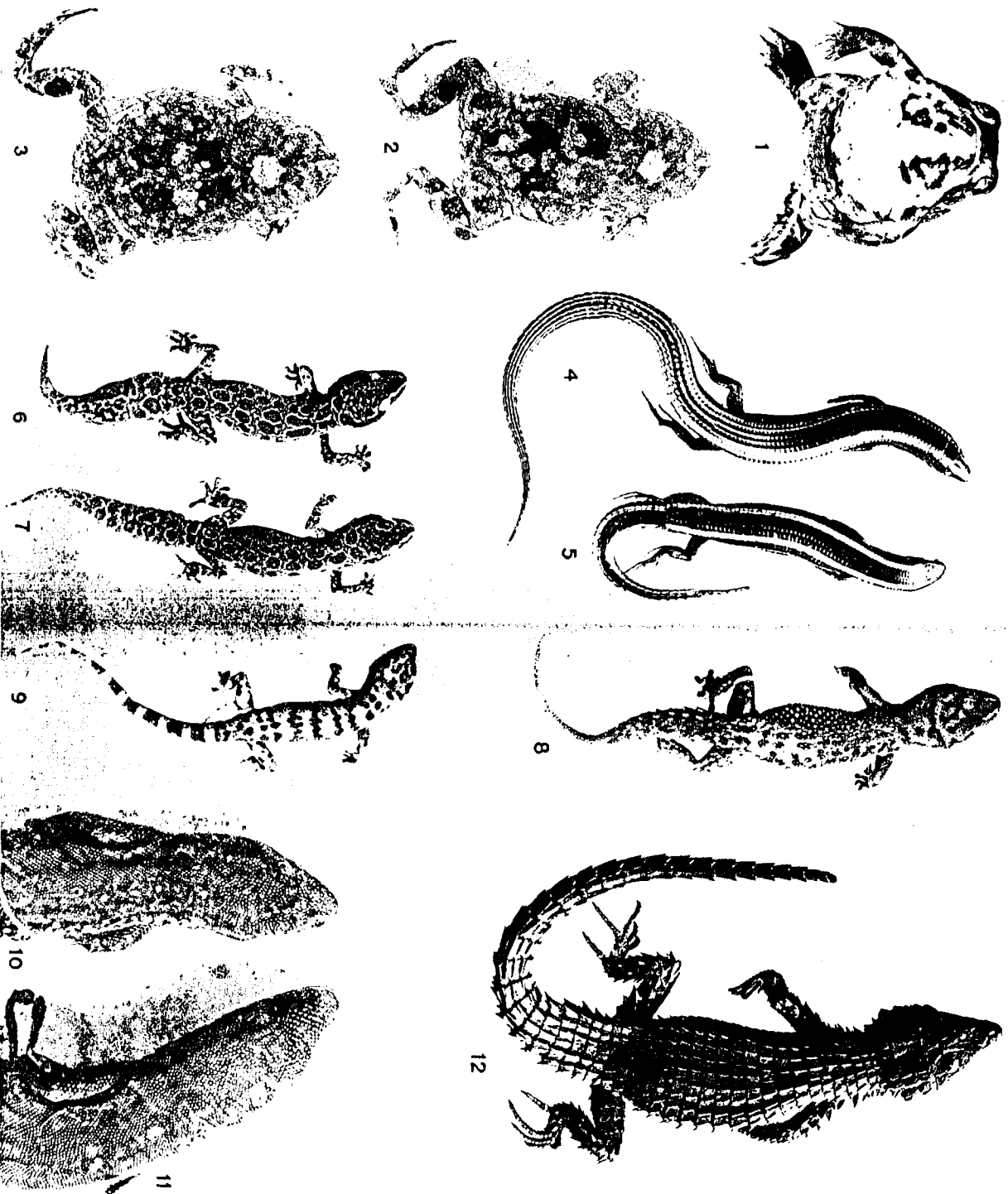


FIG. 1.—*Breviceps adspersus* PRA. FIGS. 2, 3.—*Bufo fenouhethi rhodesianus* subsp. n. FIG. 4.—*Cordylusaurus trivittatus* PRA. FIG. 5.—*C. t. australis* subsp. n. FIGS. 6, 7.—*Pachydaedylus maeuiliatus albomarginatus* subsp. n. FIGS. 8, 9.—*Pachydaedylus capensis garrisesensis* subsp. n. FIG. 10.—*Lygodactylus bradfieldi* sp. n. FIG. 11.—*L. stevensoni* HULL. FIG. 12.—*Zonurus peersi* sp. n.