

A fair collection of birds had been made, which would be of interest to British naturalists as representing species not often brought to this country by collectors. Besides these, collections had, where possible, been made of the Invertebrate Fauna of the country.

The following papers were read:—

1. A Catalogue of the Reptiles and Batrachians of Celebes, with special reference to the Collections made by Drs. P. & F. Sarasin in 1893-1896. By G. A. BOULENGER, F.R.S., F.Z.S.

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(Plates VII.-XVI.)

During their three years' exploration of Celebes, the Drs. Sarasin paid much attention to the herpetological fauna of that island and succeeded in bringing together a collection of 565 selected specimens of Reptiles and Batrachians, representing 86 species, of which 18 proved to be new to science and 11 new to the island, all in excellent state of preservation and with the localities carefully noted. These collections were sent home in several consignments, the first three of which were received by Dr. F. Müller of Basle, who published two preliminary notes on them. At the death of that distinguished herpetologist in 1895, I was offered by the Drs. Sarasin to continue the work of identification and to write a general report on the Reptiles and Batrachians. This I gladly undertook, and in the beginning of 1896 I published descriptions of several new species sent to me from the southern part of the island. Towards the end of the same year, on the return of the explorers, the whole of their collection, including the specimens already studied by Dr. Müller, was made over to me. It seemed, however, that the value of the report would be much increased by not limiting it to the collection made by the Doctors, and I therefore resolved to prepare a complete Catalogue of the Reptiles and Batrachians of Celebes, exclusive of marine species, which would prove practically useful to future students and collectors, as by its means all specimens could be identified. I have given descriptions of the endemic forms, and of a few that are imperfectly known, and a key, as short and simple as the subject permits, by which it is possible to determine all the species so far recorded from Celebes.

The older literature contains but little information on the herpetology of Celebes. But within the last twenty-five years important collections were made, with special attention to localities, and described by Peters, Günther, Doria, M. Weber, van Lidth de Jeude, and myself. These collections will be alluded to throughout in the text, with the names of the collectors, A. B. Meyer, Bruijn, Beccari, M. Weber, and Everett. I have,

however, abstained from introducing a few species of which I have not seen examples, and on the correct determination of which I entertain serious doubts.

The following is a list of the principal publications referring to the herpetological fauna of Celebes :—

- W. PETERS.—“Ueber einige von Hrn. Dr. A. B. Meyer bei Gorontalo und auf den Togian-Inseln gesammelten Amphibien.” *Mon. Berl. Ac.* 1872, pp. 581–585.
- A. GÜNTHER.—“Notes on some Reptiles and Batrachians obtained by Dr. Adolf Bernhard Meyer in Celebes and the Philippine Islands.” *Proc. Zool. Soc.* 1873, pp. 165–172, pls. xvii. & xviii.
- W. PETERS & G. DORIA.—“Catalogo dei Rettili e dei Batraci raccolti da O. Beccari, L. M. D’Albertis e A. A. Bruijn nella sotto-regione Austro-Malese.” *Ann. Mus. Genova*, xiii. 1878, pp. 323–450, pls. i.–vii.
- A. B. MEYER.—“Verzeichniss der von mir in den Jahren 1870–1873 im Ostindischen Archipel gesammelten Reptilien und Batrachier.” *Abh. Mus. Dresden*, 1887, no. 2, 16 pp.
- M. WEBER.—“Reptilia from the Malay Archipelago. I. Sauria, Crocodilidæ, Chelonia.” *Zool. Ergebn. Reise Nederl. Ost-Ind.* i. pp. 159–177, pl. xiv. (1890).
- T. W. VAN LIDTH DE JEUDE.—“Reptilia from the Malay Archipelago. II. Ophidia.” *Op. cit.* pp. 178–192, pls. xv. & xvi.
- F. MÜLLER.—“Reptilien und Amphibien aus Celebes.” *Verh. nat. Ges. Basel*, x. 1894, pp. 825–843. II. Bericht. T. c. pp. 862–869.
- G. A. BOULENGER.—“Descriptions of new Reptiles and Batrachians collected in Celebes by Drs. P. & F. Sarasin.” *Ann. & Mag. N. H.* (6) xvii. 1896, pp. 393–395.
- G. A. BOULENGER.—“Descriptions of new Reptiles and Batrachians collected by Mr. Alfred Everett in Celebes and Jampea.” *Ann. & Mag. N. H.* (6) xviii. 1896, pp. 62–64.

For the position of the localities recorded in this Catalogue, the reader is referred to the five Reports, with maps, published by the Drs. Sarasin in the ‘*Zeitschrift d. Gesellschaft f. Erdkunde*,’ Berlin, xxix. 1894, pp. 352–401, xxx. 1895, pp. 226–234, 311–352, and xxxi. 1896, pp. 21–49, and ‘*Verhandlungen d. Ges. f. Erdk.*’ 1896, Heft 7. The localities at which Reptiles were collected are here enumerated :—

I. NORTHERN CELEBES : Kema, Lilang (near Kema), Tomohon (2500 f.), Sonder (1800 f.), Rurukan (3600 f.), Kakas (Tondano Lake, 2300 f.), the volcanoes Klabat (6550 f.), Lokon (5150 f.), Sudara (4450 f.), Masarang (4000 f.), Mahawu and Emponglar (in the Masarang chain), and Sopotan (5800 f.), all in Minahassa ; Kottabangon (800 f.), in the kingdom of Bolang Mongondo ; and Dumoga besar, Malibagu, Bone Valley, Bone Mts., Totoija Valley ; Gorontalo and Lake Limbotto near Gorontalo ; Buol, Matinang Mts., Wangkahulu Valley, Paguat, Marisa.

II. CENTRAL CELEBES: Paloppo, Borau, Lembong-pangi (1600 f.), Manangalu, and the Kalaena River, all in the kingdom of Luhu; the Central Mountains with the Takalekajo (5500 f.), and Lake Posso (1600 f.); Mapana, on the Gulf of Tomini; Bungi, Enrekang, Sosso, Batulappa, in the South-western part.

III. SOUTHERN CELEBES: Macassar, Barabatuwa Hills, Bonthain, Loka (3800 f.), Bonthain Peak with Lompobatang, Wawo Karang, Pare-Pare.

IV. SOUTH-EASTERN CELEBES: Lakes Matanna (1350 f.) and Towuti (1050 f.).

The following table is drawn up with the object of showing at a glance the exact distribution of the species now known to inhabit the island. Column **A** refers to North Celebes, **B** to Central Celebes, **C** to Southern Celebes, and **D** to South-eastern Celebes; whilst in the last column, **E**, the letters W. or E. show whether the species is distributed in the Malay subregion West or East of Celebes, or, if the distribution be a very limited one, the other islands whence the species is on record are indicated in full. One or two asterisks prefixed to a name signifies that the species or the genus is restricted to the island with which this paper deals.

Although rich in endemic species, Celebes possesses but a single genus peculiar to it (*Rhabdophidium*, Blgr.).

#### REPTILES.

	A	B	C	D	E
1. <i>Crocodilus porosus</i> , Schn. ....	+	...	+	...	W. E.
2. <i>Cyclemys amboinensis</i> , Daud....	+	...	+	...	W. E.
3. <i>Testudo forstenii</i> , Schl. & Müll.	+	...	...	...	Gilolo.
*4. <i>Gymnodactylus jellesmæ</i> , Blgr.	+	+	...	+	
*5.       " <i>fumosus</i> , F. Müll.	+				
6. <i>Hemidactylus frenatus</i> , D. & B.	+	+	+	+	W. E.
7.       " <i>platyurus</i> , Schn..	+	...	+	+	W.
8. <i>Gehyra mutilata</i> , Wgm. ....	+	+	+	...	W. E.
9. <i>Lepidodactylus lugubris</i> , D. & B.	+	...	...	+	W. E.
10. <i>Gecko verticillatus</i> , Laur. ....	+	...	+	...	W. E.
11.       " <i>monarchus</i> , Schl. ....	+	...	+	+	W. E.
12. <i>Draco reticulatus</i> , Gthr. ....	...	+	...	...	Philippines, Sanghir.
*13.       " <i>spilonotus</i> , Gthr. ....	+				
*14.       " <i>beccarii</i> , Ptrs. & Dor. ...	...	+	+	+	
15. <i>Calotes cristatellus</i> , Kuhl ....	+	...	+	+	W. E.
16. <i>Lophura amboinensis</i> , Schloss. .	...	+	+	...	Philippines, Amboyna.
17. <i>Varanus salvator</i> , Laur. ....	+	...	...	+	W. E.
*18.       " <i>togianus</i> , Ptrs. ....	...	+	+		
19. <i>Mabuia multifasciata</i> , Kuhl ...	+	+	+	+	W. E.
20.       " <i>rudis</i> , Blgr. ....	+	+	+	...	Borneo, Sumatra.
*21. <i>Lygosoma tropidonotus</i> , Blgr. .	...	+			
*22.       " <i>nigrilabre</i> , Gthr. ....	+	+	+		
*23.       " <i>sarasinorum</i> , Blgr....	...	+			
24.       " <i>variegatum</i> , Ptrs. ...	...	..	+	...	W. E.
*25.       " <i>celebense</i> , F. Müll....	+				
26.       " <i>smaragdinum</i> , Less. .	+	+	+	...	E.
*27.       " <i>inconspicuum</i> , F. Müll.	+				
*28.       " <i>textum</i> , F. Müll. ....	+				
29.       " <i>cyanurum</i> , Less. ....	+	+	...	+	E.
30.       " <i>atrocostatum</i> , Less....	+	+	...	+	E.

	A	B	C	D	E
31. <i>Lygosoma bowringii</i> , Gray .....	+	...	...	...	W.
32. " <i>temminckii</i> , D. & B..	+	...	...	...	Java, Sumatra.
*33. " <i>parvum</i> , Blgr.....	...	+	...	...	
*34. " <i>infralineolatum</i> , Gthr.	+	+	+	...	
35. <i>Tropidophorus grayi</i> , Gthr. ...	...	+	...	...	Philippines.
36. <i>Dibamus novæ-guineæ</i> , D. & B.	+	+	...	...	W. E.
37. <i>Typhlops braminus</i> , Daud. ....	+	...	...	...	W. E.
38. " <i>ater</i> , Schl.....	+	...	...	...	Java, Ternate.
39. <i>Python reticulatus</i> , Schn. ....	+	...	+	+	W. E.
40. " <i>molurus</i> , L.....	...	...	+	...	W.
41. <i>Enygrus carinatus</i> , Schn.....	+	...	...	...	E.
42. <i>Cylindrophis rufus</i> , Laur. ....	+	...	+	...	W.
43. <i>Xenopeltis unicolor</i> , Reinw. ...	+	...	...	+	W.
44. <i>Chersydrus granulatus</i> , Schn. ...	+	...	+	...	W. E.
*45. <i>Tropidonotus sarasinorum</i> , Blgr.	...	...	+	...	
*46. " <i>celebicus</i> , Ptrs. & Dor. ....	+	...	+	+	
47. " <i>trianguligerus</i> , Boie .....	...	...	+	...	W. E.
48. " <i>vittatus</i> , L.....	+	...	...	...	Java.
49. " <i>subminiatus</i> , Schl.	+	...	...	...	W. E.
50. " <i>chrysargoides</i> , Gth.	+	...	...	...	Java.
51. <i>Lycodon aulicus</i> , L. ....	...	...	+	...	W. E.
*52. " <i>stormi</i> , Bttgr. ....	+	...	...	...	
*53. <i>Zamenis dipsas</i> , Schl. ....	+	...	...	...	
*54. <i>Coluber janseni</i> , Blkr. ....	+	+	+	...	
55. " <i>erythrurus</i> , D. & B. ...	+	...	+	+	Philippines, Sooloo.
56. <i>Dendrophis pictus</i> , Gm. ....	+	...	+	...	W. E.
57. <i>Dendrelaphis terrificus</i> , Ptrs....	+	...	...	...	Philippines.
*58. <i>Oligodon waandersii</i> , Blkr.....	+	...	+	...	
*59. <i>Agrophis sarasinorum</i> , F. Müll.	+	...	...	...	
**60. <i>Rhabdophidium forstenii</i> , D. & B.	+	...	...	...	
*61. <i>Calamaria acutirostris</i> , Blgr. ...	...	...	+	...	
*62. " <i>nuchalis</i> , Blgr. ....	...	...	+	...	
*63. " <i>muelleri</i> , Blgr. ....	...	+	+	...	
*64. " <i>curta</i> , Blgr. ....	...	...	+	...	
*65. " <i>gracilis</i> , Blgr. ....	...	...	+	...	
*66. " <i>collaris</i> , Blgr.....	+	...	...	...	
67. " <i>virgulata</i> , Boie .....	+	+	...	...	Java, Sumatra.
68. " <i>linnæi</i> , Boie .....	+	...	...	...	Java.
69. <i>Hypsirhina plumbea</i> , Boie .....	+	...	+	+	W.
*70. " <i>matannensis</i> , Blgr..	...	...	...	+	
71. " <i>enhydri</i> , Schn. ...	...	...	+	...	W.
72. <i>Cerberus rhynchops</i> , Schn. ....	+	...	+	+	W. E.
73. <i>Dipsadomorphus multimaculatus</i> , Boie	+	...	...	...	W.
74. " <i>dendrophilus</i> , Boie .....	+	...	+	+	W.
75. " <i>irregularis</i> , Merr. ....	+	...	+	+	E.
*76. " <i>flavescens</i> , D. & B. ....	...	...	+	...	
77. <i>Psammodynastes pulverulentus</i> , Boie .....	+	+	...	...	W. E.
78. <i>Dryophis prasinus</i> , Boie .....	+	...	+	+	W. E.
79. <i>Chrysopelea ornata</i> , Shaw .....	+	+	...	...	W.
80. <i>Bungarus candidus</i> , L. ....	+	...	...	...	W.
81. <i>Naia bungarus</i> , Schl. ....	+	...	...	...	W.
82. <i>Doliopsis intestinalis</i> , Laur. ...	+	...	...	...	W.
83. <i>Lachesis wagleri</i> , Boie .....	+	+	...	+	W.

## BATRACHIANS.

	A	B	C	D	E
1. <i>Oxyglossus lævis</i> , <i>Gthr.</i> .....	+	+	+	...	W.
2. <i>Rana kuhlii</i> , <i>D. &amp; B.</i> .....	+	...	...	...	W.
*3. „ <i>modesta</i> , <i>Blgr.</i> .....	+				
4. „ <i>leytensis</i> , <i>Bttgr.</i> .....	...	+	+	...	Philippines, Borneo, Sooloo.
5. „ <i>microdisca</i> , <i>Bttgr.</i> .....	+	...	...	...	Java, Mentawi.
6. „ <i>palavanensis</i> , <i>Blgr.</i> .....	+	+	+	...	Palawan, Borneo.
7. „ <i>tigrina</i> , <i>Daud.</i> .....	+	+	+	+	W.
8. „ <i>erythræa</i> , <i>Schl.</i> .....	...	...	+	...	W.
9. „ <i>varians</i> , <i>Blgr.</i> .....	+	+	...	...	Philippines, Batjan.
10. „ <i>everetti</i> , <i>Blgr.</i> .....	+	+	+	...	Philippines, Borneo.
*11. „ <i>celebensis</i> , <i>Ptrs.</i> .....	+				
*12. „ <i>macrops</i> , <i>Blgr.</i> .....	+	+			
13. <i>Rhacophorus leucomystax</i> , <i>Gravh.</i> .....	+	+	+	+	W.
*14. „ <i>edentulus</i> , <i>F. Müll.</i> .....	+	...	+		
*15. „ <i>monticola</i> , <i>Blgr.</i> .....	...	...	+		
*16. <i>Sphenophryne celebensis</i> , <i>F. Müll.</i> .....	+	+	+		
*17. „ <i>variabilis</i> , <i>Blgr.</i> .....	...	...	+		
18. <i>Callula baleata</i> , <i>S. Müll.</i> .....	+	+	+	...	W.
19. „ <i>pulchra</i> , <i>Gray</i> .....	...	...	+	...	W.
20. <i>Bufo biporcatus</i> , <i>Gravh.</i> .....	...	+	+	+	W.
*21. „ <i>celebensis</i> , <i>Gthr.</i> .....	+	...	+		

It will be noticed that the single initial W. in the last column occurs 22 times and E. only 5 times, which shows a greater agreement with the Western than with the Eastern islands of the Archipelago, as already pointed out by Peters and Doria. The agreement with Java, Borneo, and Sumatra, so far as the genera are concerned, is much greater than with the Moluccas. Special relation to the Philippines is shown by *Draco reticulatus*, *Lophura amboinensis*, *Tropidophorus grayi*, *Coluber erythrurus*, and *Dendrelaphis terrificus*. Papuan affinity is only exhibited by the Batrachian genus *Sphenophryne*, the two other species of which inhabit New Guinea. Australian affinity does not exist.

In dealing with the geographical distribution of the Lacertilia, in 1885, I submitted that the then generally accepted Wallace's line does not answer for this group of animals, and the same view has since been shown, especially by Max Weber, to apply to other groups. The present study of the herpetological fauna of Celebes clearly shows that there is no justification for Wallace's line so far as Reptiles and Batrachians are concerned.

*Key to the Identification of the Species.*

## REPTILES.

I. CROCODILES ..... 1. *Crocodilus porosus*.

## II. TORTOISES.

Digits distinct, webbed; head covered with undivided skin; carapace tricarinate in the young ..... 2. *Cyclemys amboinensis*.

Limbs club-shaped; head with shields; carapace without keels. .... 3. *Testudo forsteni*.

## III. LIZARDS.

A. Head covered with granules or small scales above.

1. No movable eyelids; pupil vertical.

a. Digits not dilated.

Ear-opening oval, slightly oblique, nearly vertical; lower surface of thighs uniformly granulate ..... 4. *Gymnodactylus jellesmæ*.

Ear-opening a horizontal cleft; male with femoral pores, female with a series of enlarged scales along the lower surface of the thighs.

5. *Gymnodactylus fumosus*.

b. Digits dilated.

α. Digital expansion with two series of lamellæ inferiorly.

Digits free, all clawed ..... 6. *Hemidactylus frenatus*.

Digits webbed, all clawed ..... 7. *Hemidactylus platyurus*.

Digits webbed at the base, inner rudimentary and clawless.

8. *Gehyra mutilata*.

Digits with a rudiment of web, inner well developed but clawless.

9. *Lepidodactylus lugubris*.

β. Digital expansion with single lamellæ inferiorly.

Rostral shield not entering the nostril; toes free. 10. *Gecko verticillatus*.

Rostral shield entering the nostril; toes with a rudiment of web.

11. *Gecko monarchus*.

2. Movable eyelids; pupil round.

a. Wing-like lateral membranes, supported by the much-prolonged spurious ribs.

α. No parietal foramen.

Hind limb reaching slightly beyond the elbow of the adpressed fore limb; a continuous series of enlarged keeled scales along each side of the posterior half of the body ..... 12. *Draco reticulatus*.

Hind limb reaching the axil or a little beyond; enlarged lateral scales absent or few and far between ..... 13. *Draco spilonotus*.

β. Parietal foramen very distinct; hind limb reaching the axil or a little beyond ..... 14. *Draco beccarii*.

b. No wings.

α. Body and tail compressed, crested.

Crest feeble on back and tail ..... 15. *Calotes cristatellus*.

Caudal crest high, supported by the neural spines. 16. *Lophura amboinensis*.

β. Body depressed; tail compressed, not crested.

More than 80 transverse rows of ventral scales from gular fold to groin.

17. *Varanus salvator*.

74 transverse rows of ventral scales from gular fold to groin.

18. *Varanus togianus*.

B. Upper surface of head with symmetrical shields.

1. Two pairs of limbs.

a. Tympanum distinct, more or less sunk; fourth toe considerably longer than third.

α. Lower eyelid scaly, without central disk; limbs overlapping when adpressed.

\* Dorsal scales pluricarinate; supranasal present.

Dorsal scales tri- or quinquecarinate; hind limb not reaching the axil.

19. *Mabuia multifasciata*.

Dorsal scales very strongly tricarinate; hind limb reaching the axil or beyond.

20. *Mabuia rudis*.

\*\* Dorsal scales smooth or unicarinate.

† 38-50 scales round the middle of the body; no enlarged scale on the heel.

‡ No supranasal; dorsal scales keeled.

Dorsal and lateral scales strongly keeled ..... 21. *Lygosoma tropidonotus*.

Dorsal scales feebly keeled, laterals smooth ..... 22. *Lygosoma nigrilabre*.

‡‡ No supranasal; dorsal scales smooth.

7 or 8 supraoculars; 44-46 scales round the middle of the body.

23. *Lygosoma sarasinorum*.

6 supraoculars; 38-40 scales round the middle of the body.

24. *Lygosoma variegatum*.

‡‡‡ Supranasal present; dorsal scales smooth.

25. *Lygosoma celebense*.

†† 20-26 scales round the middle of the body; an enlarged scale on the heel..... 26. *Lygosoma smaragdinum*.

β. Lower eyelid with a transparent disk.

\* Limbs not overlapping when adpressed; no supranasal.

22 scales round the middle of the body ..... 27. *Lygosoma inconspicuum*.

30 scales round the middle of the body ..... 28. *Lygosoma textum*.

\*\* Limbs overlapping when adpressed; supranasal present.

24-26 scales round the middle of the body ..... 29. *Lygosoma cyanurum*.

36-40 scales round the middle of the body ..... 30. *Lygosoma atrocostatum*.

\*\*\* Limbs not overlapping when adpressed; supranasal present.

31. *Lygosoma bowringii*.

b. Tympanum distinct, more or less sunk; fourth toe not longer than third.

Frontonasal usually in contact with frontal; ear-opening large.

32. *Lygosoma temminckii*.

Præfrontals forming a median suture; ear-opening small.

33. *Lygosoma parvum*.

c. Tympanum covered with scales ..... 34. *Lygosoma infralineolatum*.

d. Tympanum exposed and superficial; dorsal scales very strongly keeled and ending in a sharp point.

35. *Tropidophorus grayi*.

2. Limbs absent (♀) or hind pair rudimentary and flap-like (♂).

36. *Dibamus novæ-guinææ*.

#### IV. SNAKES.

A. Eyes under the head-shields.

Præocular in contact with the labials; 20 scales round the body.

37. *Typhlops braminus*.

Præocular separated from the labials by a small shield; 18 scales round the body ..... 38. *Typhlops ater*.

B. Eyes exposed; all the teeth solid.

1. Tail prehensile; ventral and subcaudal shields present; pupil vertical.

a. Upper surface of head with shields; anterior upper labials pitted; scales smooth.

Four upper labials pitted ..... 39. *Python reticulatus*.

Two upper labials pitted ..... 40. *Python molurus*.

- b. Upper surface of head covered with small scales; no labial pits; scales keeled ..... 41. *Enygrus carinatus*.
2. Tail not prehensile; parietal shields very small, or separated from each other by an azygous occipital shield.  
Ventral shields very small; no azygous occipital. 42. *Cylindrophis rufus*.  
Ventrols well developed; a large azygous occipital, in contact with the frontal. 43. *Xenopeltis unicolor*.
3. Tail prehensile; body compressed, covered with uniform, small, juxtaposed, rough scales; no ventral shields. 44. *Chersydrus granulatus*.
4. Tail not prehensile; parietal shields large, forming a suture.  
a. Internasal shields distinct from the præfrontals; head distinct from neck.  
a. Pupil round; scales in 15 to 21 rows, keeled; anal divided; ventrols fewer than 200.  
\* Scales in 15 rows.  
Scales strongly keeled ..... 45. *Tropidonotus sarasinorum*.  
Scales feebly keeled ..... 46. *Tropidonotus celebicus*.  
\*\* Scales in 19 rows.  
Two superposed anterior temporals; 9 upper labials. 47. *Tropid. trianguligerus*.  
A single anterior temporal; 9 upper labials..... 48. *Tropidonotus vittatus*.  
Two superposed anterior temporals; 8 upper labials. 49. *Tropidonotus subminiatus*.  
\*\*\* Scales in 21 rows ..... 50. *Tropid. chrysargoides*.
- β. Pupil vertical; scales in 17 or 19 rows.  
Scales in 17 rows; subcaudals in two rows ..... 51. *Lycodon aulicus*.  
Scales in 19 rows; subcaudals single ..... 52. *Lycodon stormi*.
- γ. Pupil round; scales in 13 rows, smooth; ventrols rounded. 53. *Zamenis dipsas*.
- δ. Pupil round; scales in 21 to 25 rows; ventrols more than 200.  
Scales in 23-25 rows..... 54. *Coluber janseni*.  
Scales in 21 rows ..... 55. *Coluber erythrurus*.
- e. Pupil round; scales in 13-15 rows; ventrols angulate laterally, less than 200.  
Scales in 15 rows, vertebrales strongly enlarged... 56. *Dendrophis pictus*.  
Scales in 13 rows, vertebrales scarcely enlarged... 57. *Dendrelaphis terrificus*.
- b. Internasal shields distinct from the præfrontals; head small, not distinct from neck; scales in 15 rows.  
a. Parietal separated from labials by temporals; a præocular. 58. *Oligodon waandersii*.  
β. Parietal in contact with labials.
- Nostril between two nasals; no præocular; præfrontal entering the eye. 59. *Agrophis sarasinorum*.
- Nasal single; a præocular ..... 60. *Rhabdophidium forsteni*.
- c. Internasals fused with the præfrontals; head small, not distinct from neck; scales in 13 rows.  
a. Five upper labials, third and fourth entering the eye.  
\* Anterior chin-shields in contact with the symphysial.  
† Ventrols 130-187.  
‡ Frontal three or four times as broad as the supraocular.
- Snout pointed; rostral as deep as broad ..... 61. *Calamaria acutirostris*.  
Snout rounded; rostral broader than deep ..... 62. *Calamaria nuchalis*.

‡‡ Frontal not more than twice as broad as the supraocular.

Upper portion of rostral as long as or a little longer than its distance from the frontal ..... 63. *Calamaria muelleri*.

Upper portion of rostral hardly half as long as its distance from the frontal. .... 64. *Calamaria curta*.

†† Ventrals 211-235..... 65. *Calamaria gracilis*.

\*\* First lower labial in contact with its fellow behind the symphysial.

Ventrals 232-265 ..... 66. *Calamaria collaris*.

Ventrals 151-199 ..... 67. *Calamaria virgulata*.

β. Four upper labials, second and third entering the eye; ventrals 135-163 ..... 68. *Calamaria linnæi*.

#### C. Eyes exposed; posterior maxillary teeth grooved.

1. Nostrils superior; nasal shield semidivided and in contact with its fellow behind the rostral.

a. Scales smooth.

Scales in 19 rows; a single internasal (rarely two) 69. *Hypsirhina plumbea*.

Scales in 21 rows; two internasals..... 70. *Hypsirhina matannensis*.

Scales in 21 or 23 rows; a single internasal ..... 71. *Hypsirhina enhydris*.

b. Scales strongly keeled, in 23 or 25 rows.

72. *Cerberus rhynchops*.

2. Nostrils lateral; nasals separated by the internasals.

a. Pupil vertical; scales smooth.

a. Vertebral scales enlarged.

\* Two postoculars.

Scales in 17 or 19 rows..... 73. *Dipsadomorphus multi-maculatus*.

Scales in 21 or 23 rows; posterior chin-shields not larger than the anterior.

74. *Dipsadomorphus dendrophilus*.

Scales in 21 or 23 rows; posterior chin-shields larger than the anterior.

75. *Dipsadomorphus irregularis*.

\*\* Three postoculars; scales in 19 rows.

76. *Dipsadomorphus flavescens*.

β. Vertebral scales not enlarged ..... 77. *Psammodynastes pulverulentus*.

b. Pupil horizontal; scales smooth..... 78. *Dryophis prasinus*.

c. Pupil round; scales keeled ..... 79. *Chrysopelea ornata*.

#### D. Eyes exposed; anterior poison-fangs.

1. Upper surface of head covered with shields.

a. Vertebral scales enlarged ..... 80. *Bungarus candidus*.

b. Vertebral scales not enlarged.

Scales in 15 rows on the body; 7 upper labials.. 81. *Naia bungarus*.

Scales in 13 rows; 6 upper labials..... 82. *Doliophis intestinalis*.

2. Upper surface of head covered with small keeled scales.

83. *Lachesis wagleri*.

## BATRACHIANS.

## I. Upper jaw toothed.

A. Tongue entire, rounded behind..... 1. *Oxyglossus laevis*.

B. Tongue bifid behind.

1. Fingers quite free; belly smooth or indistinctly areolate.

a. Glandular dorso-lateral fold, if present, independent from the supratemporal fold; tips of fingers not or but feebly dilated.

a. Tips of toes dilated into small but very distinct disks.

\* Tympanum hidden ..... 2. *Rana kuhlii*.

\*\* Tympanum distinct.

† No dorso-lateral fold.

Tibio-tarsal articulation reaching the tip of the snout, or between the eye and the tip of the snout; toes entirely or nearly entirely webbed.

3. *Rana modesta*.

Tibio-tarsal articulation reaching the nostril, the tip of the snout, or a little beyond the tip of the snout; toes two-thirds or three-fourths webbed; the last three phalanges of the fourth toe extending beyond the fifth toe.

4. *Rana leytensis*.

Tibio-tarsal articulation reaching far beyond the tip of the snout; toes two-thirds webbed ..... 5. *Rana microdisca*.

†† A narrow dorso-lateral fold. 6. *Rana palawanensis*.

β. Tips of toes not dilated ..... 7. *Rana tigrina*.

b. Glandular dorso-lateral fold well developed, continuous with the supratemporal fold; tips of fingers and toes dilated.

a. Sides smooth or with small warts.

First finger extending as far as second; digital disks very small; lateral fold broad ..... 8. *Rana erythræa*.

First finger extending beyond second; digital disks small; lateral fold narrow. 9. *Rana varians*.

First finger not extending quite so far as second; disks of fingers large; lateral fold narrow ..... 10. *Rana everetti*.

β. Sides with large glands; first finger extending as far as second; lateral fold broad ..... 11. *Rana celebensis*.

c. Glandular dorso-lateral fold distinct only anteriorly; tips of fingers and toes strongly dilated ... 12. *Rana macrops*.

2. Fingers with at least a rudiment of web, the tips strongly dilated; belly granulate.

Fingers with a very slight rudiment of web; frontal region rugose.

13. *Rhacophorus leucomystax*.

Outer fingers half-webbed; tibio-tarsal articulation reaching the tip of the snout or beyond ..... 14. *Rhacophorus edentulus*.

Outer fingers two-thirds webbed; tibio-tarsal articulation not reaching the tip of the snout ..... 15. *Rhacophorus monticola*.

## II. Jaws toothless.

A. Tips of fingers strongly dilated.

1. No metatarsal tubercles.

Tympanum indistinct, not more than one-third the diameter of the eye; tibio-tarsal articulation reaching the eye or a little beyond.

16. *Sphenophryne celebensis*.

Tympanum feebly distinct, two-thirds to three-fourths the diameter of the eye; tibio-tarsal articulation reaching the shoulder or the tympanum.

17. *Sphenophryne variabilis*.

2. Two metatarsal tubercles, inner large.

Terminal expansions of fingers more than half the diameter of the eye.

18. *Callula baleata*.

Terminal expansions of fingers not half the diameter of the eye.

19. *Callula pulchra*.

B. Tips of fingers not dilated; a large (parotoid) gland behind the eye.

Supraorbital bony ridges produced on the occiput. 20. *Bufo biporcatus*.

Supraorbital bony ridges not produced on the occiput; a thick orbito-tympanic bony ridge ..... 21. *Bufo celebensis*.

## REPTILIA.

### EMYDOSAURIA.

#### CROCODILIDÆ.

1. *CROCODILUS POROSUS*, Schn.

Kema. One skull.

Gorontalo, Macassar (*Meyer*). Pampanna, S. Celebes (*Weber*).

#### CHELONIA.

#### TESTUDINIDÆ.

2. *CYCLEMYS AMBOINENSIS*, Daud.

One specimen: Kema. Four specimens: Macassar.

Manado, Macassar (*Meyer*). Macassar (*Beccari*). Macassar, Panjana, S. Celebes (*Weber*).

3. *TESTUDO FORSTENII*, Schleg. & Müll.

One adult and one young: Buol.

Mt. Boliohoeto, near Salamatta, N. Celebes (*Meyer*).

The type specimen is from Gilolo.

Shell of young with strongly serrated anterior and posterior borders, yellowish above and below, with small blackish-brown spots on the dorsal and marginal shields, and a large blotch on each abdominal shield.

## LACERTILIA.

#### GECKONIDÆ.

4. *GYMNODACTYLUS JELLESME*, sp. n. (Plate VII. fig. 1.)

Head large, depressed, oviform; snout longer than the diameter of the orbit, which equals its distance from the ear-opening; forehead concave; ear-opening large, oval, slightly oblique, nearly vertical, measuring about half the diameter of the eye. Limbs rather elongate; digits strong, slightly depressed at the base, strongly compressed in the remaining portion; the basal phalanx with well-developed transverse plates inferiorly. Head granular, the granules largest on the snout, with very small tubercles on the occipital and temporal regions; rostral nearly twice as broad as deep, with **M**-shaped upper border, with or without median cleft

above; nostril bordered by the rostral, the first labial, and three or four scales; 10 to 12 upper and 10 or 11 lower labials; symphysial triangular, broader than long; two pairs of chin-shields, median largest and forming a suture behind the point of the symphysial; gular granules minute. Body and limbs covered above with small granules intermixed with small roundish, feebly keeled tubercles; lateral abdominal fold very indistinct; ventral scales very small, cycloid, imbricate, smooth, 40 to 45 across the middle of the belly between the lateral folds. No præanal or femoral pores. Tail cylindrical, tapering, covered with uniform small flat scales; a few enlarged, nail-shaped tubercles form transverse series on the upper basal part of the tail. Brown above, with small darker spots and V- or M-shaped cross-bands on the back; a dark temporal streak; tail with dark annuli; lower parts brownish.

	mm.
Total length.....	115
Head .....	18
Width of head.....	11.5
Body .....	45
Fore limb.....	20
Hind limb .....	30
Tail (reproduced).....	52

This species differs from *G. marmoratus*, to which the first specimens received from Celebes were referred by Peters and Doria, myself and F. Müller, in the larger ear-opening, the smaller ventral scales, and the total absence of præanal or femoral pores, the lower surface of the thighs being in both sexes covered with uniform granules without any enlarged scales.

Seven specimens: Masarang, Buol, Wankahulu Valley, Kema, and Central Celebes. Obtained in North Celebes by Dr. Meyer and in South-eastern Celebes by Beccari.

It was the intention of my lamented friend Dr. Müller to name this species in honour of Mr. E. J. Jellesma, Resident of Manado, to whom the Drs. Sarasin are indebted for much assistance during their expedition from Manado to Gorontalo and their stay in the Minahassa.

5. *GYMNODACTYLUS FUMOSUS*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 833, fig. (Plate VII. fig. 2.)

Head large, depressed, oviform; snout longer than the diameter of the orbit, which nearly equals its distance from the ear-opening; forehead concave; ear-opening a horizontal cleft, measuring one half to two-thirds the diameter of the eye. Limbs rather elongate; digits strong, slightly depressed at the base, strongly compressed in the remaining portion; the basal phalanx with well-developed transverse plates inferiorly. Head granular, the granules slightly larger on the snout, with few very small tubercles on the temple; rostral nearly twice as broad as deep, subquadrangular, with median cleft above, its upper border in contact with two or three small

shields; nostril bordered by the rostral and three scales, sometimes also by the first upper labial; 9 or 10 upper and 8 or 9 lower labials; symphysial triangular, broader than long; a pair of large chin-shields forming a suture behind the point of the symphysial, with one or two much smaller shields on each side. Body and limbs covered above with small granules and few, widely scattered, roundish, flat and smooth or faintly keeled, small tubercles; a well-marked latero-ventral fold; ventral scales small, cycloid, imbricate, smooth, 35 to 40 across the middle of the belly between the lateral folds. Male with a pubic groove and a long continuous series of 42 præano-femoral pores, pierced in enlarged scales which are traceable in the female. Tail cylindrical, tapering, covered with small flat scales which are larger on the lower surface; a few enlarged, nail-shaped scales on the upper surface. Grey, grey-brown, or pinkish brown above, with blackish spots which may form irregular cross-bands on the body; a more or less distinct dark streak from the eye to the shoulder; lower parts whitish or brownish, uniform or with dark dots.

	mm.
Total length .....	127
Head .....	19
Width of head.....	13
Body .....	42
Fore limb.....	22
Hind limb .....	28
Tail .....	66

Four specimens: Bone Mts. ("Boelawa," Müller, *errore*), Rurukan, Masarang.

#### 6. HEMIDACTYLUS FRENATUS, D. & B.

Numerous specimens: Coast between Paguat and Gorontalo, Mapane (Tomini Gulf), Wangkahulu Valley (Paguat), Buol, Kema, Enrekang, Macassar.

Manado, Minahassa (*Meyer*). Macassar, Kandari (*Beccari*). Macassar, Pare-Pare, Luhu (*Weber*).

#### 7. HEMIDACTYLUS PLATYURUS, Schn.

Several specimens: Buol, Pare-Pare, Macassar.

Manado, Macassar (*Meyer*). Kandari (*Beccari*). Pare-Pare, Tempe (*Weber*).

#### 8. GEHYRA MUTILATA, Wiegman.

Several specimens: Buol, Kema, coast between Paguat and Gorontalo, C. Celebes, Macassar.

Manado, Minahassa (*Meyer*). Macassar (*Weber*).

#### 9. LEPIDODACTYLUS LUGUBRIS, D. & B.

Four specimens: Tomohon, Rurukan.

Kandari (*Beccari*).

10. *GECKO VERTICILLATUS*, L<sup>aur</sup>.

One specimen : Kema. Four specimens : Macassar.

Manado, Minahassa, Macassar (*Meyer*). Macassar (*Beccari*). Macassar (*Weber*).

The specimen from Kema has been erroneously referred to *G. stentor* by Dr. Müller.

11. *GECKO MONARCHUS*, Schleg.

Two specimens : Macassar.

Manado, Minahassa (*Meyer*). Kandari (*Beccari*).

## AGAMIDÆ.

12. *DRACO RETICULATUS*, Gthr.

One female specimen : C. Celebes, Luhu, 3300 ft.

13. *DRACO SPILONOTUS*, Gthr. (Plate VIII.)

Numerous specimens : Kema, Tomohon.

Manado (*Meyer*, *Bruijn*).

Head small ; snout as long as or a little shorter than the orbit ; nostril lateral, directed outwards ; tympanum sometimes scaly, usually naked ; no parietal foramen (pineal eye). Upper head-scales very unequal, keeled ; 4 to 6 series of very small scales along the interorbital region between the enlarged, strongly keeled supra-oculars ; nasal shield separated from the rostral and from the first labial by one, rarely by two, series of scales ; 6 to 8 upper and as many lower labials. The male's gular appendage one-half to two-thirds the length of the head. A very slight nuchal crest. Dorsal scales subequal, smooth or faintly keeled, slightly larger than the ventrals, which are strongly keeled ; no dorso-lateral series of enlarged scales, although two or three such scales may be exceptionally present. The fore limb stretched forwards extends much beyond the tip of the snout ; the hind limb reaches the axil or the shoulder.

The late Dr. Müller has drawn attention to the differences in colour which exist between specimens of this species. These differences are, however, much greater still, for the female specimens referred by Peters and Doria, Müller, and others to *D. lineatus* belong to this species. Head, body, and limbs of a bluish grey, marbled with dark grey or brown ; a black nuchal spot ; sides of neck usually reticulated with dark bluish grey ; gular appendage of male lemon-yellow ; throat of females speckled with black ; wing-membranes of males lemon-yellow or deep orange, speckled all over with black, or with small black spots on the basal portion, unspotted below ; wing-membranes of females orange with black spots forming more or less regular cross-bands, or nearly entirely black with white longitudinal lines and mere traces of orange cross-bars ; their lower surface immaculate or with a few small black spots.

	♂.	♀.
	mm.	mm.
Total length .....	182	242
Head .....	13	16
Width of head .....	8.5	11
Body .....	49	60
Fore limb .....	29	32
Hind limb .....	35	41
Tail .....	120	166

#### 14. DRACO BECCARII, Peters & Doria. (Plate IX.)

Numerous specimens: Luhu, South Coast near Bonthain, Macassar.

Kandari, S.E. Celebes (*Beccari*). S. Celebes (*Everett*).

Head small; snout as long as the orbit; nostrils lateral, directed outwards; tympanum usually naked, rarely scaly; parietal (pineal) foramen distinct. Upper head-scales very unequal, keeled; 2 to 4 series of small scales along the interorbital region between the enlarged, strongly keeled supraoculars; nasal shield separated from the rostral and from the first labial by two, rarely by one, series of scales; 8 to 10 upper and as many lower labials. The male's gular appendage two-thirds to three-fourths the length of the head. A very slight nuchal crest. Dorsal scales subequal, more or less distinctly keeled, rarely nearly smooth, a little larger than the ventrals, which are strongly keeled; no lateral series of enlarged scales. The fore limb stretched forward extends much beyond the tip of the snout; the hind limb reaches the axil or the shoulder. Pale greyish above, with brown marblings or wavy cross-bars; black nuchal spot small or absent; female with black lines on the head, one of which passes through the eye and forms an angle on the occiput; sides of head, in the male, reticulated with dark grey; gular appendage of male bright orange; throat of female with black dots; wing-membranes of male orange, rusty brown or grey at the base, blackish towards the outer border, with two or more large black spots above and usually one or two below the anterior border; wing-membranes of female orange or yellow, spotted and dotted with black, with two to four black cross-bands on the outer portion and one or two black spots below, near the anterior border.

	♂.	♀.
	mm.	mm.
Total length .....	205	217
Head .....	15	15
Width of head .....	9	10
Body .....	55	60
Fore limb .....	33	34
Hind limb .....	40	42
Tail .....	135	142

The specimens that have been referred to *D. volans* and *D. maculatus* will, on proper examination, probably turn out to belong to *D. beccarii*.

15. *CALOTES CRISTATELLUS*, Kuhl.

Four specimens: Tomohon. Three specimens: Kema. Two specimens: Kottabangon.

Manado (*Meyer*). Manado, Kandari (*Bruijn, Beccari*). Bantimurong, S. Celebes (*Weber*).

Dr. Müller has expressed his doubts as to the specific distinctness of *C. celebensis*. After examining the material collected by the Drs. Sarasin, I agree with him, and no longer think that form can be regarded as more than a variety of *C. cristatellus*, with which it is connected by the form named *intermedia* by Peters and Doria. The specimens recorded above have 57 to 65 scales round the middle of the body, and the tympanum measures two-fifths to one-half the diameter of the orbit.

*Calotes jubatus* is represented in the British Museum by a specimen labelled "Manado: Meyer." As Dr. Meyer does not indicate this species in the list of Reptiles collected by him, I suppose some mistake has taken place, and I therefore leave out this *Calotes* from the Catalogue of Celebes Reptiles.

16. *LOPHURA AMBOINENSIS*, Schloss.

Paloppo (Luhu), C. Celebes. A single specimen.

Posso, C. Celebes; Togian Ids. (*Meyer*). Tempe and Pampanna, S. Celebes (*Weber*).

The single specimen, an adult male, agrees in the coloration with Peters's *L. celebensis*, but the enlarged scales on the neck and body are nothing like the size of the tympanum. The largest scale on the side of the body measures 5 millim., the tympanum 9. Seven femoral pores on one side, eleven on the other.

## VARANIDÆ.

17. *VARANUS SALVATOR*, Laur.

Two specimens: Kema.

Manado, Gorontalo, Posso (*Meyer*). Manado, Kandari (*Bruijn, Beccari*).

18. *VARANUS TOGIANUS*, Peters.

Timotto, one of the Togian Ids., in the Bay of Tomini (*Meyer*). Macassar and Tello, near Macassar (*Weber*).

## SCINCIDÆ.

19. *MABUIA MULTIFASCIATA*, Kuhl.

Numerous specimens: Kema, Tomohon, Kingdom of Luhu, Loka.

Manado, Minahassa, Gorontalo (*Meyer*). Macassar, Kandari, Manado (*Beccari, Bruijn*). Macassar (*Weber*).

20. *MABUIA RUDIS*, Blgr.

One specimen: Kema. One specimen: Tomohon. Two specimens: Macassar.

Luhu (*Weber*).

21. *LYGOSOMA TROPIDONOTUS*, sp. n. (Plate X. fig. 1.)

Section *Hinulia*. Habit lacertiform; the distance between the end of the snout and the fore limb contained once and one-fifth in the distance between axilla and groin. Snout short, obtuse; supraocular region much swollen. Lower eyelid scaly. Nostril pierced in a single nasal; no supranasal; two superposed loreal shields behind the nasal, separated from the lower præocular by a third loreal; rostral forming a straight suture with the frontonasal, which is nearly twice as broad as long and forms a narrow suture with the frontal; latter shield twice as long as broad, much narrowed behind, in contact with the three anterior supraoculars; six supraoculars, first nearly twice as long as second; ten supraciliaries; frontoparietals and interparietal distinct, subequal in size; parietals forming a short suture behind the interparietal; nuchal present on one side; fourth, fifth, and sixth upper labials below the eye. Ear-opening large, oval, a little smaller than the eye-opening; no auricular lobules. 42 scales round the middle of the body; lateral scales smallest; dorsal and lateral scales strongly keeled. A pair of enlarged præanals. The hind limb reaches a little beyond the shoulder. Digits elongate, compressed; subdigital lamellæ unicarinate, 27 under the fourth toe. Blackish brown above, with irregular transverse series of small, round, yellowish-white spots; sides of head and neck with yellowish-white vertical bars; limbs and tail with light cross-bars; lower parts brownish white.

	mm.
Total length (tail in process of regeneration) ..	118
Head .....	14
Width of head .....	10
Body .....	47
Fore limb .....	23
Hind limb .....	36

Kingdom of Luhu, Central Celebes, 1200 feet. A single specimen.

22. *LYGOSOMA NIGRILABRE*, Gthr.

*Lygosoma (Hinulia) amabile*, F. Müller, Verh. nat. Ges. Basel, x. 1894, p. 833.

Habit lacertiform; the distance between the end of the snout and the fore limb contained once and one-sixth to once and one-third in the distance between axilla and groin. Snout short, obtuse; supraocular region much swollen. Lower eyelid scaly. Nostril pierced in a single nasal; no supranasal; two superposed loreal shields behind the nasal, the lower usually in contact with the lower præocular; rostral forming a straight suture with the frontonasal, which is twice as broad as long; præfrontals usually forming a median suture, rarely meeting by their inner angles; frontal as long as or a little shorter than frontoparietals and interparietal together, more or less narrowed posteriorly, in contact with the three anterior

supraoculars; six supraoculars, first much longer than second; 11 to 13 supraciliaries; frontoparietals and interparietal distinct. subequal, or former longer than latter; parietals forming a short suture behind the interparietal; nuchals absent or one pair; fourth and fifth, fifth and sixth, or fourth, fifth, and sixth upper labials below the eye. Ear-opening large, oval, a little smaller than the eye-opening; no auricular lobules. 40 to 50 scales round the middle of the body; dorsals largest and feebly keeled, laterals smallest. A pair of enlarged præanals. The hind limb reaches the axilla, the shoulder, or a little beyond the latter. Digits elongate, compressed; subdigital lamellæ unicarinate, 20 to 27 under the fourth toe. Tail once and a half to once and three-fourths the length of head and body. Brown above, with very variable markings. A more or less distinct dorso-lateral series of yellowish spots; back sometimes with blackish cross-bars; a black lateral streak on the head and neck, passing through the eye, often extending along the side of the body, where it may be edged above with a yellowish streak, replacing the dorso-lateral series of yellowish spots; a large black spot, or ocellus with light centre, sometimes present above the shoulder; the flanks may be dotted with whitish; upper lip yellowish white, uniform or with a black streak, or with blackish spots or vertical bars; a black streak often present along each side of the base of the tail. Lower parts yellowish white, throat sometimes bluish in males; throat and breast sometimes much spotted with black.

	mm.
Total length .....	235
Head .....	21
Width of head .....	15
Body .....	74
Fore limb .....	35
Hind limb .....	52
Tail.....	140

The type specimen was obtained at Manado by Dr. A. B. Meyer. The Drs. Sarasin's specimens, 24 in number, are from the Sudara Volcano, Tomohon, Matinang Mts. (2600–3400 ft.), Kingdom of Luhu (1000–1600 ft.), L. Posso and Mapane on the Tomini Gulf. Specimens were also obtained in South Celebes by Mr. Everett.

As the description shows, this species varies remarkably in scaling and in coloration. The Drs. Sarasin's specimens have from 40 to 48 scales round the body, and from 20 to 27 lamellæ under the fourth toe. One specimen with 40 scales agrees in coloration with the type, and others also show the absence of correlation between the two characters. I am therefore unable to maintain as a distinct species Müller's *L. amabile*, which was founded on specimens with 40 scales, 21 lamellæ under the fourth toe, and a large black spot above the shoulder.

### 23. *LYGOSOMA SARASINORUM*, sp. n. (Plate X. fig. 2.)

Section *Hinulia*. Habit lacertiform; the distance between the

end of the snout and the fore limb contained once and one-sixth to once and one-third in the distance between axilla and groin. Snout short, obtuse; supraocular region much swollen. Lower eyelid scaly. Nostril pierced in a single nasal; no supranasal; two superposed loreals behind the nasal, the lower in contact with the lower præocular; rostral forming a straight or slightly curved suture with the frontonasal, which is twice as broad as long; præfrontals forming a median suture; frontal as long as frontoparietals and interparietal together, much narrowed behind, in contact with the three or four anterior supraoculars; seven or eight supraoculars, first much longer than second; twelve to fifteen supraciliaries; frontoparietals and interparietal distinct, subequal in size; parietals forming a short suture behind the interparietal; no nuchals; fifth and sixth, or fourth, fifth, and sixth upper labials below the eye. Ear-opening large, oval, a little smaller than the eye-opening; no auricular lobules. 44 or 46 smooth scales round the middle of the body, laterals smallest. A pair of enlarged præanals. The hind limb reaches the shoulder or a little beyond. Digits elongate, compressed; subdigital lamellæ unicarinate, 22 to 24 under the fourth toe. Tail about twice as long as head and body. Brown above, with small darker spots and more or less distinct, wavy, yellowish-brown cross-bars; a more or less distinct dorso-lateral series of small yellowish spots; limbs with dark brown or blackish vertical bars; a black stripe on each side of the pelvis and the base of the tail, bordered above by a yellowish streak or a series of yellowish spots; lower parts yellowish white.

	mm.
Total length .....	236
Head .....	18
Width of head .....	12
Body .....	58
Fore limb .....	24
Hind limb .....	46
Tail .....	160

Six specimens were obtained in Central Celebes, in the low-land and in the hills up to an altitude of 650 feet.

#### 24. *LYGOSOMA VARIEGATUM*, Ptrs.

Numerous specimens: Loka, Bonthain Peak, 3800 feet.

Bantimurong, near Maros, Loka (*Weber*). Indrulaman (*Everett*).

The Celebes specimens have 38 or 40 scales round the middle of the body, and 20-24 lamellæ under the fourth toe. The dorso-lateral series of light spots are often confluent and form a pair of yellowish streaks along the neck and body; the throat of the males is often blue or bluish.

Peters has recorded *Lygosoma fasciatum*, Gray, a Philippine species of the Section *Hinulia*, as having been obtained by Dr. A. B. Meyer at Gorontalo. Not having the means of verifying the determination, I prefer to leave the species out of this list.

25. *LYGOSOMA CELEBENSE*, F. Müll. (Plate XI. fig. 1.)

*Lygosoma (Otosaurus) celebense*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 836, fig.

Section *Otosaurus*. Habit lacertiform; the distance between the end of the snout and the fore limb contained once and one-fifth to once and a half in the distance between axilla and groin. Snout short, obtuse. Lower eyelid scaly. Nostril pierced in a single nasal; two pairs of superposed loreals; a large supranasal, forming a suture with its fellow, or separated from it by the fronto-nasal, which is small, situated between the internasals and the præfrontals, and in contact with the frontal; latter as long as or a little shorter than frontoparietals and interparietal together, in contact with the three anterior supraoculars; six supraoculars, first much longer than second; 11 to 13 supraciliaries; frontoparietals and interparietal distinct, subequal; parietals forming a short suture behind the interparietal; no nuchals; fourth and fifth upper labials below the eye. Ear-opening large, oval, smaller than the eye-opening; no auricular lobules. 40 to 44 smooth scales round the middle of the body, laterals smallest. A pair of enlarged præanals. The hind limb reaches the wrist or the elbow of the adpressed fore limb. Digits elongate, compressed; subdigital lamellæ unicarinate, 17 to 20 under the fourth toe. Tail once and one-third to once and three-fifths the length of head and body. Pale brown or reddish above, spotted or tessellated with dark brown, or dark brown with yellowish-brown spots or irregular cross-bars; an interrupted blackish dorso-lateral streak may be present; lower parts whitish, uniform or throat speckled with black; throat sometimes bluish.

	mm.
Total length .....	144
Head .....	13
Width of head .....	8
Body .....	43
Fore limb .....	17
Hind limb .....	25
Tail.....	88

Seven specimens: Mahawu Volcano, near Tomohon; Masarang Volcano; Upper Bone Valley.

26. *LYGOSOMA SMARAGDINUM*, Less.

*L. acutirostre*, Oudemans, in Semon, Zool. Forsch. p. 141, fig. (1894).

10 specimens: Buol, Mapane (Tomini Gulf), Pare-Pare, Macassar.

Minahassa, Macassar (*Meyer*). Macassar (*Beccari*, *Bruijn*).

The specimens vary in scaling and in coloration. Some are of the usual emerald-green colour, without or with small black spots; others olive or pale brown, with small black spots or with two dorsal series of very large black blotches. Eight have six upper

labials anterior to the suboculars, two have seven; in one the interparietal separates the parietals; and two (one green, one brown) have 20 scales round the body, the others 22. The number of scales round the body thus varies from 20 to 26 in this species; and Prof. Weber was therefore well advised in referring to it his specimen from Saleyer with 20 scales, seven anterior upper labials, and the parietals completely separated by the interparietal—specimen which afterwards became the type of Oudemans's *L. acutirostre*.

27. *LYGOSOMA INCONSPICUUM*, F. Müll. (Plate XI. fig. 2.)

*Lygosoma (Leiolepisma) inconspicuum*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 837.

Section *Leiolepisma*. Body rather elongate; the distance between the end of the snout and the fore limb contained once and three-fifths in the distance between axilla and groin. Snout pointed. Lower eyelid with an undivided transparent disk. Nostril pierced in a single nasal; no supranasal; frontonasal broader than long, broadly in contact with the rostral and with the frontal; latter little longer than the frontoparietal, and in contact with the two anterior supraoculars; four supraoculars, first and fourth longest; eight supraciliaries; frontoparietal single, longer than the interparietal; parietals forming a suture behind the interparietal; three pairs of nuchals; fifth upper labial below the centre of the eye. Ear-opening oval; smaller than the eye-opening; no auricular lobules. 22 smooth scales round the middle of the body; dorsals largest, especially the two median series. A pair of enlarged præ-anals. The adpressed limbs fail to meet. Digits subcylindrical; subdigital lamellæ smooth, 18 under the fourth toe. Grey above; a dark brown lateral stripe along the head and body, narrow and faint on the head; a few dark brown spots on the occiput and nape, one pair on the parietal shields and another on the nuchals; lower parts white, chin grey.

	mm.
Total length.....	106
Head .....	10
Width of head .....	6
Body .....	40
Fore limb.....	11
Hind limb .....	15
Tail (reproduced) .....	56

A single specimen: Bone Mts., 3900 feet.

28. *LYGOSOMA TEXTUM*, F. Müll. (Plate XI. fig. 3.)

*Lygosoma (Leiolepisma) textum*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 838.

Section *Leiolepisma*. Body rather elongate, the distance between the end of the snout and the fore limb contained once and one-third to once and two-thirds in the distance between axilla and

groin. Snout short, pointed. Lower eyelid with an undivided transparent disk. Nostril pierced in a single nasal; no supranasal; frontonasal nearly twice as broad as long, forming a broad suture with the rostral; præfrontals forming a median suture; frontal nearly as long as frontoparietals and interparietal together, in contact with the first and second supraoculars; five supraoculars, first longest; eight or nine supraciliaries; frontoparietals and interparietal distinct, subequal; parietals forming a suture behind the interparietal; no enlarged nuchals; fourth and fifth upper labials below the eye. Ear-opening oval, smaller than the eye-opening; no auricular lobules. 30 or 32 smooth scales round the middle of the body, laterals smallest. A pair of enlarged præanals. The adpressed limbs fail to meet. Digits subcylindrical; subdigital lamellæ smooth, 13 to 15 under the fourth toe. Reddish brown above, freckled with dark brown, or dark brown with light dots or small spots; a more or less distinct blackish lateral stripe; lower parts yellowish white, throat and sides more or less speckled with dark brown.

	mm.
Total length.....	95
Head .....	9
Width of head .....	5
Body .....	33
Fore limb.....	10
Hind limb .....	13
Tail (reproduced) .....	53

The type specimen was obtained on the summit of the Sudara Volcano (4450 feet); three specimens were further obtained in the Masarang Range.

#### 29. *LYGOSOMA CYANURUM*, Less.

Several specimens: Kema, Paloppo, Posso.

Minahassa, Gorontalo, Tomini Bay (*Meyer*). Kandari (*Beccari*). Luhu (*Weber*).

The specimen from Kandari, S.E. Celebes, referred to *L. baudinii* by Peters and Doria, and which has been kindly sent to me for inspection by Dr. Gestro, proves to belong to this species.

#### 30. *LYGOSOMA ABROCOSTATUM*, Less.

Several specimens: Buol (N. Celebes), Paloppo (C. Celebes), and south coast of N. Celebes, near Paguat and Malibagu.

Gorontalo (*Meyer*). Kandari (*Beccari*).

#### 31. *LYGOSOMA BOWRINGI*, Gray.

This species was known from Hong Kong, Burma, Singapore, and Borneo (*L. whiteheadi*, Mocquard). Two specimens were obtained at Buol by the Drs. Sarasin. One has 28 scales round the middle of the body, the other 26.

32. *LYGOSOMA TEMMINCKI*, D. & B.

This species appears to be common in the mountains of Java; it has been found at Padang, Sumatra, by Prof. M. Weber; and we are now able to add Celebes to its habitat, three specimens having been brought from the Masarang by the Drs. Sarasin.

33. *LYGOSOMA PARVUM*, sp. n. (Plate XI. fig. 4.)

Section *Homolepida*. Body much elongate, limbs weak; the distance between the end of the snout and the fore limb is contained once and two-thirds in the distance between axilla and groin. Snout short, obtuse. Lower eyelid scaly. Nostril pierced in the nasal; no supranasal; frontonasal twice as broad as long, forming a broad suture with the frontal; præfrontals forming a median suture; frontal nearly as long as frontoparietals and interparietal together, in contact with the first and second supraoculars; four supraoculars; eight supraciliaries; frontoparietals and interparietal distinct, latter a little smaller than the former; parietals forming a suture behind the interparietal; no enlarged nuchals; third to fifth upper labials below the eye, from which they are separated by a series of scales. Ear-opening roundish, much smaller than the eye-opening; no auricular lobules. 30 smooth scales round the middle of the body, ventrals largest. A pair of slightly enlarged præanals. The length of the hind limb equals the distance between the centre of the eye and the fore limb; fourth toe not longer than third, with 10 smooth lamellæ inferiorly. Tail little longer than head and body, gradually tapering to a fine point. Dark brown above, with yellowish-brown dots on the sides; pale brown inferiorly.

	mm.
Total length.....	78
Head .....	8
Width of head .....	5
Body .....	28
Fore limb .....	7
Hind limb .....	10
Tail .....	42

A single specimen from Luhu, Central Celebes, between 1000 and 1600 feet.

This species is closely allied to *L. temminckii*, but distinguished by the much smaller ear-opening and the separation of the frontonasal from the frontal. The latter character is, however, not absolutely distinctive, since out of about one hundred Javan specimens of *L. temminckii* I have found two in which the præfrontals form a short median suture.

34. *LYGOSOMA INFRALINEOLATUM*, Gthr.

Habit lacertiform; the distance between the end of the snout and the fore limb contained once and two-fifths to once and three-fourths in the distance between axilla and groin. Snout

moderately long, pointed. Lower eyelid with an undivided transparent disk. Nostril pierced in the centre of the nasal; no supranasal; frontonasal broader than long, forming a suture with the rostral and with the frontal; præfrontals small; frontal a little longer than the frontoparietal, in contact with the first and second supraoculars; four supraoculars, first and fourth longest; seven to nine supraciliaries; frontoparietal single; interparietal distinct; parietals forming a suture behind the interparietal; two or three pairs of nuchals; fourth and fifth or fifth and sixth upper labials largest and below the eye. Ear concealed under the scales, but indicated by a depression. 22 smooth scales round the middle of the body, those of the two vertebral series much broader than the others. A pair of enlarged præanals. The adpressed limbs fail to meet, meet, or slightly overlap. Digits moderately long, strongly compressed distally; subdigital lamellæ smooth, 18 to 25 under the fourth toe. Tail once and a half as long as head and body. Yellowish, with four black stripes, the median pair extending to the supraoculars, the lateral to the eyes; or dark brown with a golden or silvery vertebral stripe commencing from the snout and a more or less distinct light dorso-lateral stripe; or pale bronzy, with a lighter black-edged stripe along each side of the back; digits with brown cross-bars; whitish beneath, with or without brown longitudinal lines running between the series of scales; throat sometimes dark brown.

	mm.
Total length.....	92
Head .....	10
Width of head.....	6
Body .....	39
Fore limb .....	12
Hind limb .....	16
Tail (reproduced).....	43

Ten specimens: wood near Dumoga besar; Kema; Buol; Bungi; Sosso; Macassar.

Siao (Sangir Is.), Manado (*Meyer*). I suspect the specimen from Gorontalo, referred by Peters to *L. quadrivittatum*, will prove to belong to this species.

*L. quadrivittatum* (with 18 rows of scales) is now represented in the British Museum by two specimens from Sandakan, North Borneo, presented by Mr. Douglas Cator and Governor C. V. Creagh.

### 35. TROPIDOPHORUS GRAYI, Gthr.

Two specimens: Kingdom of Luhu, C. Celebes.  
Luhu (*Weber*).

### DIBAMIDÆ.

### 36. DIBAMUS NOVÆ-GUINÆÆ, D. & B.

Six specimens: Tomohon and Rurukan.  
Luhu (*Weber*).

## OPHIDIA.

## TYPHLOPIDÆ.

## 37. TYPHLOPS BRAMINUS, Daud.

Two specimens : Kema.

Manado (*Meyer*).

## 38. TYPHLOPS ATER, Schleg.

A single specimen, 165 millim. long, from Tomohon, has been referred to this species by Dr. Müller, and there can be no doubt his identification is correct. The species was previously known from Java and Ternate.

I cannot help thinking that Peters's *T. conradti*, from North Celebes, is based on a specimen of this species in which the division of the præocular shield has been overlooked.

## BOIDÆ.

## 39. PYTHON RETICULATUS, Schn.

A single specimen : Kema.

Minahassa, Gorontalo, Macassar (*Meyer*). Kandari (*Beccari*).

## 40. PYTHON MOLURUS, L.

Macassar (*Meyer*).

## 41. ENYGRUS CARINATUS, Schn.

Minahassa (*Meyer*).

## ILYSIIDÆ.

## 42. CYLINDROPHIS RUFUS, Laur.

Four specimens : Tomohon and southern slope of Matinang Mts., 3300 feet.

Macassar, Manado (*Meyer*). Manado (*Bruijn*). Tempe (*Weber*).

## XENOPELTIDÆ.

## 43. XENOPELTIS UNICOLOR, Reinw.

Two specimens : Kema (V. 164, 164 ; C. 25, 26).

Manado, Kandari (*Bruijn*, *Beccari*).

## COLUBEIDÆ.

## ACROCHORDINÆ.

## 44. CHERSYDRUS GRANULATUS, Schn.

Three specimens : Kema and Macassar.

Macassar (*Beccari*).

## COLUBRINÆ.

45. *TROPIDONOTUS SARASINORUM*, Blgr. (Plate XII. fig. 1.)

*Tropidonotus sarasinorum*, Boulenger, Ann. & Mag. N. H. (6) xvii. 1896, p. 393.

Maxillary teeth 25, the posterior very feebly enlarged. Snout rather prominent, obtusely truncate; eye moderate. Rostral much broader than deep, not visible from above; internasals as long as broad, as long as the præfrontals; frontal twice as long as broad, longer than its distance from the end of the snout, shorter than the parietals; loreal as long as deep; one præ- and three postoculars; temporals 1+2 or 3; eight upper labials, third, fourth, and fifth entering the eye; four lower labials in contact with the anterior chin-shields, which are shorter than the posterior. Scales in 15 rows, all strongly keeled. Ventrals 137-141; anal divided; subcaudals 65-75. Reddish brown anteriorly, with more or less distinct blackish cross-bands and a dark nuchal blotch, connected with a dark streak on each side of the head along the upper border of the labials; latter whitish, speckled or vermiculate with brown; body olive or dark grey posteriorly; belly yellow, reddish on the sides, dotted with blackish; posterior ventrals and subcaudals, in the male, dark grey.

Total length 530 millim.; tail 150.

Two specimens, male (V. 141; C. 75) and young (V. 137; C. 65), were obtained by the Drs. Sarasin at Loka, Bonthain Peak, at an elevation of about 3800 feet.

This species is intermediate between *T. picturatus*, Schleg., and *T. celebicus*, Peters & Doria.

46. *TROPIDONOTUS CELEBICUS*, Ptrs. & Doria. (Plate XII. fig. 2.)

Maxillary teeth 20, the posterior very feebly enlarged. Snout scarcely prominent, truncate; eye moderate. Rostral twice as broad as deep, not visible from above; internasals a little broader than long, a little shorter than the præfrontals; frontal once and two-thirds to once and four-fifths as long as broad, longer than its distance from the end of the snout, shorter than the parietals; loreal as long as deep; one præ- and three postoculars; temporals 1+2; eight upper labials, third, fourth, and fifth entering the eye; four lower labials in contact with the anterior chin-shields, which are shorter than the posterior. Scales in 15 rows, feebly keeled, smooth on the anterior part of the body. Ventrals 125-142; anal divided; subcaudals 45-53. Brown or blackish above, with or without two irregular ochraceous stripes; nape black, with an orange cross-band behind, and a yellow bar or two yellow spots just behind the parietals; a few light cross-bands may be present on the neck; upper lip white, speckled or powdered with brown; yellowish white beneath, uniform or dotted with black.

Total length 450 millim.; tail 90.

The type specimen came from Kandari, South-eastern Celebes

(Beccari collection); a male specimen (V. 125; C. 53) was obtained at Buol by the Drs. Sarasin, and a female (V. 142; C. 45) in Southern Celebes, at an altitude of 2000 feet, by Mr. Everett.

47. *TROPIDONOTUS TRIANGULIGERUS*, Boie.

Macassar (*Meyer*).

A single specimen (♂, V. 150; C. 72) was collected in Southern Celebes, at an altitude of 2000 feet, by Mr. Everett.

48. *TROPIDONOTUS VITTATUS*, L.

Manado (*Meyer*).

The specimens preserved in the British Museum are apparently referred to *T. quincunciatus* in Dr. Meyer's list.

49. *TROPIDONOTUS SUBMINIATUS*, Schleg.

Manado (*Meyer*). *T. manadensis*, Gthr.

50. *TROPIDONOTUS CHRYSARGOIDES*, Gthr.

10 specimens: Bone Valley (E. of Gorontalo), Kema, Tomohon.

Manado (*Meyer*). Manado (*Bruijn*).

The fine series collected by the Drs. Sarasin shows that *T. callistus*, Gthr., is nothing but the young of *T. chrysargoides*, the short head and brilliant coloration of the former being juvenile characters which gradually disappear with age. Two to four postoculars; temporals 2+2 or 2+3; eight or nine upper labials, fourth and fifth, fifth and sixth, or fourth, fifth, and sixth entering the eye. Ventrals 148-160; subcaudals 70-85.

51. *LYCODON AULICUS*, L.

A single specimen from Macassar.

Macassar (*Meyer*). Tempe (*Weber*).

52. *LYCODON STORMI*, Bttgr. (Plate XII. fig. 3.)

Head strongly depressed; eye small. Rostral broader than deep, just visible from above; internasals much shorter than the præfrontals, which are longer than broad; frontal once and a half as long as broad, as long as its distance from the rostral or the tip of the snout, much shorter than the parietals; loreal a little longer than deep, not entering the eye, not touching the internasal; one præocular, not reaching the frontal; two postoculars (the upper, in one specimen, fused with the supraocular); temporals small, 1+3+4, or 3+4+4; eight or nine upper labials, third and fourth or third, fourth, and fifth entering the eye; five lower labials in contact with the anterior chin-shields, which are longer than the posterior. Scales smooth, in 19 rows. Ventrals 217-231, angulate laterally; anal entire; subcaudals 73-78, all single. Slate-colour or dark brown, with whitish annuli speckled with black, the white most marked on the lower surface; 23 annuli on the body.

Total length 720 millim.; tail 135.

The type specimen, described by Boettger, came from Celebes.

Two specimens from Buol are in the Drs. Sarasin's collection.

## 53. ZAMENIS DIPSAS, Schleg.

Snout scarcely projecting, obtuse; eye very large. Rostral broader than deep, just visible from above; internasals shorter than the præfrontals; frontal once and a half to once and three-fifths as long as broad, as long as or longer than its distance from the end of the snout, a little shorter than the parietals; loreal as long as deep or a little longer than deep; præocular single or divided, not touching the frontal, with a small subocular below it; two postoculars; temporals 1+2 or 2+2; eight upper labials, fourth and fifth entering the eye; four or five lower labials in contact with the anterior chin-shields; posterior chin-shields longer than the anterior, and in contact anteriorly. Scales smooth, in 13 rows. Ventrals 187-197; anal entire; subcaudals 102-139. Adult blackish brown or black; the anterior part of the body pale brown or yellow on the sides and yellowish white beneath, with vertical black bars on the sides; upper lip yellow. Young pale yellowish brown above, with dark olive spots or cross-bands, or with two blackish dorsal stripes, uniform olive-brown posteriorly; a bright yellow nuchal collar, sometimes interrupted in the middle.

Total length 2 metres; tail 55 centim.

An adult male and a young specimen were obtained at Tomohon by the Drs. Sarasin; also two young specimens at Rurukan (Minahassa).

Manado (*Bleeker, Bruijn*).

## 54. COLUBER JANSENI, Blkr.

Five specimens; Kema, Tomohon, Kottabangu, Mapane, Luhu. Manado, Macassar (*Meyer*). Manado (*Bruijn*).

Body compressed. Snout subacuminate, elongate, obliquely truncate and projecting. Rostral broader than deep, just visible from above; internasals as long as broad, a little shorter than the præfrontals; frontal once and one-fourth to once and a half as long as broad, as long as or a little shorter than its distance from the end of the snout, a little shorter than the parietals; loreal at least twice as long as deep; one large præocular, in contact with the frontal; two postoculars; temporals 1+2 or 2+3; nine or ten upper labials, fifth to seventh entering the eye; five or six lower labials in contact with the anterior chin-shields, which are much longer than the posterior. Scales smooth or faintly keeled, in 23 or 25 rows. Ventrals angulate laterally, 247-256; anal divided; subcaudals 133-140. Olive or yellowish brown above, some or all of the scales black-edged, entirely black posteriorly and on the tail; back of the head sometimes black; a black lateral stripe may be present. Young pale olive anteriorly, with or without small blackish markings, greyish olive posteriorly.

Total length 1990 millim.; tail 450.

The Drs. Sarasin have observed this snake to inflate its neck when irritated.

A young specimen appears to have been referred to *C. oxycephalus* by Peters and Doria.

55. COLUBER ERYTHRURUS, D. & B.

Two specimens: Kema.

Gorontalo, Macassar (*Meyer*). Manado, Kandari (*Bruijn, Beccari*).

This snake also inflates its neck, and, owing to the V- or A-shaped black marking on that region, bears some resemblance to a Cobra.

56. DENDROPHIS PICTUS, Gm.

Two specimens: Kema. One specimen: Macassar.

Manado, Gorontalo, Macassar (*Meyer*).

57. DENDRELAPHIS TERRIFICUS, Ptrs.

Manado, Gorontalo, Minahassa (*Meyer*).

58. OLIGODON WAANDERSI, Blkr.

*Oligodon tæniurus*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 826.

Nasal entire or semidivided; portion of rostral seen from above as long as or shorter than its distance from the frontal; suture between the internasals as long as or a little longer than that between the præfrontals; frontal once and a half as long as broad, longer than its distance from the end of the snout, as long as or a little shorter than the parietals; loreal small, as deep as long, or absent; one præ- and two postoculars; temporals 1+2; seven upper labials, third and fourth entering the eye; three or four lower labials in contact with the anterior chin-shields, which are as long as or longer than the posterior. Scales in 15 rows. Ventrals 134-163; anal divided (exceptionally entire); subcaudals 21-28. Coloration very variable. Orange, brick-red, brown, or black above, with or without small yellow or orange, dark-edged spots, which may be disposed in pairs or form transverse series; a yellowish collar may be present; a more or less distinct yellow or reddish vertebral stripe on the posterior part of the body and on the tail; yellowish white or pinkish beneath, with or without greyish dots or small black spots; a black lateral stripe usually present, occupying the outer ends of the ventrals.

Total length 355 millim.; tail 45.

Bleeker's specimens came from Boni. 11 specimens were obtained by the Drs. Sarasin at Pinogo (Bone valley), Masarang, Tomohon, and Rurukan. I have also examined 4 specimens collected by Mr. Everett in Southern Celebes. With this material before me, I cannot hesitate to unite Müller's *O. tæniurus* with *O. waandersii*. Out of the 17 specimens, 6 lack the loreal shield, and two have the anal entire. The ventrals vary from 134 to 151 in males, from 143 to 163 in females; the subcaudals from 26 to 28 in males, from 21 to 25 in females.

59. *AGROPHIS SARASINORUM*, F. Müll. (Plate XIII. fig. 1.)

*Agrophis sarasinorum*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 827, fig.

Maxillary teeth 14, subequal; mandibular teeth slightly decreasing in size posteriorly. Head small, not distinct from neck; snout long, obtusely pointed; eye very small, with round pupil. Rostral large, the portion visible from above a little shorter than its distance from the frontal; nostril between two nasals, the anterior of which is very small; præfrontals twice as long as nasals; frontal large, rhomboidal, as broad as long, as long as its distance from the end of the snout, shorter than the parietals; supraocular very small; no præocular, loreal and præfrontal entering the eye, a minute postocular; five upper labials, third and fourth entering the eye, fifth largest and forming a long suture with the parietal; symphysial not quite touching the anterior chin-shields, which are a little shorter than the posterior. Scales smooth, in 15 rows. Ventrals 139-164; anal entire; subcaudals 36-40. Tail pointed. Blackish brown above, strongly iridescent, whitish beneath; ventrals and subcaudals darker in front.

Total length 235 millim.; tail 45.

Summit of Sudara Volcano, 4450 feet; Lokon Volcano, near Tomohon, 5150 feet; Masarang Volcano, 4000 feet.

The genus *Agrophis*, which was established by F. Müller for this species, is closely allied to the American genus *Geophis*, from which it differs in the smaller anterior nasal. A second species has recently been described from Borneo by Günther, under the name of *Geophis albonuchalis*.

60. *RHABDOPHIDIUM FORSTENI*, D. & B.

Snout rather pointed. Rostral broader than deep, well visible from above; internasals shorter than the præfrontals; frontal longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals, about twice as broad as the supraocular; a rather large præocular, reaching or nearly reaching the nasal; one postocular; five or six upper labials, third and fourth entering the eye, fifth largest and in contact with the parietal; first lower labial in contact with its fellow behind the symphysial; three lower labials in contact with the anterior chin-shields, which are longer than the posterior. Scales in 15 rows. Ventrals 137-160 (♂, 137-151; ♀, 153-160); anal entire; subcaudals 21-34 (♂, 30-34; ♀, 21-26). Adult uniform blackish above, young with yellowish variegations; lower parts and upper lip pale brown or yellowish white, with or without a blackish streak along the middle of the tail.

Total length 470 millim.; tail 80.

The genus *Rhabdophidium* is confined to Celebes.

11 specimens from Northern Celebes: 9 from Tomohon, and 2 from Rurukan.

61. *CALAMARIA ACUTIROSTRIS*, Blgr. (Plate XIII. fig. 2.)

*Calamaria acutirostris*, Bouleng. Ann. & Mag. N. H. (6) xvii. 1896, p. 394.

Snout pointed. Rostral small, as deep as broad, just visible from above; frontal pentagonal, as long as broad or slightly longer than broad, as long as its distance from the end of the snout, much shorter than the parietals, four times as broad as the supraocular; one præ- and one postocular; the diameter of the eye hardly equals its distance from the mouth; five upper labials, third and fourth entering the eye; a pair of large anterior chin-shields, in contact with the symphysial; posterior chin-shields small and separated by a scale. Scales in 13 rows. Ventrals 156-179 (♂, 156-172; ♀, 164-179); anal entire; subcaudals 14-24 (♂, 20-24; ♀, 14-16). Uniform blackish above, white beneath.

Total length 250 millim.; tail 43.

12 specimens: Loka, Bonthain Peak about 3500 feet. Several specimens were also obtained in Southern Celebes by Mr. Everett.

This species connects *Calamaria* with *Pseudorhabdium*.

62. *CALAMARIA NUCHALIS*, Blgr. (Plate XIII. fig. 3.)

*Calamaria nuchalis*, Bouleng. Ann. & Mag. N. H. (6) xviii. 1896, p. 62.

Rostral broader than deep, its upper portion as long as its distance from the frontal; frontal once and two-thirds as long as broad, thrice as broad as the supraocular, as long as the parietals; one præ- and one postocular; diameter of the eye greater than its distance from the mouth; five upper labials, third and fourth entering the eye; two pairs of chin-shields in contact with each other, the anterior in contact with the symphysial. Scales in 13 rows. Ventrals 135; anal entire; subcaudals 16. Tail ending in an obtuse point. Dark brown above, with small round black spots; head dark brown above, speckled with black; nape yellowish, with two large black blotches; a black lateral streak, running along the second row of scales; outer row of scales white; belly white, with a black dot at the outer end of each ventral; tail with three or four yellow blotches on each side; subcaudals white, with a black line between them in the posterior half of the tail.

Total length 180 millim.; tail 15.

A single male specimen was obtained in Southern Celebes by Mr. Everett.

63. *CALAMARIA MUELLERI*, Blgr. (Plate XIV. fig. 1.)

*Calamaria muelleri*, Bouleng. Ann. & Mag. N. H. (6) xvii. 1896, p. 394.

Rostral large, as deep as broad, the portion visible from above as long as or a little longer than its distance from the frontal; frontal hexagonal, much longer than broad, much longer than its distance from the end of the snout, as long as or a little shorter than the parietals, twice as broad as the supraocular; one præ- and one

postocular; diameter of the eye exceeding its distance from the mouth; five upper labials, third and fourth entering the eye; anterior chin-shields in contact with the symphysial; posterior chin-shields shorter and in contact with each other. Scales in 13 rows. Ventrals 130-187 (♂, 130-164; ♀, 161-187); anal entire; subcaudals 11-21 (♂, 16-21; ♀, 11-14). Tail ending in a point. Coloration very variable. Dark brown above, uniform or spotted with black, or reddish brown, or brick-red, the scales speckled and edged with black; a black streak on each side of the head, passing through the eye; upper lip white; white beneath, the ventrals edged or spotted with black, or edged with vermilion, or with a lateral series of black spots; a black or red band between two white ones along the lower surface of the tail.

Total length 235 millim.; tail 20.

12 specimens: Loka, Bonthain Peak, 3500 feet; 1 specimen: Luhu, C. Celebes; 2 specimens: between Posso Lake and Tomini Gulf. Several specimens were collected in Southern Celebes by Mr. Everett.

The specimens from Macassar referred by A. B. Meyer to *C. gervaisii* will probably be found to belong to *C. muelleri*.

64. *CALAMARIA CURTA*, Blgr. (Plate XIV. fig. 2.)

*Calamaria curta*, Bouleng. Ann. & Mag. N. H. (6) xviii. 1896, p. 62.

Rostral small, nearly as deep as broad, its upper portion hardly half as long as its distance from the frontal; frontal once and two-thirds as long as broad, twice as broad as the supraocular, much shorter than the parietals; one præ- and one postocular; diameter of the eye greater than its distance from the mouth; five upper labials, third and fourth entering the eye; two pairs of chin-shields in contact with each other, the anterior in contact with the symphysial. Scales in 13 rows. Ventrals 154; anal entire; subcaudals 14. Tail ending in a point. Olive-brown above, each scale with a black basal spot; head uniform; two outer rows of scales white, black at the base; ventrals black at the base, white on the border; subcaudals white.

Total length 315 millim.; tail 15.

A single specimen (♀) from Southern Celebes, 2000 feet, collected by Mr. Everett.

65. *CALAMARIA GRACILIS*, Blgr. (Plate XIV. fig. 3.)

*Calamaria gracilis*, Bouleng. Ann. & Mag. N. H. (6) xviii. 1896, p. 63.

Rostral a little broader than deep, its upper portion about half as long as its distance from the frontal; frontal once and a half as long as broad, twice as broad as the supraocular, much shorter than the parietals; one præ- and one postocular; diameter of the eye equal to its distance from the mouth; five upper labials, third and fourth entering the eye; two pairs of chin-shields

in contact with each other, the anterior in contact with the symphysial. Scales in 13 rows. Ventrals 211-235 (♂, 216; ♀, 211-235); anal entire; subcaudals 10-13 (♂, 13; ♀, 10-11). Tail rounded at the end. Grey-brown above, with small black spots; outer row of scales white, black at the base; ventrals white, black on the outer edge, with a continuous or interrupted median series of small black spots.

Total length 320 millim.; tail 8.

Three specimens were collected by Mr. Everett: one in Southern Celebes, at an altitude of 2000 feet, and two on Bonthain Peak, 6000 feet.

The specimen from Celebes, referred by Schlegel to *C. lumbricoidea*, may prove to belong to the present species.

66. *CALAMARIA COLLARIS*, sp. n. (Plate XIV. fig. 4.)

Rostral small, broader than deep, just visible from above; frontal once and one-third to once and a half as long as broad, twice or twice and a half as broad as the supraocular, much shorter than the parietals; one præ- and one postocular; diameter of eye equal to its distance from the mouth; five upper labials, third and fourth entering the eye; two pairs of chin-shields in contact with each other; first lower labial in contact with its fellow behind the symphysial. Scales in 13 rows. Ventrals 232-265 (♂, 243; ♀, 232-265); anal entire; subcaudals 10-30 (♂, 30; ♀, 10-17). Tail very obtuse. Dark grey-brown above, with black dots or small spots; scales of outer row whitish in the centre; a yellowish collar behind the parietals, most distinct in the young; yellowish white beneath, spotted or edged with dark brown, or with a median series of dark brown spots.

Total length 380 millim.; tail 10.

Nine specimens: Bone Mts., Tomohon, Rurukan.

These specimens were referred by F. Müller to *C. virgulata*, from which they differ in the much more slender body.

67. *CALAMARIA VIRGULATA*, Boie.

A single specimen: Lake Posso.

Manado (*Meyer*).

68. *CALAMARIA LINNÆI*, Boie.

Manado (*Meyer*).

HOMALOPSINÆ.

69. *HYPsirrhina PLUMBEA*, Boie.

Two specimens: Kema.

Macassar (*Meyer*). Kandari, Macassar (*Beccari*). Tempe (*Weber*).

70. *HYPsirrhina MATANNENSIS*, sp. n. (Plate XV. fig. 1.)

Rostral broader than deep; internasal divided; frontal broader than the supraocular, twice as long as broad, longer than its

distance from the end of the snout, shorter than the parietals; loreal slightly longer than deep, not in contact with the internasal; one præ- and one postocular; temporals 1 + 2; eight upper labials, fourth and fifth entering the eye; five lower labials in contact with the anterior chin-shields; posterior chin-shields smaller and separated by scales. Scales in 21 rows. Ventrals 137; anal divided; subcaudals 43. Dark olive-brown above, with a very indistinct darker line along the middle row of scales; throat yellowish white; anterior ventrals yellowish white, with large transverse olive-brown spots, middle ventrals nearly entirely olive-brown, posterior ventrals and subcaudals olive-brown at the base, yellowish white on the border; an olive-brown line along the middle of the lower surface of the tail.

Total length 240 millim.; tail 65.

A single male specimen from Lake Matanna, South-eastern Celebes.

This species is very closely allied to *H. plumbea*.

71. *HYPsirrhina enhydris*, Schn.

Macassar (*Meyer*).

72. *CERBERUS rhynchops*, Schn.

Two specimens: Kema.

Kandari (*Beccari*). Pare-Pare (*Weber*).

DIPSADOMORPHINÆ.

73. *DIPSADOMORPHUS MULTIMACULATUS*, Boie.

Minahassa (*Meyer*).

74. *DIPSADOMORPHUS DENDROPHILUS*, Boie.

Three specimens: Kema. Var. *gemmicincta*, D. & B.

Macassar (*Meyer*). Manado, Kandari (*Bruijn*, *Beccari*).

75. *DIPSADOMORPHUS IRREGULARIS*, Merr.

Five specimens: Kema. One specimen: Barabatuwa, N. of Macassar.

Minahassa, Gorontalo, Macassar (*Meyer*). Manado, Kandari (*Bruijn*, *Beccari*).

76. *DIPSADOMORPHUS FLAVESCENS*, D. & B.

This species is known from a single specimen obtained at Macassar many years ago. Closely allied to *D. irregularis*. Præocular not extending to the upper surface of the head; three postoculars; eight upper labials. Scales in 19 rows. Ventrals 260; anal entire; subcaudals 116. Yellowish brown above, with mere traces of darker cross-bands; uniform yellowish beneath.

77. *PSAMMODYNASTES PULVERULENTUS*, Boie.

Five specimens: summit of Sudara, 4450 feet; Upper Bone

Valley ; Buol ; Matinang Mts., near Buol, 1700 feet ; south of L. Posso, 2000 feet.

Togian Islands (*Meyer*).

78. *DRYOPHIS PRASINUS*, Boie.

Five specimens : Kema, Macassar, Marapo R. near Batulappa. Manado, Macassar (*Meyer*). Manado, Kandari (*Beccari*, *Bruijn*). S. Celebes, 2000 feet (*Everett*).

79. *CHRYSOPELEA ORNATA*, Shaw.

Six specimens : Kema, Marissa, Posso.

These specimens have been referred by Müller to *C. rhodopleuron*. The markings become very indistinct or disappear in the adult. Two of the specimens have the scales in 15 rows. Young pale brownish above, with black and yellow bars on the head and nape, a chain of small black spots along the vertebral line and a series of transverse vermilion spots on the posterior part of the body ; ventrals and subcaudals pale olive, with black lateral keels.

Gorontalo, Macassar (*Meyer*). Manado, Kandari (*Bruijn*, *Beccari*).

ELAPINÆ.

80. *BUNGARUS CANDIDUS*, L.

Manado (*Meyer*).

81. *NAIA BUNGARUS*, Schleg.

A single young specimen, black above, with narrow angular yellow cross-bars, barred black and yellow beneath, was obtained by the Drs. Sarasin in Minahassa, at the foot of the Soputan volcano.

82. *DOLIOPHIS INTESTINALIS*, Laur.

Manado (*Meyer*).

VIPERIDÆ.

83. *LACHESIS WAGLERI*, Boie. (Plate XV. fig. 2.)

Five specimens : Bone Valley, 650-1000 feet, Sonder, and between L. Posso and Tomini Gulf.

The three specimens from the Bone Valley belong to the typical form, green, with white blue- or purple-edged transverse lines. The two others form remarkable colour-varieties. The specimen from Minahassa is green above, with large brick-red black-edged spots ; white beneath, with black spots and marblings powdered with brick-red. The specimen from Central Celebes (figured Pl. XV.) is green on the head, with red spots and a red lateral stripe ; the body is annulate with red, the annuli edged with white and separated by narrower green interspaces ; a red stripe extends along the middle of the body ; end of tail red.

Minahassa (*Meyer*). Kandari (*Beccari*).

**BATRACHIA.****ECAUDATA.****RANIDÆ.****1. OXYGLOSSUS LÆVIS, Gthr.**

12 specimens: Masarang, Kakas, Matinang Mts., Lembongpangi, 1700 feet, Takalekadjo Mts., 3300 feet.

Adult and larval specimens were collected by Mr. Everett in Southern Celebes, at an altitude of 2000 feet.

The largest specimen measures 42 millim. from snout to vent. The toes may be fully webbed, with rectilinear membrane, or the web may be deeply emarginate, as described by Peters in *O. marten sii* from Siam, which I am now very much inclined to think is based on an individual variation of *O. lævis*.

The habitat of this Frog would thus extend from Burma and Siam to Sumatra, Borneo, the Philippines, and Celebes.

I am able to append a description of the tadpole, from specimens collected by Mr. Everett in Southern Celebes:—

Length of body once and a half to once and two-thirds its width, two-fifths the length of the tail. Nostrils nearer the eyes than the end of the snout. Eyes on the upper surface, nearer the end of the snout than the spiraculum, the distance between them twice as great as the distance between the nostrils. Spiraculum on the left side, directed upwards and backwards, equally distant from the eye and the posterior extremity of the body. Anal opening median. Tail four or five times as long as deep, acutely pointed, with low crests. Mouth small, with horseshoe-shaped lip without horny teeth, the closed mouth appearing as a vertical slit; beak black. Olive above, white beneath; tail speckled with dark brown.

Total length 51 millim.; body 14; tail 37; depth of tail 7.

**2. RANA KUHLLI, D. & B.**

Minahassa (*Meyer*). A specimen, labelled as from Celebes, presented by Sir A. Smith, is in the British Museum.

**3. RANA MODESTA, Blgr.**

Vomerine teeth in two strong oblique series, originating between the choanæ or on a level with their posterior border and extending posteriorly to or beyond the palatines; lower jaw, in the adult, with two bony prominences in front, which are most developed in the male. Head moderate; snout short, rounded or rather pointed; canthus rostralis angular; loreal region concave; nostril nearer the tip of the snout than the eye; interorbital space nearly as broad as the upper eyelid in the adult, narrower in the young; tympanum distinct, two-fifths to two-thirds the diameter of the eye. Fingers moderate, the tips swollen into small disks, first extending beyond second; toes moderate, entirely or nearly

entirely webbed, the tips dilated into small disks; a cutaneous fringe along the outer side of the fifth toe; subarticular tubercles moderate; inner metatarsal tubercle oval or elliptical, flat, measuring one-third to one-half the length of the inner toe. The tibio-tarsal articulation reaches the tip of the snout or between the eye and the tip of the snout. Skin of the back with small warts or rather indistinct, short, interrupted longitudinal glandular folds; a strong supratemporal fold; upper eyelids tubercular; a more or less distinct fold of the skin between the latter. Brown, grey-brown, or blackish olive above, with or without rather indistinct darker spots; sometimes two lighter stripes on the back and the canthi rostrales, meeting on the tip of the snout; sometimes a light vertebral stripe; a dark cross-bar between the eyes often present; a black spot sometimes present on the tympanum; upper lip with dark vertical bars, two below the eye; limbs with dark cross-bands; hinder side of thighs dark brown, with light spots or whitish marblings; lower parts white, uniform or speckled or spotted with brown. Male with internal vocal sacs.

From snout to vent 85 millim.

Several specimens: Tomohon, Buol, Matinang Mts.

Manado, Gorontalo (*Meyer*). The specimens referred by Peters to *R. macrodon* belong to this species.

#### 4. *RANA LEYTENSIS*, Bttgr.

*Rana leytensis*, Boettger, Zool. Anz. 1893, p. 365.

One specimen: Kingdom of Luhu; one specimen: Takalekadjo Mts., towards L. Posso, 3000 feet. Several specimens were obtained in Southern Celebes by Mr. Everett.

Originally described from Leyte, Philippines, this species has been rediscovered at Tawi-Tawi, Sooloo Islands, by Mr. Everett, and at Sandakan, North Borneo, by Mr. Douglas Cator.

This small Frog (the largest specimen measures only 38 millim. from snout to vent) is closely allied to the preceding, with young specimens of which it may easily be confounded. But the toes are more slender, two-thirds or three-fourths webbed, the three last phalanges of the fourth toe are free from the web and extend beyond the fifth toe, the terminal disk of which corresponds to the second subarticular tubercle of the fourth toe.

The first finger extends as far as the second, or slightly beyond. The tibio-tarsal articulation reaches the nostril, the tip of the snout, or a little beyond. The skin of the upper part is warty, some of the warts forming interrupted longitudinal folds, but the dorso-lateral folds of *R. palavanensis* are absent. The coloration is very variable; some specimens have a bright yellow or orange spot covering the snout between the canthi and the anterior part of the interocular region: one specimen has a broad yellow vertebral stripe; others have a pair of yellowish dorsal stripes corresponding in position to the dorsal folds of *R. palavanensis*. Males are provided with a pair of internal vocal sacs.

5. *RANA MICRODISCA*, Bttgr.

*Rana microdisca*, Boettg. Ber. Offenb. Ver. Nat. 1892, p. 137, and in Semon, Zool. Forsch. pl. v. fig. 2 (1894).

Described from the mountains of Java, this small Frog was soon after recorded from Mentawi, south of Sumatra (Boulenger, Ann. Mus. Genova, 2, xiv. 1894, p. 616), and Celebes (Müller). The first Celebes specimen was obtained in the Bone Mts. by the Drs. Sarasin, and was compared with the type by Prof. Boettger. A second specimen is from Tomohon.

*R. microdisca* is closely allied to the two preceding and the following species, but is well distinguished by its extremely long hind limbs, the tibio-tarsal articulation reaching far beyond the tip of the snout, and the tibia measuring two-thirds the length of head and body. The toes are incompletely webbed, the last three phalanges of the fourth being nearly entirely free; the extremity of the fifth toe extends a little beyond the second subarticular tubercle of the fourth toe. No dermal fringe along the outer border of the fifth toe. First finger extending considerably beyond second. Upper parts with small smooth warts; no dorso-lateral fold. Olive above, with or without a pair of light dorsal stripes; a dark cross-bar between the eyes; upper lip with dark vertical bars; limbs with regular dark cross-bars; yellowish beneath, throat marbled with brown; lower lip dark brown, with regular white interruptions.

6. *RANA PALAVANENSIS*, Blgr.

*Rana palavanensis*, Bouleng. Ann. & Mag. N. H. (6) xiv. 1894, p. 85.

Vomerine teeth in two short oblique series commencing on a line with the hinder edge of the choanæ. Head moderate, as long as broad; snout short, rounded, as long as the diameter of the orbit; canthus rostralis angular; loreal region slightly concave; nostril equidistant from the orbit and the end of the snout; inter-orbital space as broad as or a little narrower than the upper eyelid; tympanum distinct, three-fifths the diameter of the eye. Fingers moderate, the tips swollen or dilated into very small disks; first finger extending slightly beyond second; toes moderate, two-thirds webbed, the tips dilated into small but very distinct disks; subarticular tubercles moderate; inner metatarsal tubercle elliptical, flat, measuring two-fifths or one-half the length of the inner toe; no outer metatarsal tubercle; no tarsal fold. Tibio-tarsal articulation reaching the tip of the snout or beyond; tibia as long as or a little shorter than the fore limb. Skin nearly smooth; posterior half of upper eyelids warty; a fold from the eye to the shoulder; a narrow glandular dorso-lateral fold, beginning behind the upper eyelid, above the supratemporal fold. Brown or greyish brown above; sides of snout below the canthi blackish or dark grey, with some more or less distinct dark vertical bars on the lip; supratemporal and dorso-lateral folds

edged with dark brown or black on the outer side; a dark cross-bar between the eyes and a dark  $\Lambda$ -shaped interscapular marking usually present; limbs with regular dark cross-bands; lower parts whitish, uniform, or throat and breast spotted with brown. Male with internal vocal sacs.

From snout to vent 43 millim.

This species was discovered in Palawan by Mr. A. Everett, who has since found it on Mt. Kina Balu, Borneo. Several specimens were obtained by the Drs. Sarasin in Celebes, some of which were taken for the young of *R. modesta* by Müller.

Tomohon, Matinang, Masarang, Rurukan, Posso, Loka. Tasosso, S. Celebes, 4000 feet (*Everett*).

7. *RANA TIGRINA*, Daud.

One specimen: L. Limbotto; three specimens: Kema; one specimen: L. Posso; two specimens: Macassar.

Manado, Gorontalo (*Meyer*). Macassar, Kandari (*Beccari*)

8. *RANA ERYTHRÆA*, Schleg.

Four specimens: Macassar.

Macassar (*Beccari*).

9. *RANA VARIANS*, Blgr.

*Rana varians*, Bouleng. Ann. & Mag. N. H. (6) xiv. 1894, p. 86.

Vomerine teeth in two oblique series between the choanæ, or extending beyond the level of the hinder edge of the latter. Head depressed, longer than broad; snout obtusely or acutely pointed, prominent, longer than the diameter of the orbit; canthus rostralis angular; loreal region nearly vertical, strongly concave; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid or a little narrower; tympanum very distinct, as large as the eye or a little smaller. Fingers moderate, first extending considerably beyond second, longer than the fourth; toes nearly entirely webbed, the last two phalanges of the fourth free; tips of fingers and toes dilated into small but well-developed disks; subarticular tubercles well developed; inner metatarsal tubercle oval, blunt; a small round outer metatarsal tubercle; no tarsal fold. Tibio-tarsal articulation reaching the tip of the snout, or a little beyond; tibia as long as or a little shorter than the fore limb. Skin finely granulate, with or without small warts; a narrow glandular dorso-lateral fold. Brown, pink, or grey above; a dark brown or black streak below the canthus rostralis and a temporal blotch; a whitish streak along the upper lip; limbs with dark cross-bands; hinder side of thighs brown or marbled with brown; some specimens with a pale vertebral line and another pale line along the upper surface of the tibia; throat and breast sometimes dark brown. Male with internal vocal sacs and without humeral gland.

From snout to vent 70 millim.

First described from Palawan, this species has since been found

in Luzon, in Batjan, and in Celebes. The specimens (12) collected by the Drs. Sarasin are from the following localities:—Masarang, Tomohon, Rurukan, Buol, Wangkahulu Valley, and Lake Posso.

#### 10. *RANA EVERETTI*, Blgr.

Nine specimens: Masarang Chain, Tomohon, Bone Valley (named *R. chalconota* by Müller), Wangkahulu Valley; Luhu, lowland. S. Celebes, 2000 feet (Everett).

The specimens referred to *R. chalconota* by Peters probably belong to this species, first described from the Philippines and since found in Borneo. *R. everetti* is easily distinguished from *R. varians* by having the first finger shorter, not extending quite so far as the second, and larger disks to the fingers, their diameter equalling one-half to two-thirds that of the tympanum. The tibio-tarsal articulation reaches the tip of the snout or a little beyond. Males with internal vocal sacs and no humeral gland. A white streak usually borders the upper lip.

The Drs. Sarasin have observed this Frog to lay its eggs in a frothy mass out of the water, forming a sort of nest as in *Rhacophorus*. A series of specimens at various larval stages, collected by Mr. Everett at Indrulaman, S. Celebes, enable me to give a description of the tadpole:—

Length of body once and a half to once and two-thirds its width, about half as long as the tail. Nostrils nearly equally distant from the eyes and the tip of the snout. Eyes on the upper surface, equally distant from the tip of the snout and the spiraculum, the distance between them a little greater than the distance between the nostrils. Spiraculum on the left side, directed upwards and backwards, nearer the posterior extremity of the body than the end of the snout. Anal opening on the right side close to the lower edge of the caudal crest. Tail about thrice and a half as long as deep, acutely pointed; crests lower than the muscular portion, the dorsal not extending on the body. Mouth as broad as the interocular space; series of labial teeth  $\frac{4}{3}$ , the outer upper and the three lower continuous, the others restricted to the sides; lower lip bordered by a double series of papillæ; beak broadly edged with black. Dark brown or blackish above, greyish below; upper caudal crest dark brown, lower greyish.

Total length 45 millim.; body 14; tail 31; depth of tail 8.

This tadpole is essentially that of a typical *Rana*.

#### 11. *RANA CELEBENSIS*, Ptrs.

Vomerine teeth in two small oblique series between the choanæ. Head moderate, depressed, as long as broad; snout subacuminate, prominent, as long as the diameter of the orbit; canthus rostralis strong; loreal region concave; nostril a little nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum very distinct, three-fourths the diameter of the eye and close to it. Fingers moderate, first extending as far as

second; toes moderate, nearly entirely webbed; tips of fingers and toes dilated into small but well-developed disks; subarticular tubercles well developed; inner metatarsal tubercle small, oval; a very distinct outer metatarsal tubercle. The tibio-tarsal articulation reaches the tip of the snout. A very broad and very prominent glandular lateral fold; below it several large, prominent, oval glands; a glandular fold from beneath the eye to the shoulder, followed by a strong glandule. Chestnut-brown above, sides of head and body rather darker; a light streak along the upper lip; limbs with dark cross-bars; hinder side of thighs brown-and-white marbled; whitish beneath, throat and breast closely speckled with brown. Male with internal vocal sacs and an oval flat gland at the base of the arm.

From snout to vent 47 millim.

This species was described by Peters from a single specimen from Manado. The specimen in the British Museum is without a locality.

12. *RANA MACROPS*, sp. n. (Plate XVI. fig. 1.)

Vomerine teeth in two very small oblique groups between the choanæ. Head rather large, as long as broad; snout rounded, with sharp canthus; loreal region nearly vertical, concave; nostril a little nearer the tip of the snout than the eye; latter very large, diameter of the orbit greater than the length of the snout; inter-orbital space as broad as the upper eyelid; tympanum distinct, half the diameter of the eye. Fingers rather slender, first extending as far as second, tips dilated into well-developed disks; toes two-thirds webbed, the terminal disks smaller than those of the fingers; subarticular tubercles moderate; a small oval inner metatarsal tubercle; no outer metatarsal tubercle; no tarsal fold. The tibio-tarsal articulation reaches the nostril or the tip of the snout. Skin smooth, or with a few small flat warts on the back; glandular lateral fold very feebly developed and distinct only anteriorly. Olive-green above; a blackish streak below the canthus rostralis; a blackish band on the temporal region and above the shoulder, broken up into spots posteriorly; sides greyish, marbled with dark brown; a whitish streak from below the eye to above the arm; limbs with more or less distinct dark cross-bands; hinder side of thighs marbled with dark brown; brownish beneath, throat dark brown, with or without small white spots. Male with internal vocal sacs and an oval flat gland at the base of the arm.

From snout to vent 45 millim.

Eight specimens: Masarang Mts., Matinang Mts., 3300 feet, and Takalekadjo Mts., towards Lake Posso, 3000 feet.

Dr. A. B. Meyer records *Rana natatrix*, Gthr., from Gorontalo, but the determination requires revision.

13. *RHACOPHORUS LEUCOMYSTAX*, Gravh.

Numerous specimens: Buol, Tomohon, Kema, Rurukan,

L. Posso, Loka (Bonthain Peak), 3600 feet, Macassar, and between L. Matanna and Towuti.

Manado, Macassar (*Meyer*). Kandari (*Beccari*).

14. RHACOPHORUS EDENTULUS, F. Müll. (Plate XVI. fig. 2.)

*Rhacophorus edentulus*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 840.

Vomerine teeth absent, or reduced to two very small indistinct groups near the inner edges of the rather large choanæ. Snout rounded, a little shorter than the diameter of the orbit; canthus rostralis distinct; loreal region slightly concave; nostril nearer the tip of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum moderately distinct, two-fifths to one-half the diameter of the eye. Outer fingers half-webbed; disks of fingers large, as large as or a little larger than the tympanum; toes webbed to the disks of the third and fifth, penultimate phalanx of fourth free; subarticular tubercles feeble; a very small inner metatarsal tubercle; no tarsal fold. The tibio-tarsal articulation reaches the tip of the snout or beyond. Skin smooth or finely shagreened above, granulate on the belly and under the thighs; a fold from the eye to the shoulder. Green above (bluish grey or lilac in spirit), uniform or with dark dots; one specimen with a large rust-red blotch on the head and another on the body; humerus yellowish white; femur yellowish white with a narrow green stripe; white beneath. Male without vocal sacs.

From snout to vent 40 millim.

Ten specimens: Bone Mts., Tomohon, Totoija Valley, Rurukan, Loka (Bonthain Peak).

Specimens were obtained in Southern Celebes by Mr. Everett.

15. RHACOPHORUS MONTICOLA, Blgr. (Plate XVI. fig. 3.)

*Rhacophorus monticola*, Bouleng. Ann. & Mag. N. H. (6) xvii. 1896, p. 395.

Vomerine teeth in two oblique series between the choanæ. Snout more or less pointed, as long as the diameter of the orbit; canthus rostralis distinct; loreal region slightly concave; nostril equally distant from the eye and the tip of the snout; interorbital space as broad as the upper eyelid; tympanum moderately distinct, half the diameter of the eye. Outer fingers two-thirds webbed; disks of fingers large, as large as or a little larger than the tympanum; toes webbed to the disks of the third and fifth, penultimate phalanx of fourth free; subarticular tubercles feeble; a very small inner metatarsal tubercle; no tarsal fold. Tibio-tarsal articulation reaching the eye or the anterior border of the orbit. Skin finely shagreened above, granulate on the belly and under the thighs; a fold from the eye to the shoulder. Coloration very variable. Grey or green (bluish or purplish in spirit) above, uniform or dotted, spotted or vermiculate with darker, or with large symmetrical dark markings, viz., a cross-band between the eyes, an hourglass- or X-shaped blotch on the anterior part of the back, and a cross-band on the sacrum; one specimen green

with scattered small yellow spots; limbs with more or less distinct dark cross-bands; flanks white, or purple with large white spots; lower parts white. Male without vocal sacs.

From snout to vent 48 millim.

Nine specimens: Loka (Bonthain Peak), 3500 feet, and north slope of Bonthain Peak, 2600 feet.

Indrulaman, S. Celebes, 2000 feet (Everett).

*Rhacophorus pardalis*, Gthr., is recorded from Minahassa by Dr. Meyer, probably through confusion with *R. edentulus*.

16. SPHENOPHYRNE CELEBENSIS, F. Müll. (Plate XVI. fig. 4.)

*Sphenophryne celebensis*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 841, fig.

Tongue large, oval, entire. Snout short, rounded, with feebly marked canthus; interorbital space as broad as or a little broader than the upper eyelid; tympanum scarcely distinct, about one-third the diameter of the eye. Tips of fingers dilated into very large disks; first finger shorter than second; toes short, free, the disks much smaller than those of the fingers; no subarticular or metatarsal tubercles. Tibio-tarsal articulation reaching the eye or a little beyond. Skin smooth above, or with scattered small flat warts; a small tubercle sometimes present on the upper eyelid; belly granulate. Coloration very variable. Yellowish, reddish, pink, or brown above, uniform or with darker spots or marblings; a triangular dark marking between the eyes, or an X-shaped or hourglass-shaped marking from between the eyes to the interscapular region; upper surface of snout sometimes pink; a dark canthal streak; a light vertebral line sometimes present; greyish or brownish beneath, uniform or mottled with dark brown. Male without vocal sacs.

From snout to vent 30 millim.

Numerous specimens: Bone Mts., 4000 feet, Masarang Volcano, Emponggar Volcano, Matinang Mts., 850 feet, Luhu, 300-1600 feet, north slope of Takalekadjo.

Several specimens were collected at Indrulaman, S. Celebes, by Mr. Everett.

17. SPHENOPHYRNE VARIABILIS, Blgr. (Plate XVI. fig. 5.)

*Sphenophryne variabilis*, Bouleng. Ann. & Mag. N. H. (6) xviii. 1896, p. 64.

Tongue large, oval, entire. Snout short, rounded, with feebly marked canthus; interorbital space broader than the upper eyelid; tympanum feebly distinct, two-thirds or three-fourths the diameter of the eye. Tips of fingers dilated into very large disks; first finger shorter than second; toes short, free, the disks much smaller than those of the fingers; no subarticular or metatarsal tubercles. Tibio-tarsal articulation reaching the shoulder or the tympanum. Skin smooth above; belly granulate. Coloration very variable. Grey, brown, purple, pink, or crimson above, uniform or with darker marblings, or with a lighter yellow or pink lateral streak; a light vertebral line sometimes present; sides of

head usually dark brown; a dark, light-edged ocellus may be present on the lumbar region; beneath uniform whitish, or greyish with yellow spots, or dark brown with yellow spots. Male without vocal sacs.

From snout to vent 28 millim.

Eight specimens: Bonthain Peak, 5000–6500 feet.

Numerous specimens were also obtained on Bonthain Peak by Mr. Everett.

*Microhyla achatina*, Boie, is recorded from Minahassa and Macassar by Meyer. The specimens will probably prove to belong to *Sphenophryne celebensis* or *S. variabilis*.

18. *CALLULA BALEATA*, S. Müll.

Several specimens: Buol, Tomohon, Kema, and near Borau, coast of Luhu.

Minahassa, Gorontalo (*Meyer*). Indrulaman, S. Celebes (*Everett*). The colour-variety *celebensis*, Gthr., has been raised to specific rank by Peters, and the present species therefore appears under two different names in Meyer's list.

19. *CALLULA PULCHRA*, Gray.

Five specimens: Macassar.

Macassar (*Beccari*).

20. *BUFO BIPORCATUS*, Gravh.

Four specimens: Kingdom of Luhu, Macassar, L. Towuti.

Macassar (*Meyer*).

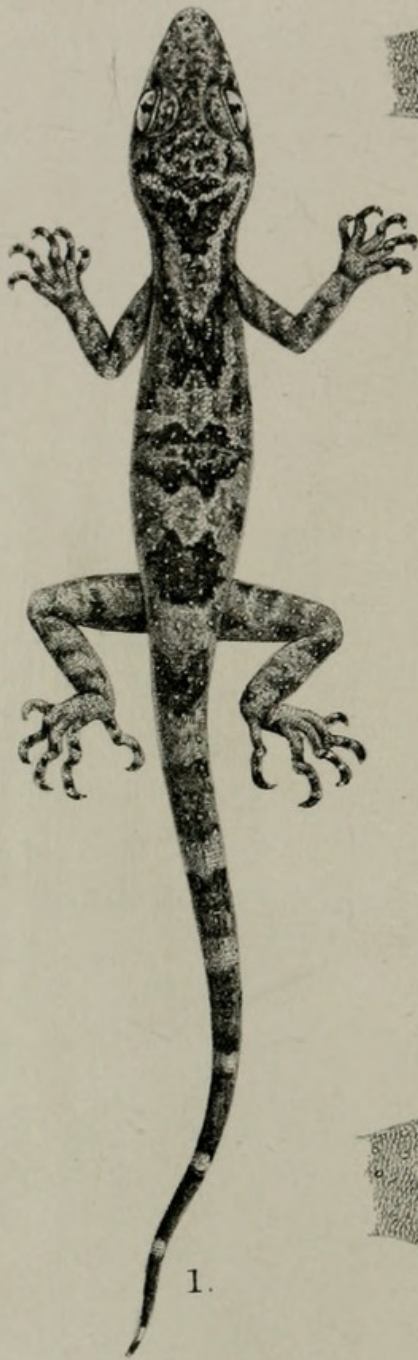
21. *BUFO CELEBENSIS*, Gthr.

Skin of upper surface of head united with the cranial ossification; canthus rostralis sharp, raised; interorbital space broad, deeply concave; a broad bony ridge between the eye and the parotoid; this ridge feebly prominent in the young, very large, elevated, knob-like in the adult; tympanum more or less distinct, measuring two-fifths to three-fifths the diameter of the eye. Fingers obtuse, first extending beyond second; toes nearly half-webbed, with single subarticular tubercles; two moderate metatarsal tubercles; no tarsal fold. The tarso-metatarsal articulation reaches the eye or the tip of the snout. Upper parts with more or less prominent, more or less conical warts, tipped with black horny spines; parotoids very prominent, variable in shape, triangular, oval, or elliptical, continuous with or detached from the postorbital bony ridge. Olive, greyish, blackish, or crimson above, uniform or with indistinct darker spots; greyish or pale olive beneath, uniform or marbled with dark brown. Male with an internal subgular vocal sac.

From snout to vent 98 millim.

Numerous specimens: Kema, Tomohon, Buol, Loka.

Manado, Minahassa, Gorontalo, Boliohuto Mt., near Sumalatta, Macassar (*Meyer*).



1.



1a.



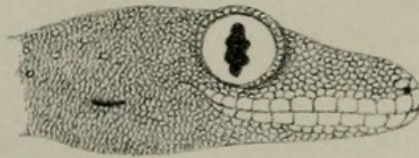
1b.



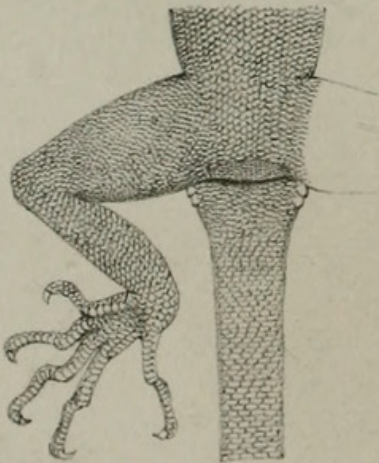
2b.



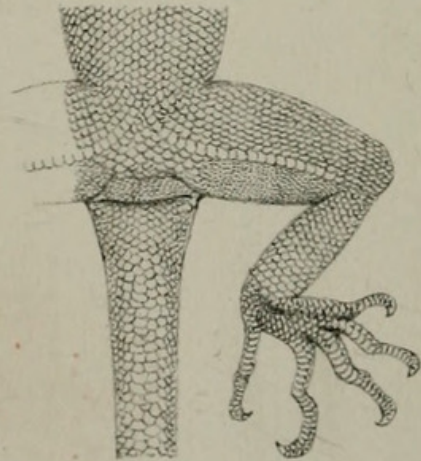
2.



2a.



1c.



2c.

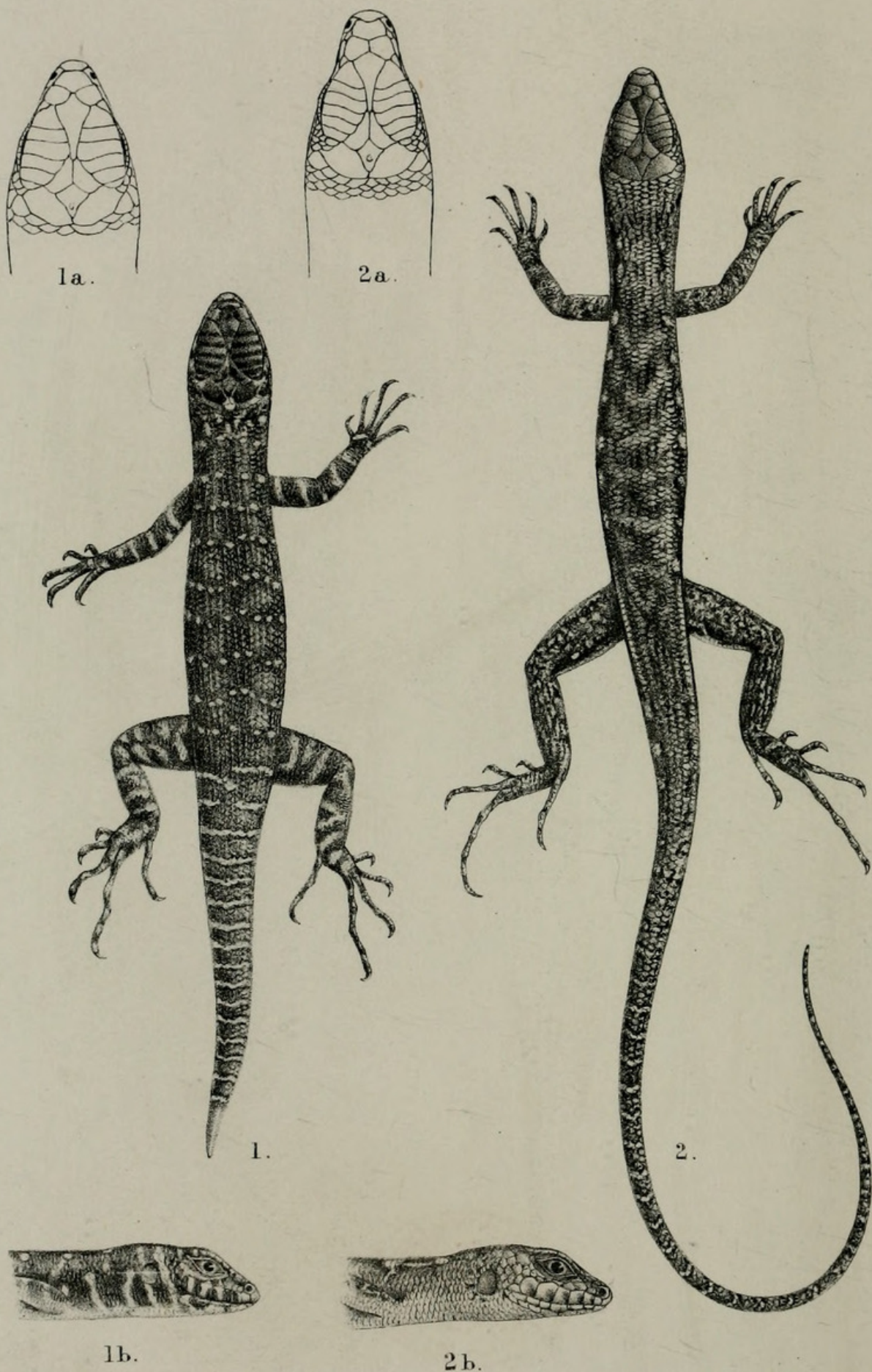


J. Green del. et lith.

Mintern Bros. Chromo.

DRACO SPILONOTUS.

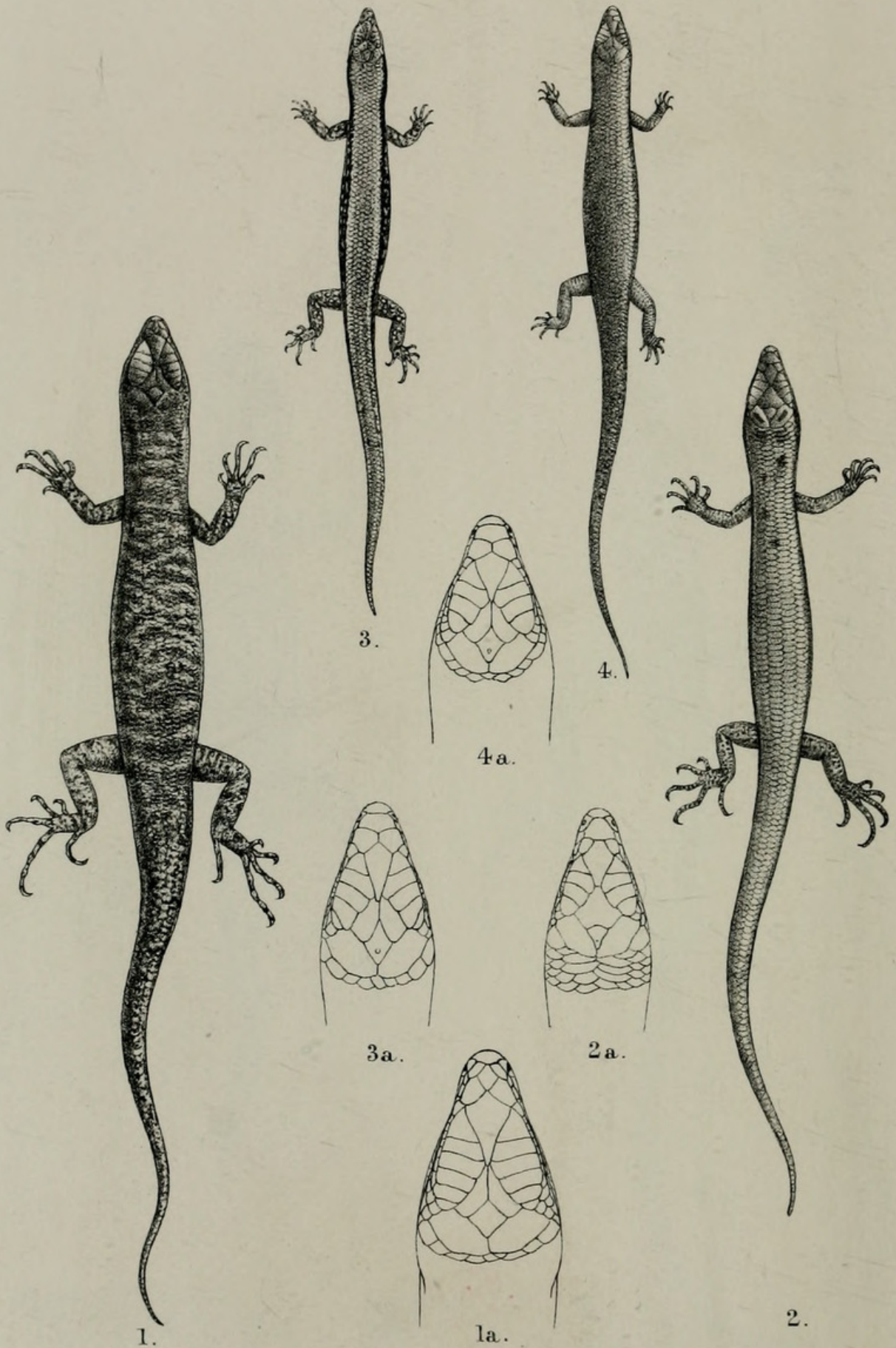




J. Green del. et lith.

Mintern Bros imp.

1. *LYGOSOMA TROPIDONOTUS*. 2. *L. SARASINORUM*.



J.Green del. et lith.

Mintern Bros imp.

1. LYGOSOMA CELEBENSE. 2. L. INCONSPICUUM.  
3. L. TEXTUM. 4. L. PARVUM.



2.



1.



3.



1.

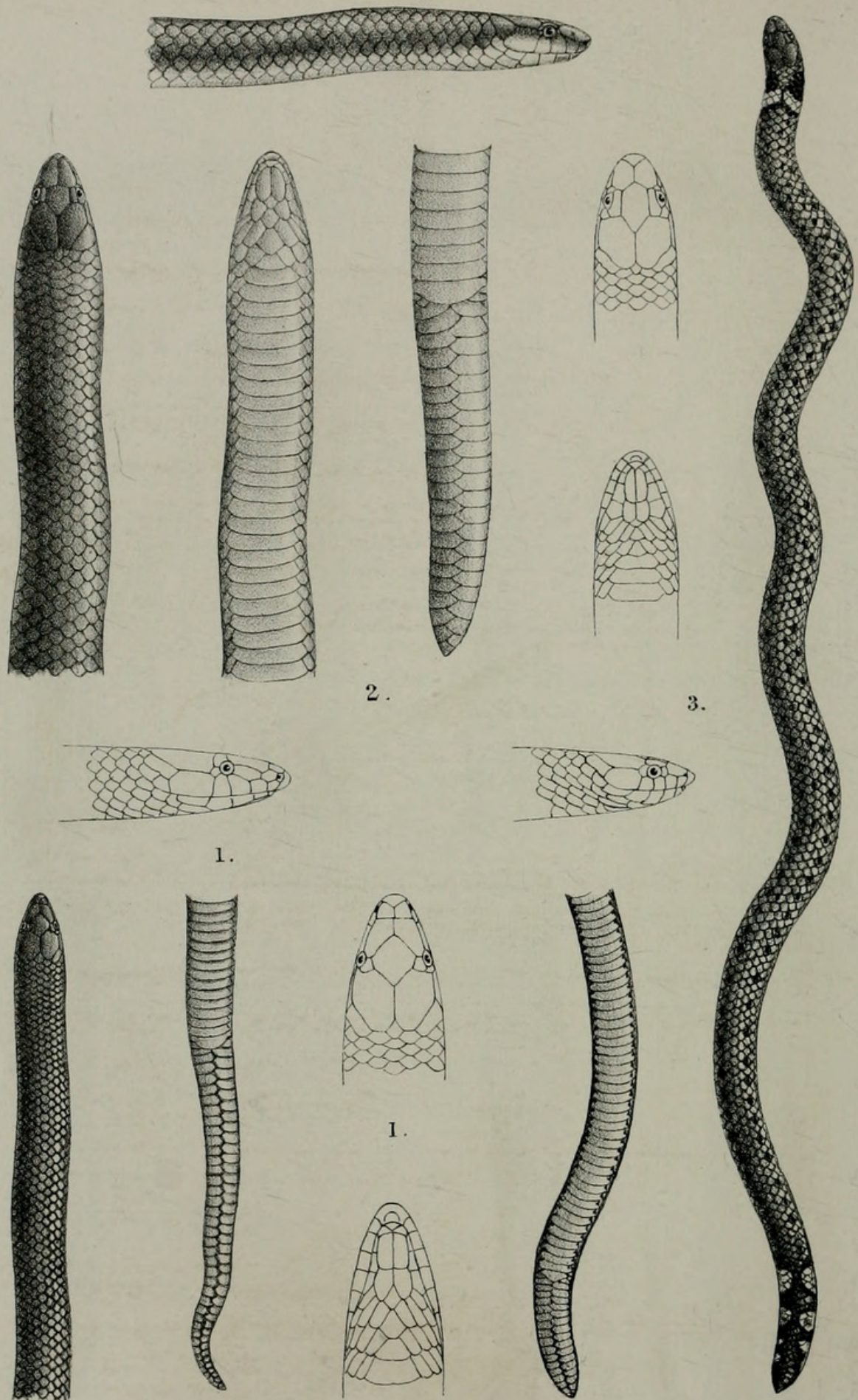


2.



3.

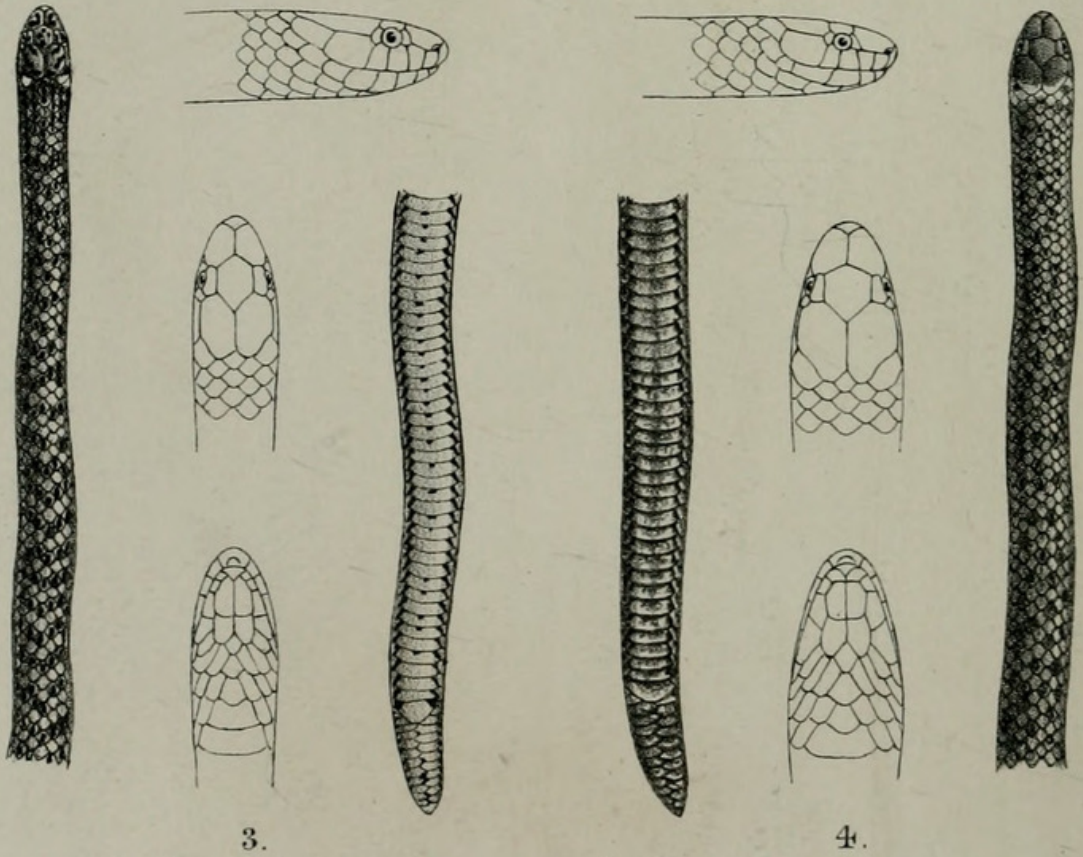
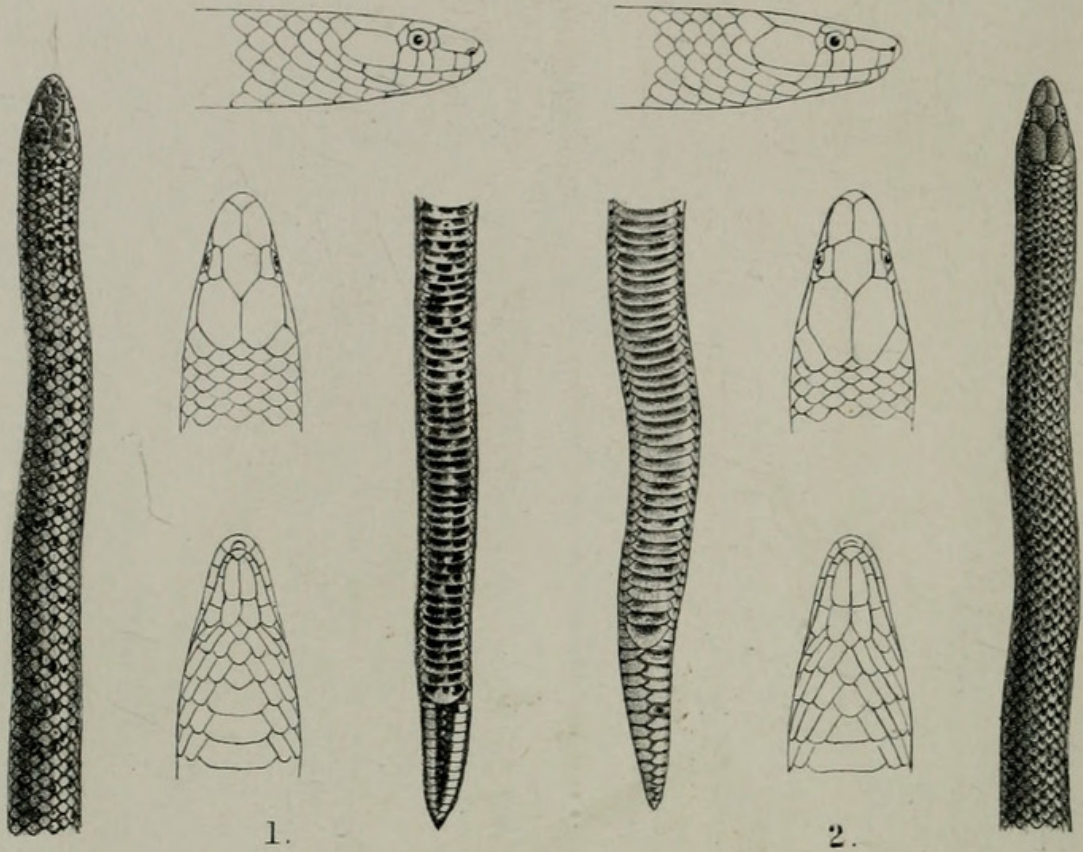


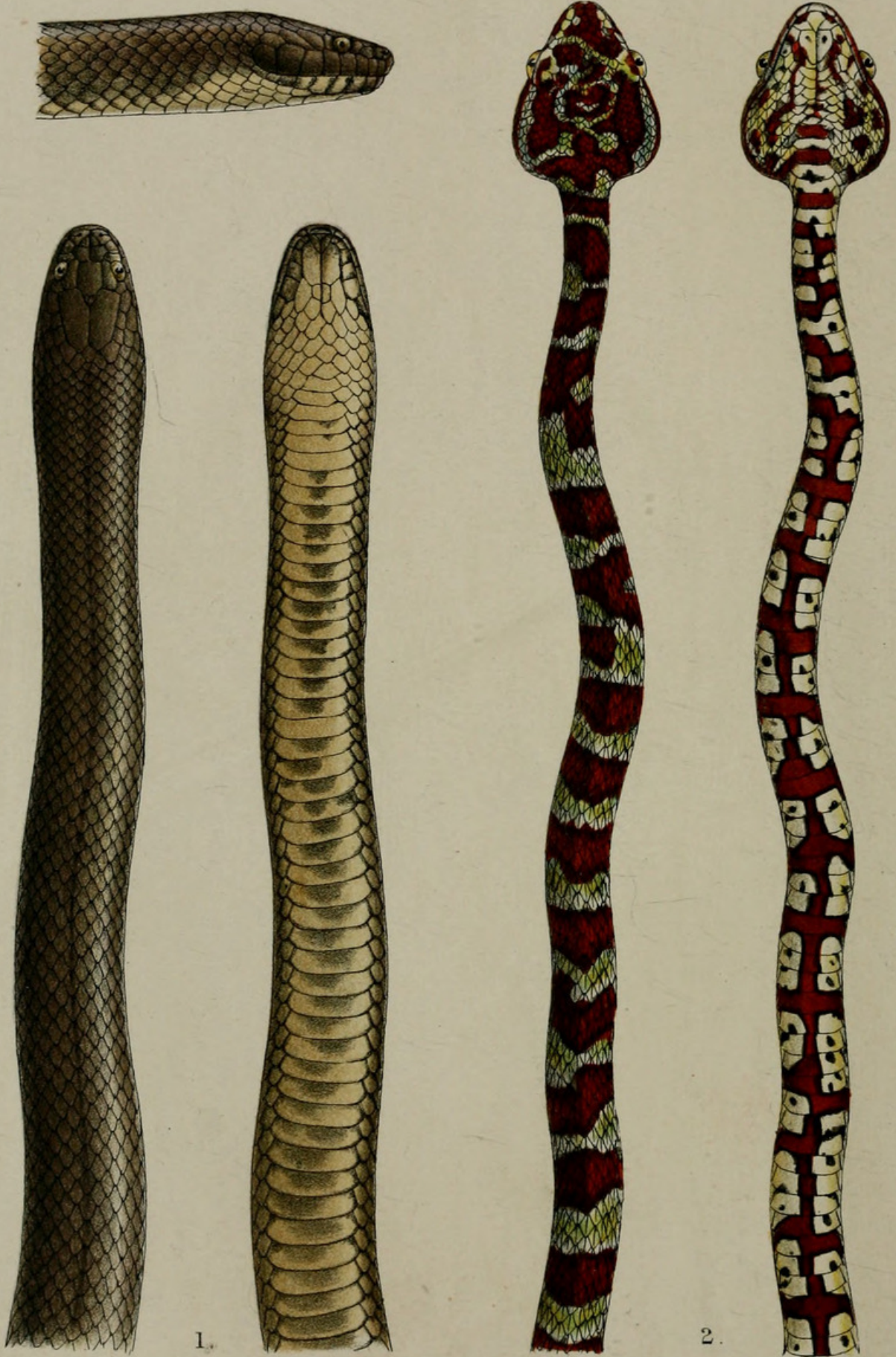


J.Green del. et lith.

Mintern Bros. imp.

1.AGROPHIS SARASINORUM. 2.CALAMARIA ACUTIROSTRIS.  
3.CALAMARIA NUCHALIS.





J.Green del. et lith.

Mintern Bros. Chromo.

1. *HYPsirrhina* MATANNENSIS. 2. *LACHESIS* WAGLERI, var.



J. Green del. et lith.

Mintern Bros. Chromo.

1. RANA MACROPS. 2. RHACOPHORUS EDENTULUS. 3. RH. MONTICOLA.  
4. SPHENOPHRYNE CELEBENSIS. 5. S. VARIABILIS.

## EXPLANATION OF THE PLATES.

## PLATE VII.

- Fig. 1. *Gymnodactylus jellesmæ*, Blgr., p. 203.  
 2. " *fumosus*, F. Müll., p. 204.  
 a. Side view of head; b. Chin; c. Anal region and lower surface of hind limb.

## PLATE VIII.

- Draco spilonotus*, Gthr. Males and females.  
 With side view of heads, p. 206.

## PLATE IX.

- Draco beccarii*, Ptrs. & Dor. Male and female.  
 With side view of head of male, p. 207.

## PLATE X.

- Fig. 1. *Lygosoma tropidonotus*, Blgr., p. 209.  
 2. " *sarasinorum*, Blgr., p. 210.  
 a. Enlarged upper view of head.  
 b. Side view of head and neck.

## PLATE XI.

- Fig. 1. *Lygosoma celebense*, F. Müll., p. 212.  
 2. " *inconspicuum*, F. Müll., p. 213.  
 3. " *textum*, F. Müll., p. 213.  
 4. " *parvum*, Blgr., p. 215.  
 a. Enlarged upper view of head.

## PLATE XII.

- Fig. 1. *Tropidonotus sarasinorum*, Blgr., p. 218.  
 2. " *celebicus*, Ptrs. & Dor., p. 218.  
 3. *Lycodon stormi*, Bttgr., p. 219.

## PLATE XIII.

- Fig. 1. *Agrophis sarasinorum*, F. Müll., p. 222.  
 2. *Calamaria acutirostris*, Blgr., p. 223.  
 3. " *nuchalis*, Blgr., p. 223.

## PLATE XIV.

- Fig. 1. *Calamaria muelleri*, Blgr., p. 223.  
 2. " *curta*, Blgr., p. 224.  
 3. " *gracilis*, Blgr., p. 224.  
 4. " *collaris*, Blgr., p. 225.

## PLATE XV.

- Fig. 1. *Hypsirhina matannensis*, Blgr., p. 225.  
 2. *Lachesis wagleri*, Boie, var., p. 227.

## PLATE XVI.

- Fig. 1. *Rana macrops*, Blgr., p. 233.  
 2. *Rhacophorus edentulus*, F. Müll., p. 234.  
 3. " *monticola*, Blgr., p. 234.  
 4. *Sphenophryne celebensis*, F. Müll., p. 235.  
 5. " *variabilis*, Blgr., p. 235.



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