

least conceivable that it may in some way have been transported from Madagascar to the mainland. In any case I think that, having regard to the fact that the fundus oculi is distinctly that of a Galago, it would be well to consider whether the other points show sufficiently prominent characteristics to warrant the classification of that animal as a Lemur.

In concluding the few observations on the eyes of the Primates which I have laid before you I venture to express the belief that the study of both the interior and the outside of the eyes of animals may be conducive to an increase of our knowledge of zoological classification and comparative physiology, and may possibly throw some light on the habits and pursuits of animals. After all, the eye is the chief connecting-link between the outer world and the consciousness of the animal, and it requires vision to find its way, obtain food, and avoid danger.

EXPLANATION OF THE PLATES.

- PLATE II. Fundus oculi of a native youth from Nubia.
 „ III. Fundus oculi of Ourang-Outang.
 „ IV. Fundus oculi of *Hapale penicillata*.
 „ V. Fundus oculi of *Lemur brunneus*.
 „ VI. Fundus oculi of *Lemur coquereli*.
-

February 2, 1897.

Prof. GEORGE B. HOWES, F.Z.S., in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of January 1897.

The total number of registered additions to the Society's Menagerie during the month of January was 47, of which 28 were by presentation, 2 by birth, 11 by purchase, and 6 were received on deposit. The total number of departures during the same period by death and removals, was 112.

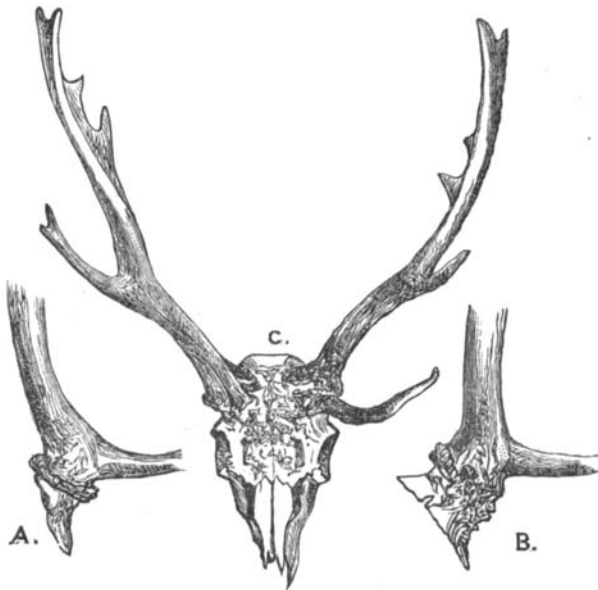
Mr. Sclater exhibited a collection of 31 bird-skins that had been formed by Mr. W. A. Churchill, H.B.M. Consul at Mozambique, during various shooting-excursions along the shores within 20 miles of the island of Mozambique. Capt. Shelley had kindly examined the collection and had referred the specimens to the following species, as named in his recently published Catalogue ('Birds of Africa,' vol. i. 1896). Mr. Sclater proposed to deposit these specimens in the British Museum, as though the species were mostly well known, the locality (Mozambique) was an

interesting one, and was not well represented in the National Collection of Birds.

Macronyx croceus (Vieill.).
Pholidauges verreauxi, Bocage.
Corvultur albicollis (Lath.).
Corvus scapularis, Dana.
Merops persicus, Pall.
Lophoceros melanoleucus (Licht.).
Gallirex chlorochlamys, Shelley.
Centropus natalensis, Shelley.
Strix flammea, Linn.
Milvus ægyptius (Gm.).
Nisaetus bellicosus (Daud.).
Polyboroides typicus, Smith.
Hagedashia hagedasch (Lath.).
Herodias lucida, Raf.
 — *alba* (Linn.).

Ardea ardesiaca, Wagl.
 — *melanocephala*, Vig. et Childr.
Mycteria senegalensis, Shaw.
Anastomus lamelligerus, Temm.
Tantalus ibis, Linn.
Phalacrocorax africanus (Gm.).
Phœnicopterus roseus, Pall.
Plectropterus niger, Sel.
Pternistes nudicollis (Bodd.).
Otis melanogaster, Rüpp.
Totanus nebularius (Gunner).
Numenius arcuatus (Linn.).
 — *phæopus* (Linn.).
Himantopus candidus (Bonn.).

Mr. R. E. Holding exhibited (on behalf of Sir Douglas Brooke,



Horns of Fallow Deer, showing malformations.

A, shed horn, bringing away only a small portion of the outer table of the skull.
 B, horn shed in the succeeding year, bringing away a much larger portion owing to exostosis at the point of fracture. In C the disease has enveloped the entire frontal bone, causing thickening of the horn-base and other malformations.

Bart.) a head and two pairs of shed horns of a Fallow Deer, the latter showing arrest in development in consequence of disease of the frontal bone, due, probably, to incomplete severance of the horn during the process of shedding.

Mr. G. E. H. Barrett-Hamilton, F.Z.S., gave a short general account of his journey to the Fur-Seal Islands of the North Pacific during the summer of 1896.

The journey had been undertaken on behalf of the Foreign and Colonial Offices, with a view to the investigation of the Natural History of the Northern Fur-Seal (*Otaria ursina*), with special reference to certain disputed points which have a distinct bearing on the industry connected with the skins of the animal.

Mr. Barrett-Hamilton stated that in the very short time at his disposal he would only be able to give a mere outline of his journey, and would hardly be able to speak at all of the Natural History of the Fur-Seal, which he would have very much liked to have done. As, however, he was engaged in reporting in some detail on these matters to the Government, it would have in any case been impossible for him to have gone into the disputed points until his report had been published.

Mr. Barrett-Hamilton left Queenstown in the R.M.S. 'Lucania,' in company with Professor D'Arcy Thompson, on May 24th, for New York, where they were met by Mr. Macoun, who was to proceed to the Seal Islands on behalf of the Canadian Government. Messrs. Macoun and Thompson proceeded at once from New York to Washington, whence they left shortly afterwards for the Pribiloff Islands, on the Alaskan side of Bering Sea, whereas Mr. Barrett-Hamilton had instructions to proceed to the Commander Islands, which are a part of the Russian Empire and lie near the coast of Kamtchatka, on the western side of the Pacific.

From New York Mr. Barrett-Hamilton went across the American Continent to San Francisco. Here, during a stay of several days, while awaiting the arrival of the steamer which was to take him to Yokohama, he was able to observe and photograph the famous Seal-rocks near the entrance to the Harbour, on which may be seen lying examples of two species of Sea-Lion, *Otaria stelleri* and *O. californiana*.

The voyage from San Francisco to Yokohama was taken in the Pacific Mail S.S. Company's Steamer 'Peru,' and was an uneventful one. Many notes were, however, made on the sea-birds seen, so far as they could be identified with certainty, the results of which, together with those of his observations in the more northern parts of the Pacific, Mr. Barrett-Hamilton stated that he hoped to publish shortly in the 'Ibis.'

Among the more interesting species observed in the voyage were the Black-footed Albatross (*Diomedea nigripes*), of which a photograph in flight was exhibited, the Frigate-bird, the Bosun-bird or Tropic-bird, the Booby, and many species of Petrels and Shearwaters.

A few hours were spent at Honolulu, in the Sandwich Islands, on the 17th of June, and Yokohama was finally reached on the night of the 29th of the same month.

On arrival at Yokohama Mr. Barrett-Hamilton found H.M.S. 'Edgar' ready to convey him to Hakodate in the northern island of Hokkaido, so that only a few hours were spent in Yokohama and Tokio, as the 'Edgar' sailed on July 1st. Hakodate was reached on the 3rd, and H.M.S. 'Spartan' was found there under orders to convey the speaker to Robben Island and the Commander Islands: various causes, however, delayed the start until the 8th of July.

On the way up from Yokohama to Hakodate, while following the eastern coast of the island of Nippon, on the 2nd of July, the effects of the terrible seismic wave of the 15th of June were very plainly visible, not only by the quantity of wreckage, dead animals, and even corpses passed at sea, but also by a distinct mark on the shore. The coast was here very much indented and highly suited to assist the action of such a catastrophe.

Hakodate was left on the 8th of July, *en route* for Robben Island, and the coast of Hokkaido followed on that day and the 9th, many sea-birds being seen and occasionally a whale. On the 10th the 'Spartan' passed through the Straits of La Pérouse, and late in the day made Cape Siretoko, a magnificent head which formed the eastern termination of Animama Bay and the south-eastern extremity of the island of Saghalien. Thence the 'Spartan' made for Robben Island, which was reached early on the morning of July the 11th.

Robben Island was a very small rock with a sandy beach all round it. It lay under Cape Patience in the island of Saghalien. It was a most inaccessible island, and there were no means of landing on it in bad weather, so that the 'Spartan' was very lucky to find a fine and clear morning there on the 11th.

There was a small Rookery of the Fur-Seals on Robben Island, which belonged to the Russian Government, and photographs of this as well as of the Rookery were taken. The season was evidently not long begun, and the young Seal-pups were still very small.

The 'Spartan' sailed from Robben Island on the same day, and steered her course across the foggy Sea of Okhotsk for Amphitrite Straits in the Kurile Islands, which were passed through in dense fog on the 13th. On the morning of the 14th she passed up the coast of Kamtchatka from Cape Lopatka to Petropaulowsk, and the weather being now clear a splendid view of the beautiful volcano and mountains of the peninsula was obtained. [Mr. Barrett-Hamilton exhibited some photographs to show the mountains and the character of the coast.]

The 'Spartan' remained three days at Petropaulowsk and in Tarenski Harbour, as some fresh meat was needed. Salmon and trout were exceedingly abundant in the harbour, the former comprising several species of the genus *Onchorhynchus*, and the latter being a species of *Salvelinus*. The fishes of these seas were

very little known and it was believed that more than one of the specimens collected by Mr. Barrett-Hamilton belonged to species new to science.

The Commander Islands were reached on the 19th of July, early on which day Mr. Barrett-Hamilton was left at Nikola by the 'Spartan.' He passed six weeks on the islands, part of the time being spent on the smaller Copper Island, which was about 40 miles from Bering Island. Much valuable information was collected during this stay, not only with regard to the Seals, but also with regard to the natives of the islands, the birds, and the general fauna and flora.

On the 25th of August, Professor Thompson and Dr. Jordan, who had been sent out to the Pribiloff Islands by the U.S. Government, arrived in H.M.S. 'Satellite,' and after a short inspection of the Glinka Rookery on Copper Island, the whole party left for Unalaska, where they arrived on the 29th.

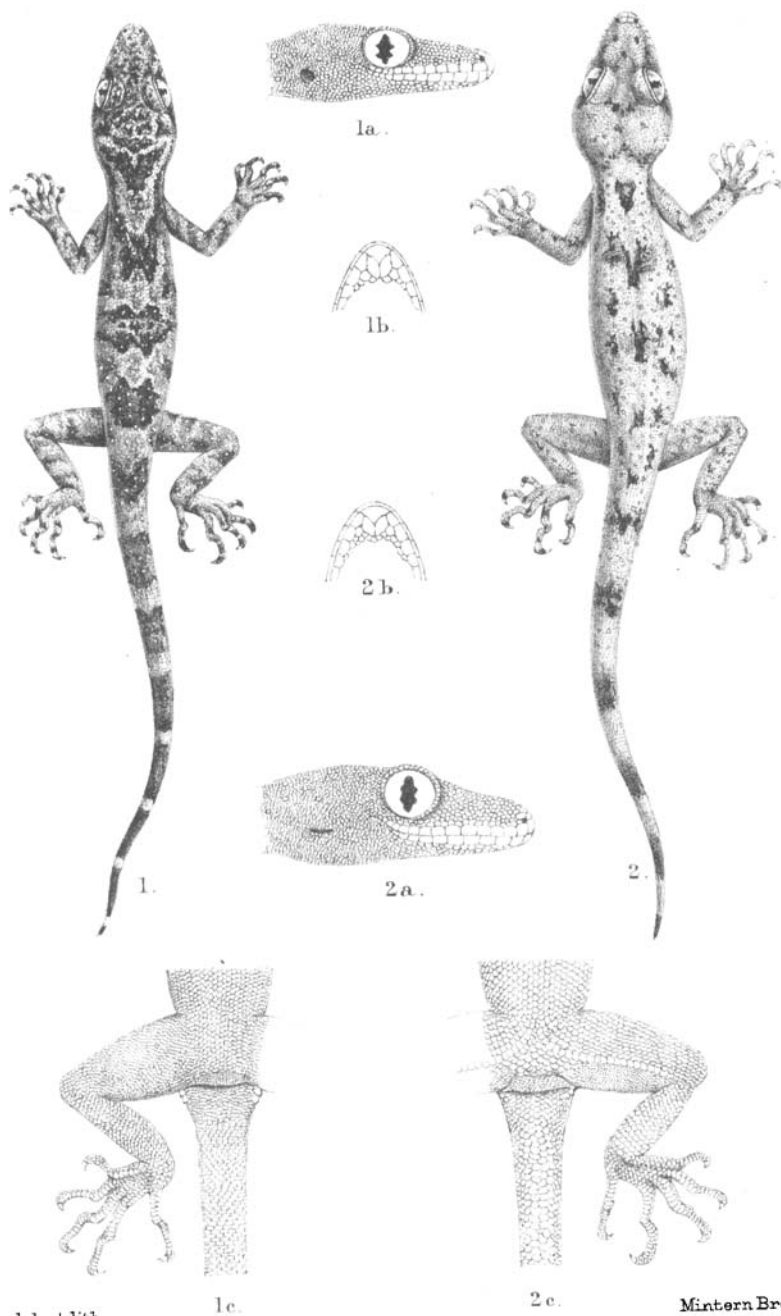
On the 31st the party proceeded in H.M.S. 'Pheasant' to St. Paul Island, the largest of the Pribiloff Group, arriving at the village on the 1st of September.

Professor D'Arcy Thompson, Dr. Jordan, and Mr. Lucas (U.S. Commissioners) left the Pribiloff islands on the 8th of September for Seattle, *via* Sitka, but Mr. Barrett-Hamilton remained behind to continue his observations on the Fur-Seal and to assist in the count of dead pups, together with Mr. Macoun (Canadian) and Colonel Murray and Mr. Clarke (Americans). He remained on the islands in all for about six weeks, part of which time was spent on the smaller island of St. George.

Finally, he left the islands for good on the 22nd of October, and returned to England by Unalaska, Port Townsend, Victoria, the Canadian Pacific Railway from Vancouver to Ottawa and Montreal, New York, Washington, and Queenstown.

Mr. Barrett-Hamilton stated that it had been his good luck to have had what for one season's work he thought must be an unique experience among the Fur-Seals, having spent six weeks on both the groups of islands, and having actually lived on each of the Seal Islands except Robben Reef, and having passed over on foot nearly every square yard of the Rookeries on all the four Seal Islands in the North Pacific. There was only one part of the season that he had missed, and that was the earliest part of it.

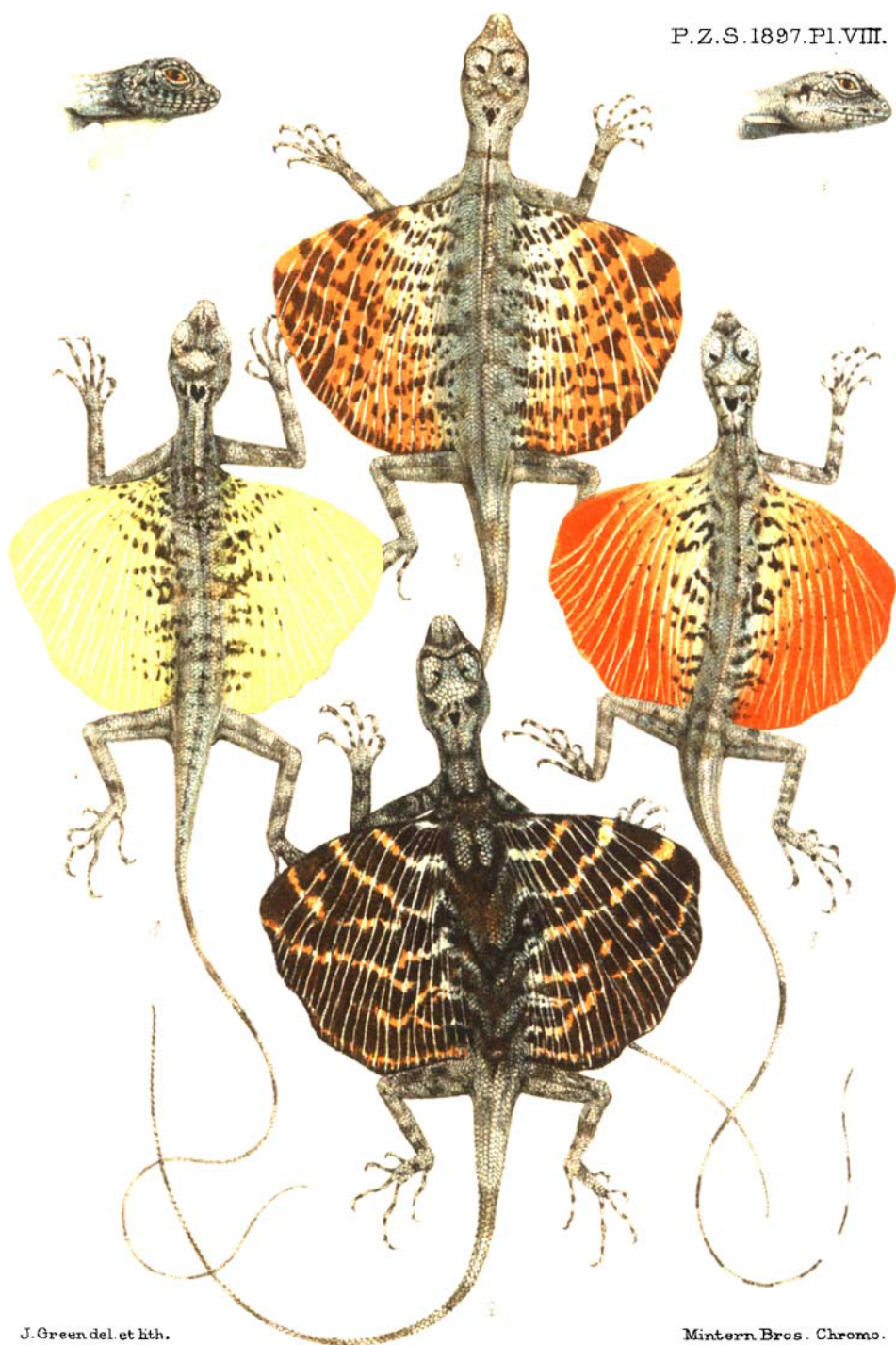
There was, of course, little chance of finding new species among the higher animals of the North Pacific, but, besides the small collection of fishes already alluded to, and which he believed contained examples of some new species, collections had been made of some of the smaller mammals met with, and the British and other Museums had been enriched by additional specimens of the Northern Fur-Seal, as well as by a set of skulls of different ages and sexes of Steller's Sea-Lion (*Otaria stelleri*). This magnificent northern species was, until now, very poorly represented in the National collection, and a young male brought home by Mr. Barrett-Hamilton was being set up for the Gallery now under re-arrangement by Mr. Lydekker.



J. Green del. et lith.

Mintern Bros. imp.

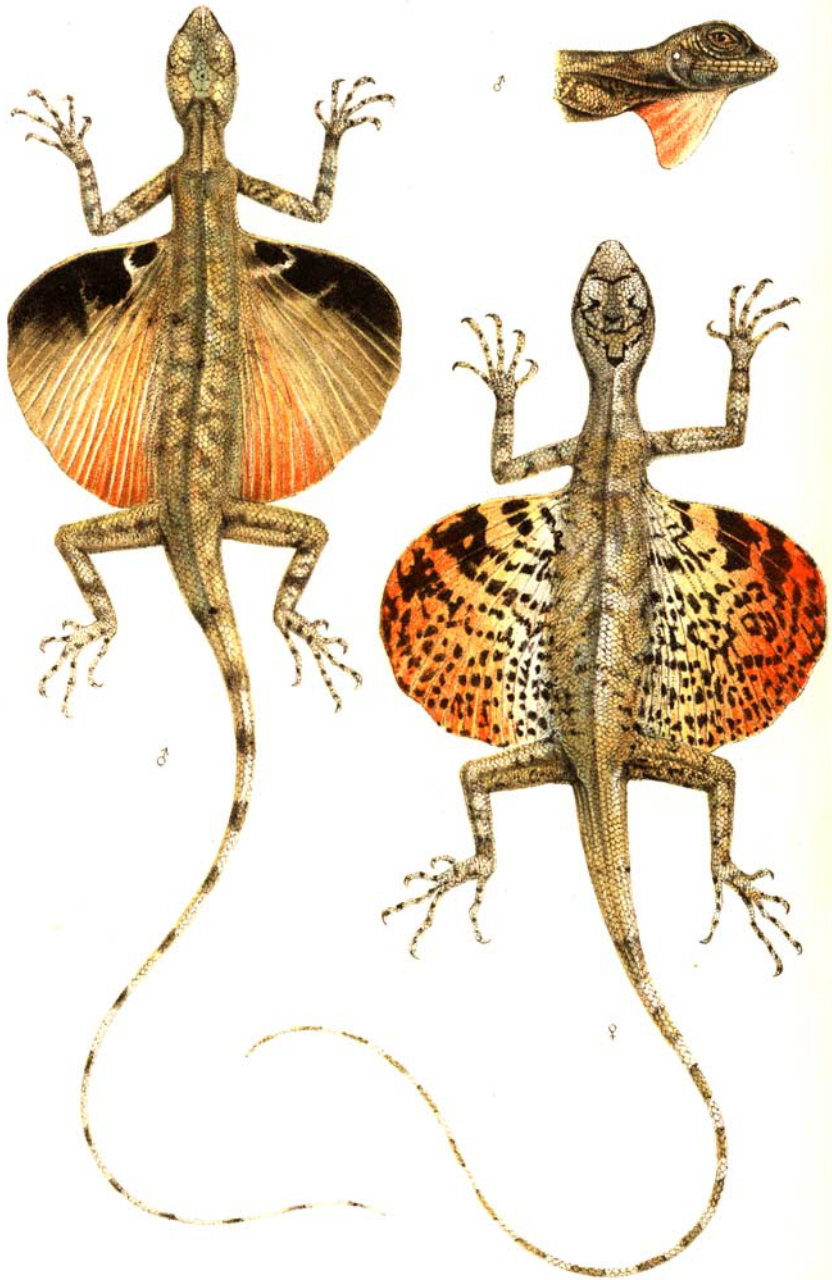
1. *GYMNODACTYLUS JELLESMÆ*. 2. *G. FUMOSUS*.



J.Green del. et lith.

Mintern Bros. Chromo.

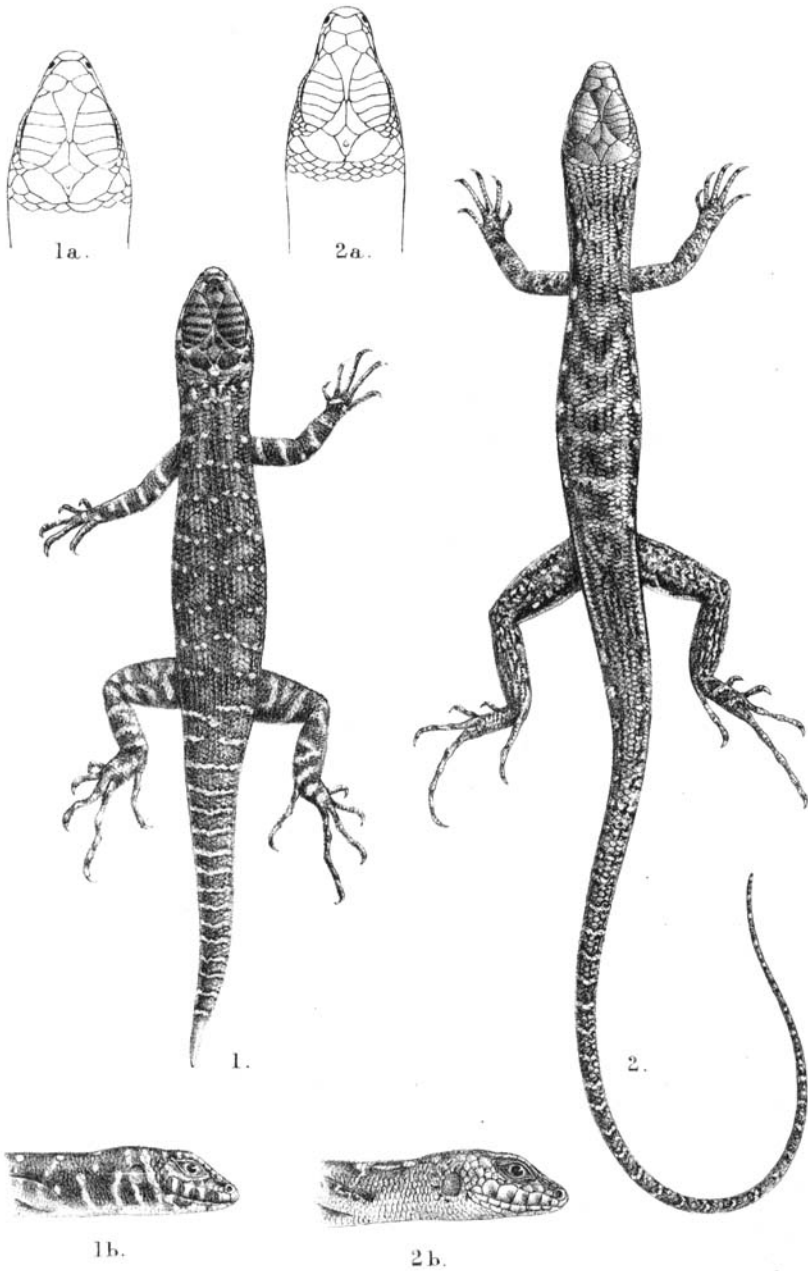
DRACO SPILONOTUS.



J. Green del. et lith.

Mintern Bros. Chromo.

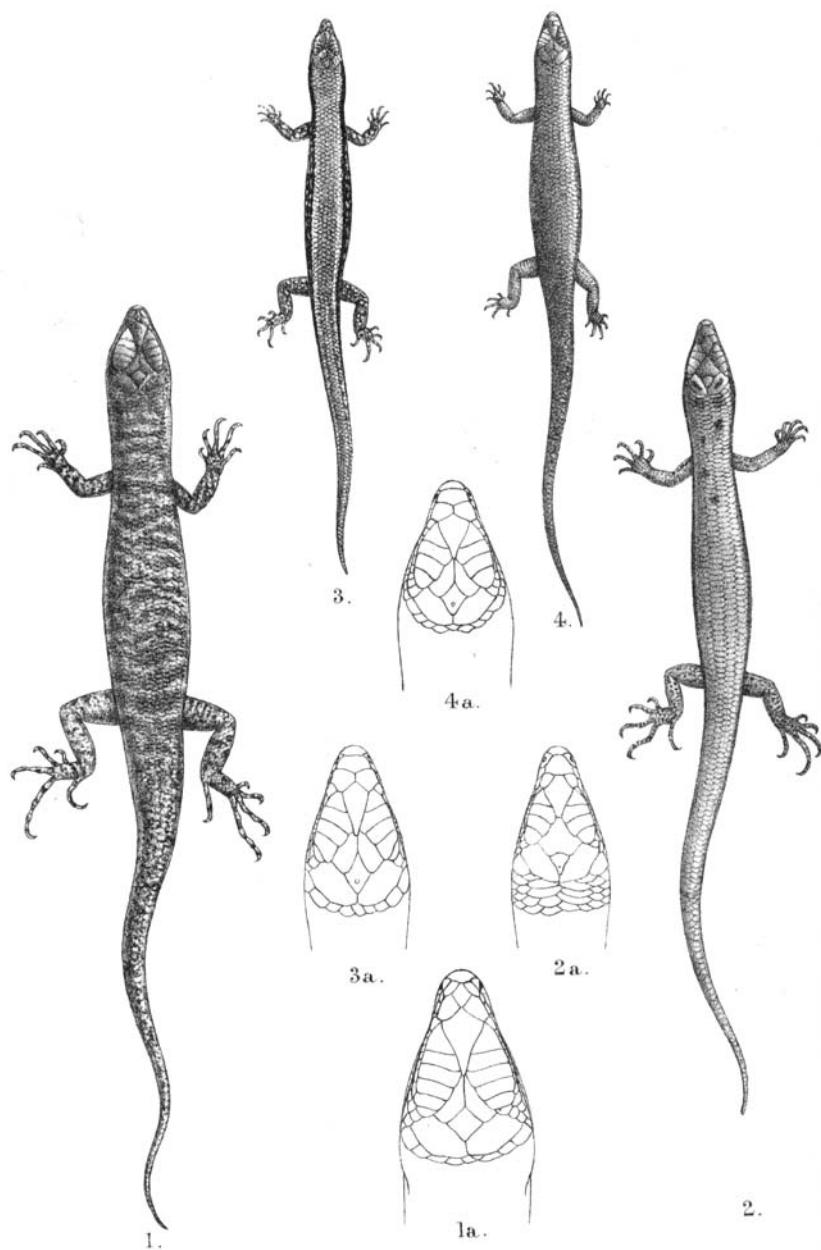
DRACO BECCARII.



J. Green del. et lith.

Mintern Bros. imp.

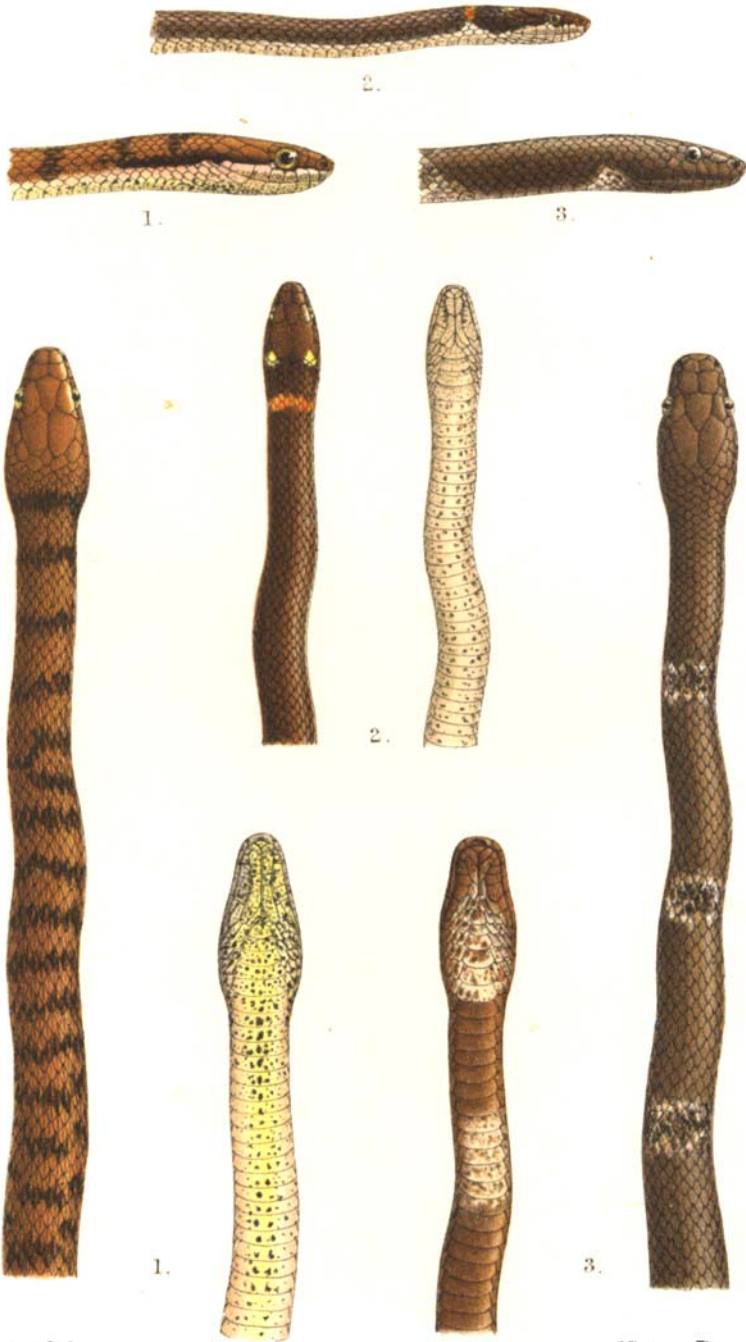
1. *LYGOSOMA TROPIDONOTUS*. 2. *L. SARASINORUM*.



1 Green del. et lith.

Mintern Bros. inc.

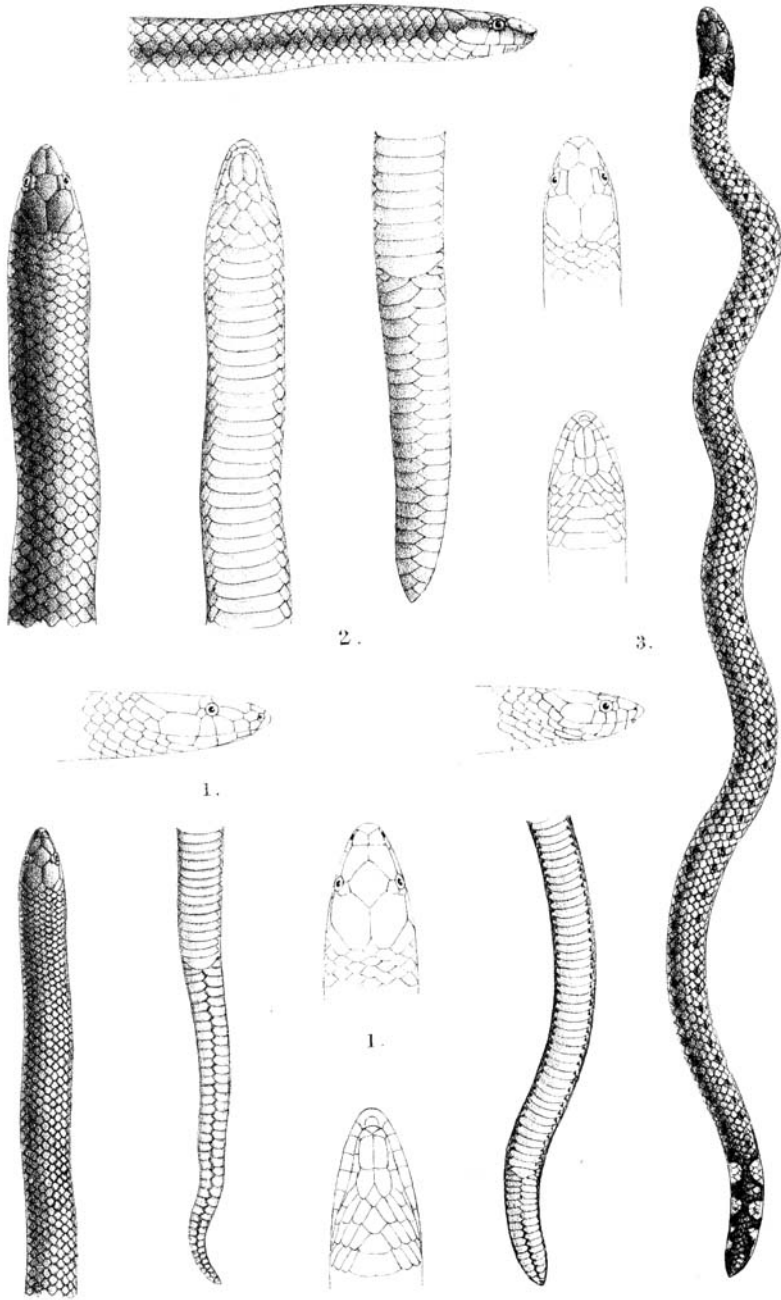
1. *LYGOSOMA CELEBENSE*. 2. *L. INCONSPICUUM*.
3. *L. TEXTUM*. 4. *L. PARVUM*.



J.Green del. et lith.

Mintern Bros. Chromo.

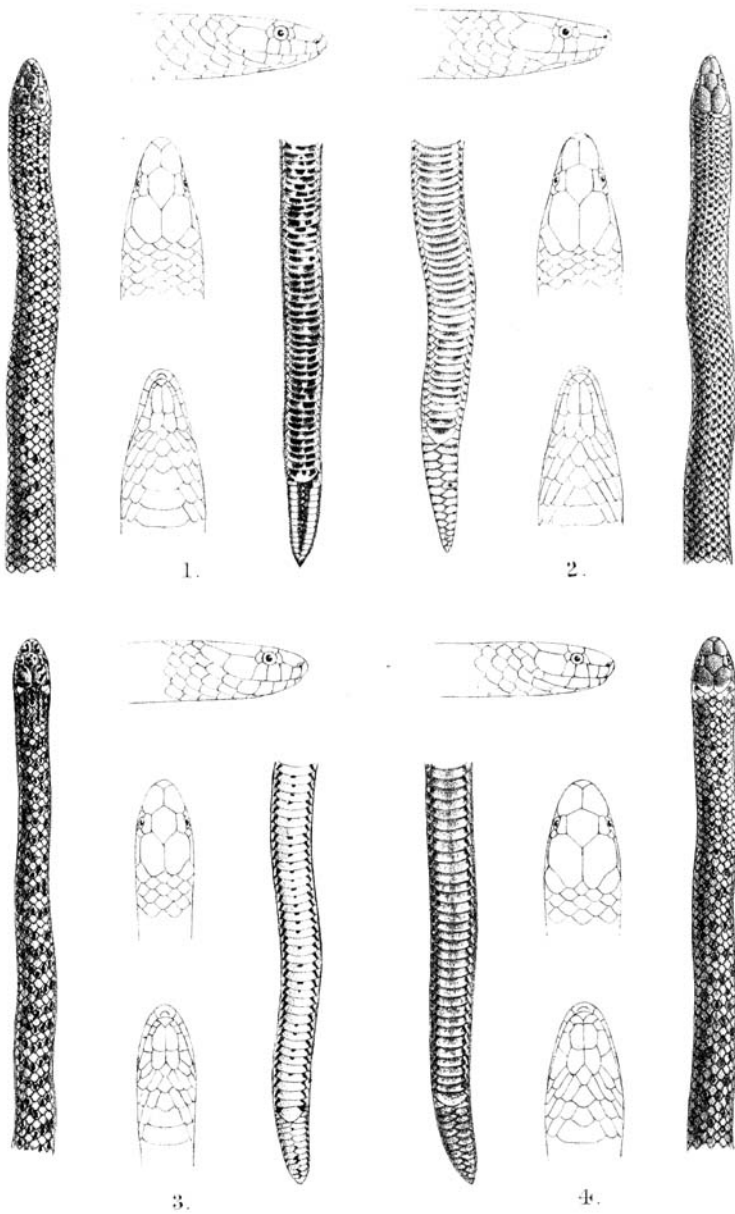
1.TROPIDONOTUS SARASINORUM.2.T.CELEBENSIS.
3.LYCODON STORMI.



J. Greindl. et. litt.

Mintern Bros. imp.

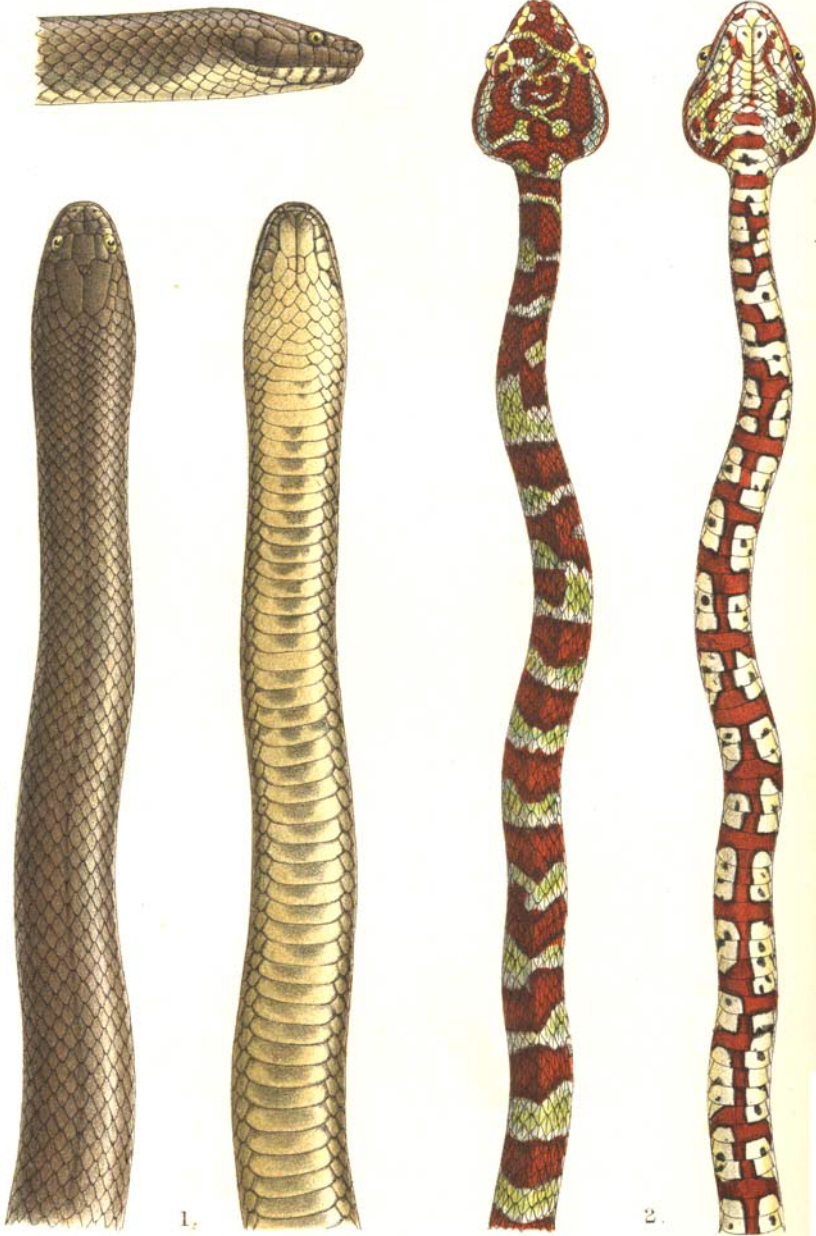
1. AGROPHIS SARASINORUM. 2. CALAMARIA ACUTIROSTRIS.
3. CALAMARIA NUCHALIS.



J. Green del. et lith.

Mintern Bros. imp.

1. CALAMARIA MUELLERI. 2. C. CURTA. 3. C. GRACILIS.
4. C. COLLARIS.



J Green del et lith.

Mintern Bros. Chroma

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



J. Green del. et lith.

Mintern Bros. Chroms

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

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.

[Received December 11, 1896.]

(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,

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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 Hr. 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 Niederl. 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 Jamepa.” *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 (*Rhabdophidum*, Blgr.).

REPTILES.

| | A | B | C | D | E |
|--|-----|-----|-----|-----|-----------------------|
| 1. <i>Crocodylus 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>celebensis</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-guinæ</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>erythrusus</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>linnaei</i> , Boie | + | ... | ... | ... | Java. |
| 69. <i>Hypsirhina plumbea</i> , Boie | + | ... | + | + | W. |
| *70. " <i>matannensis</i> , Blgr. | ... | ... | ... | + | |
| 71. " <i>enhydria</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 laevis</i> , <i>Gthr.</i> | + | + | + | ... | W. |
| 2. <i>Rana kuhlî</i> , <i>D. & 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 *Dendrolaphis 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. *Crocodylus 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.

a. 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.

a. 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.

a. 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.

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

* Dorsal scales pluricarinate; supranasal present.

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

19. *Mabuia multifasciata*.

Dorsal scales very strongly tricarinat; 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*.
 Ventrals 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; ventrals fewer than 200.
 * Scales in 15 rows.
 Scales strongly keeled 45. *Tropidonotus sarsasinorum*.
 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 autious*.
 Scales in 19 rows; subcaudals single 52. *Lycodon stormi*.
 γ. Pupil round; scales in 13 rows, smooth; ventrals rounded. 53. *Zamenis dipsas*.
 δ. Pupil round; scales in 21 to 25 rows; ventrals more than 200.
 Scales in 23-25 rows 54. *Coluber janseni*.
 Scales in 21 rows 55. *Coluber erythrurus*.
 ε. Pupil round; scales in 13-15 rows; ventrals angulate laterally, less than 200.
 Scales in 15 rows, vertebrae strongly enlarged ... 56. *Dendrophis pictus*.
 Scales in 13 rows, vertebrae 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 sarsasinorum*.
 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.
 † Ventrals 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 matanensis*.

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. *Naja 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 leytenensis*.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 erythraea*.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; symphyseal triangular, broader than long; a pair of large chin-shields forming a suture behind the point of the symphyseal, 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, Lubu (*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*, Laur.

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 *Himulia*. 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 præanals. 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 ABROCASTATUM*, 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 Masurang 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*).

COLUBRIDÆ.

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 ERYTHIRURUS*, 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 taniurus, 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. taniurus* 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: Luahu, 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 Minabassa, 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 Minabassa 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.

Minabassa (*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 KUHLII, 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: Takalekadjö 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. palawanensis* 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. palawanensis*. 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 Λ -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 ERYTHREA*, 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; Luhul, 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, Emponglar 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*).

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. *Hypsirkina 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.

2. Further Contributions to the Knowledge of the Phytophagous Coleoptera of Africa, including Madagascar.
By MARTIN JACOBY, F.E.S.

PART I.

[Received January 5, 1897.]

(Plate XVII.)

Since my last papers on African Phytophaga in the Transactions of the Entomological Society of London for 1895 and in the 'Deutsche entom. Zeitschrift' of the same year, a good deal of new material has come into my hands. M. Alluaud, of Paris, has kindly submitted to me the Madagascar species obtained by him, which, as the number of species was not large, I have included here, although the fauna of Madagascar has little in common with that of Africa, while Mr. Guy Marshall has been busy collecting in Natal and Mashonaland with good results; and although not much is gained for science, in my opinion, by continuing to add new species to the already enormous material known and unknown, it is to be hoped that one day we shall be enabled to work out a Biologia of the country now under investigation, as has been done in the case of Central America with such splendid results by Messrs. Godman and Salvin.

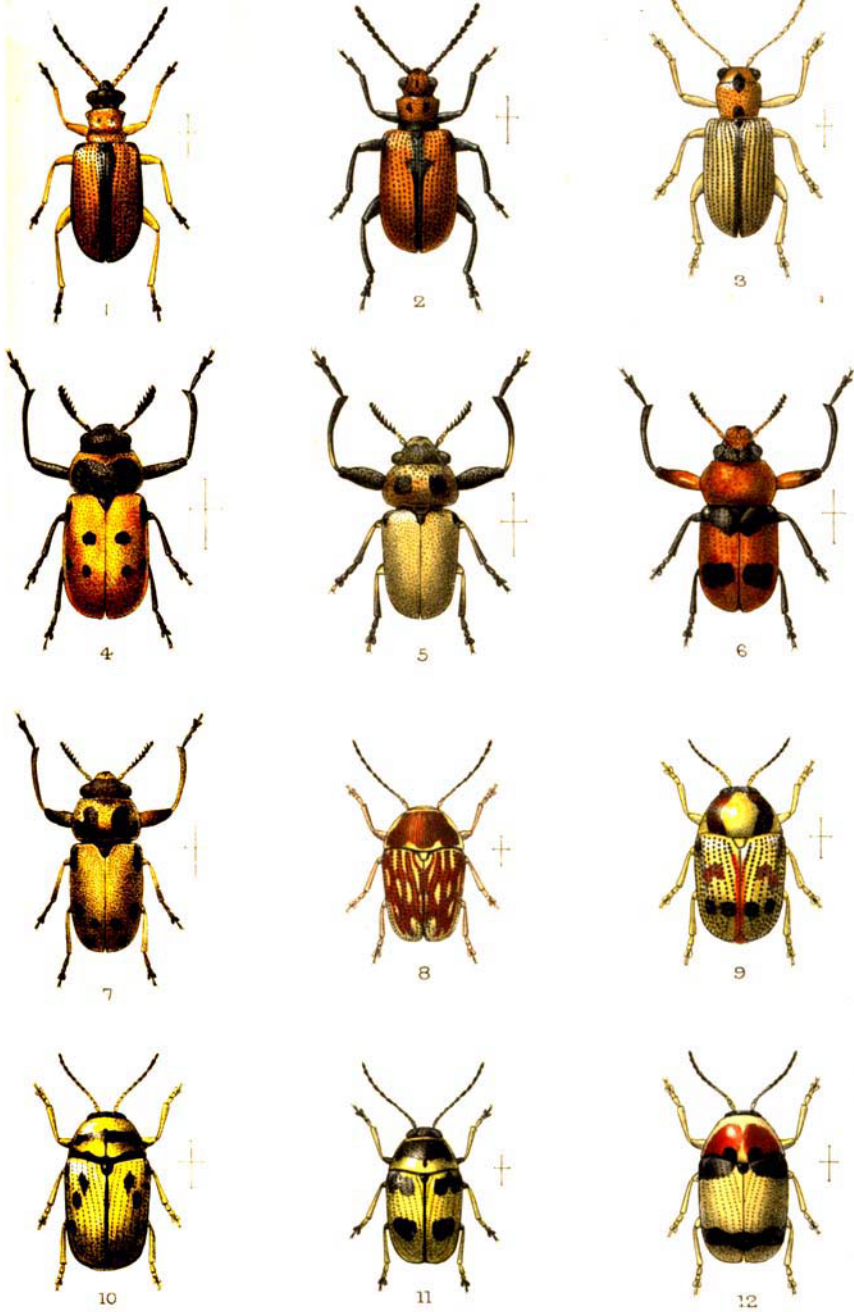
The present paper deals only with the *Criocerinae*, *Cryptocephalinae*, and *Clythrinae*; the other families I hope to deal with in a future paper. Types of all the species are contained in my collection and in that of the British Museum.

LEMA PRINCEPS, n. sp.

Rufous; the antennæ (the basal joints excepted) and the tarsi black; thorax foveolate at the sides; elytra metallic bright blue or violaceous, deeply foveolate below the base, strongly punctate-striate.

Length $3\frac{1}{2}$ lines.

Head impunctate, bituberculate between the eyes, the clypeus and labrum black; antennæ long and slender, black, the lower five joints rufous, the fourth joint one-half longer than the third one, the fifth very elongate; thorax not longer than broad, the sides moderately constricted, rather strongly produced above the constriction, the base with a deep transverse sulcus, a small transverse fovea is also placed immediately above the constriction at the sides, the disc with two rows of punctures at the middle, some other punctures also placed near the anterior angles; scutellum fulvous, not longer than broad; elytra with a deep depression below the base near the suture, bright metallic blue, strongly punctate-striate, the punctures slightly elongate and distinct to the apex, the interstices at the latter place strongly costate, the others flat and smooth;



WPurkiss del. et lith.

West, Newman imp.

Phytophagous Coleoptera from Africa and Madagascar.

underside and legs fulvous, nearly impunctate; the sides of the breast clothed with short golden-yellow pubescence; terminal joints of the tarsi more or less black.

Hab. West Coast of Africa.

Amongst the large-sized metallic-blue species of Africa, the present one may be known by the colour of the antennæ, their slender shape, the sculpturing of the thorax, and the deep elytral impression and their strong punctuation, as well as by the colour of the tarsi. I received several specimens from Mr. Alluaud in Paris.

LEMA MARSHALLI, n. sp. (Plate XVII. fig. 2.)

Greenish black; the vertex and the thorax fulvous, the latter with two spots on the disc and the base greenish; elytra fulvous, strongly punctate-striate; a spot on the shoulder, the suture, and a transverse spot across the latter, below the base, metallic dark green.

Length 3 lines.

Head strongly and remotely punctured, the vertex fulvous with two greenish spots and a central similarly-coloured fovea; eyes deeply notched; lower portion of face greenish black; the entire head sparingly clothed with fulvous short hairs; palpi long and slender, black; antennæ rather short, greenish black, pubescent, the fifth and following joints gradually but slightly widened; thorax about one-half broader than long, the sides but moderately constricted, the anterior angles slightly tuberculiform, the surface with two rows of central punctures and some others anteriorly, fulvous, two triangular-shaped spots at the middle and a transverse band occupying the basal portion below the sulcus greenish black; scutellum of the same colour, subquadrate, sparingly pubescent; elytra with a slight depression below the base, reddish fulvous, deeply and regularly punctate-striate, the interstices longitudinally costate at the apex; an elongate spot on the shoulders, a transverse short spot across the suture below the base, and the suture itself narrowly metallic dark green; underside and legs greenish black.

Hab. Natal (collected by Mr. G. Marshall).

Of this handsome species, two specimens were obtained by Mr. Marshall in the neighbourhood of Natal. This *Lema* seems very closely allied to *L. insignis*, Lac., likewise from Africa, in regard to coloration; but is smaller, the thorax is distinctly broader than long (not scarcely so long as broad as in *L. insignis*), the elytra have only a shallow depression below the base, not a deep one, and the band and subquadrate spot of which Lacordaire speaks are absent.

LEMA BREVICORNIS, n. sp.

Below blackish; antennæ very short, black; basal and apical joint fulvous; head and thorax obscure dark fulvous, minutely

punctured; elytra greenish black, strongly punctate-striate; last abdominal segment and the legs more or less flavous.

Length $1\frac{1}{2}$ line.

Head dark fulvous, the vertex very convex, not constricted behind the eyes, minutely punctured, the sides and the middle deeply longitudinally sulcate; eyes large, very slightly notched; antennæ extending to the base of the thorax only, the lower five and the apical joint fulvous, the others black, basal joints very short, nearly moniliform, the following five joints transverse, broader than long; thorax scarcely longer than broad, the sides but very little constricted at the base, the surface without a sulcus, very minutely punctured and finely granulose, of a dark fulvous colour, with a slight æneous gloss; scutellum broader than long; elytra with a slight depression below the base, closely and strongly punctate-striate, the punctures rather elongate, the interstices flat, except near the extreme apex, impunctate; legs flavous, the femora marked with piceous at the middle; breast and abdomen greenish black, the last abdominal segment flavous.

Hab. Tsipango, Natal (*G. Marshall*); also Mashonaland.

This is a very interesting little *Lema*, and unlike any other with which I am acquainted, on account of the very short antennæ and their transversely-shaped joints and the scarcely constricted thorax. I have seen six specimens of this species.

LEMA FUSCITARSIS, n. sp.

Testaceous; the apical joints of the antennæ and the tarsi more or less fuscous; head and thorax impunctate; elytra very deeply punctate-striate, the interstices at the apex convex.

Length 2 lines.

Head scarcely constricted behind the eyes, impunctate, the space between the eyes strongly swollen, with a deep central fovea, the supraocular grooves moderately deep, with some yellow pubescence; eyes not very deeply notched; antennæ scarcely extending to the middle of the elytra, the basal joint short and thick, the second very short, the third and fourth equal, twice as long as the second one, the apex of each joint slightly stained with fuscous, the terminal joints entirely of that colour; thorax not longer than broad, the sides moderately constricted, the basal sulcus not very deep, the disc entirely impunctate, shining; scutellum with the apical margin emarginate; elytra scarcely perceptibly depressed below the base, deeply foveolate-punctate at the base, less strongly punctured posteriorly, the interstices not raised, except at the sides and apex; underside entirely testaceous, clothed with fine yellow pubescence; the legs of the same colour, the apex of each tarsal joint and the claws fuscous.

Hab. Tsipango (Natal); collected by Mr. G. Marshall.

Allied to *L. infima*, Lac., from Senegal, but differing in the colour of the antennæ and tarsi, in the impunctate head and thorax, and the deep elytral punctuation at the base; the punctures at the lower portion are rather elongate in shape and as large as the space

dividing each puncture; in one specimen the last joint of the antennæ is fulvous, the preceding ones fuscous, and the basal joints as in the type.

LEMA SEMIPURPUREA, n. sp.

Black, with bluish gloss; antennæ short; thorax with rounded sides, finely punctured; elytra purplish or bluish, deeply and closely punctate-striate, the ninth row entire.

Length $2\frac{1}{2}$ lines.

Head with some deep punctures at the vertex, the latter with two obscure small fulvous spots, more or less distinct, and a central longitudinal groove, frontal elevations absent, the space surrounding the eyes rugose; antennæ scarcely extending to the middle of the elytra, black, pubescent, the fifth and following joints rather robust and widened, one-half longer than broad; thorax subquadrate, scarcely one-half broader than long, but very moderately constricted at the sides, the anterior half rather widened or thickened, but rounded, the anterior angles not produced, the basal sulcus deep, the space at the sides within the constriction transversely rugose, the rest of the surface finely punctured throughout, with some larger punctures intermixed; scutellum not longer than broad; elytra subcylindrical, without basal depression, metallic purplish or bluish, deeply and strongly punctured, the punctures large and closely placed, but diminishing at the apex, where the interstices are as usual, convex; underside and legs black, with a bluish gloss, the posterior femora only extending to the second abdominal segment.

Hab. Mashonaland (*G. Marshall*).

From the smaller metallic species of *Lema* from Africa, *L. semipurpurea* is well distinguished by the shape and punctuation of the thorax, the former is far more approaching to a cylindrical shape than is the case in most species from that region, although not to the extent that is found in two or three species; the glabrous upper surface and want of an elytral depression separate the species from *L. azurea*, Klug, and its allied forms.

LEMA TARSATA, n. sp. (Plate XVII. fig. 1.)

Head, antennæ (the basal four joints excepted), the breast, and the tarsi black; thorax flavous, foveolate, and punctured; elytra deeply punctate-striate, flavous, the suture and the lateral margins bluish; legs and abdomen flavous.

Var. Elytra without dark bands, underside entirely black.

Length 2 lines.

Head black, strongly rugose and finely pubescent, the neck more or less fulvous, sometimes with a small black central spot, the space between the eyes with a deep central groove; labrum and palpi black; antennæ extending to the middle of the elytra, black, the lower four joints flavous, terminal joints rather robust, twice as long as broad; thorax subquadrate, one-half broader than long, the sides strongly widened towards the apex, the latter with a

small tubercle at the anterior angles; the surface flavous, strongly punctured at the middle, with two foveæ placed anteriorly near the middle, and another more transverse one at each side, the basal sulcus deep, the anterior margin sometimes with a small black spot at the middle; scutellum black, its apex truncate; elytra not depressed below the base or scarcely so, with regular rows of moderately strong punctures, which get much finer towards the apex, where they are slightly elongate in shape, the ninth row entire, the margins narrowly, the suture more broadly bluish black; underside black; the abdomen more or less fulvous; legs flavous, the tarsi black.

Hab. Natal, Estcourt, 4000 ft. (*G. Marshall*).

Allied to *L. aperta*, Lac., in coloration, but quite distinct on account of the lateral and central thoracic foveæ; in the variety, of which several specimens are before me, there is no trace of any elytral blue bands, but in other respects these specimens agree in everything. Mr. Marshall found this species under bark of trees.

LEMA CONSOBRINA, n. sp.

Black, thorax impunctate, bifoveolate; elytra metallic blue, strongly punctate-striate, depressed below the base; posterior femora at the lower portion fulvous.

Length 2 lines.

Head impunctate, black, the space between the eyes with two strongly raised elongate tubercles; eyes deeply emarginate; antennæ extending to the middle of the elytra, black, pubescent, the third and fourth joint elongate, the fifth the longest, terminal joints longer than broad; thorax one half broader than long, the sides obliquely diverging outwards from the sulcation, the anterior angles rather acute, the disc impunctate, black, with a deep transverse subbasal sulcus and two small foveæ anteriorly at the sides; scutellum truncate at its apex; elytra distinctly depressed below the base, metallic blue; the punctures regular and rather deep, extending to the base and apex, the ninth row entire, the interstices flat and impunctate, except near the extreme apex; underside and legs black, the posterior femora, their apex excepted, fulvous.

Hab. Mashonaland (*G. Marshall*).

Closely allied to *L. affinis*, Clark, and *L. rufo-femorata*, Cl.; but differing from the former in the sculpture of the head and in the black abdomen, also in its smaller size, and from the latter in the black, not blue, colour, the bifoveolate thorax, and smooth, not rugose, elytral interstices.

Two specimens are before me.

CHIOCERIS CYLINDRICOLLIS, n. sp.

Obscure fulvous; the antennæ, tibiæ, and tarsi black; thorax subcylindrical, with two rows of punctures; elytra pale fulvous, regularly and deeply punctured, the interstices convex at the apex.

Length $2\frac{1}{4}$ lines.

Head impunctate at the vertex, the space round the eyes finely punctured and pubescent, with a short central groove; antennæ very short and robust, black, the basal two joints fulvous; thorax subcylindrical, but slightly constricted at the base; the sulcus indistinct and placed close to the base, the disc with two rows of rather deep punctures at the middle and a few others near the anterior angles; elytra with deep round punctures, placed in closely approached rows, the punctuation getting finer towards the apex, the interstices sparingly impressed with minute punctures, convex near the apex, there are some slight transverse wrinkles to be seen below the base; underside and the femora fulvous, clothed with extremely short yellow pubescence, tibiæ and tarsi piceous or black.

Hab. Madagascar, Diego-Suarez (*C. Alluaud*).

Smaller than *C. livida*, Dahlm.; the thorax more cylindrical and with two rows of punctures only; the antennæ also differently coloured.

CRIOCERIS MADAGASCARIENSIS, n. sp.

Dark fulvous; antennæ short, the last four joints black; thorax flat, strongly and closely punctured; elytra finely punctate-striate, the interstices sparingly and finely punctured.

Length 3 lines.

Head deeply constricted at the base, with a short central and deep lateral grooves; eyes deeply notched; clypeus finely punctured; palpi filiform; antennæ extending to the base of the thorax only, the second joint moniliform, third and fourth short, equal, the following joints triangularly widened, the terminal ones strongly transverse, the lower seven joints fulvous, the others black; thorax subquadrate, slightly longer than broad, but moderately constricted at the middle, the anterior angles rounded, the surface rather flattened, strongly, irregularly, and closely punctured, the space near the base nearly impunctate, with a very feeble transverse sulcation; scutellum narrowly elongate; elytra not depressed below the base, nor raised near the scutellum, with very regular rows of punctures, which are larger anteriorly on the inner disc, the interstices flat, with a single row of fine punctures which are more or less interrupted, lateral margin strongly thickened; underside nearly smooth and impunctate; tarsi blackish.

Hab. Madagascar, Diego-Suarez (*Alluaud*).

Closely allied to *C. antennalis*, Lac., also from Madagascar; but smaller, the last four, not five joints of the antennæ black, the thorax much more strongly and closely punctured, and the elytral interstices likewise finely punctulate. *C. dimidiaticornis*, Lac., is described as having the antennæ one-third the length of the body, the interstices of the elytra finely alutaceous and convex posteriorly, and the apex of the tibiæ black as well as the tarsi. M. Alluaud has sent me three specimens of the present species which show no differences in any way.

PEDRILLIA MADAGASCARIENSIS, n. sp.

Fulvous, pubescent; the apical six joints of the antennæ, the apex of the tibiæ, and the tarsi, black; thorax finely, elytra strongly punctured.

Length $1\frac{1}{2}$ line.

Head broad, very sparingly and finely punctured, with some few hairs; clypeus narrow, semicircular; antennæ widely separated at the base, extending scarcely beyond the base of the elytra, fulvous, the terminal seven joints black; thorax but slightly broader than long, constricted below the middle, the latter projecting angularly, the disc with a shallow transverse groove near the base, the sides below the groove thickened, with some stiff hairs, the surface finely and remotely punctured, each puncture provided with a blackish stiff hair; scutellum subtriangular, punctured and pubescent; elytra slightly flattened along the suture, broader at the base than the thorax, much more strongly punctured than the latter and sparingly clothed with yellowish hairs; underside and legs fulvous; the apex of the posterior femora, (sometimes) that of the tibiæ and the tarsi, black.

Hab. Madagascar, Diego-Suarez (*Alluand*).

This is the first species of the genus known to me from this locality. In the collection of M. Alluand and my own.

HEMYDACNE, n. g.

Elongate, parallel; head broad, not constricted; antennæ widely separated, filiform; eyes small, slightly emarginate; thorax narrowed at the base, without lateral margin; elytra wider than the thorax, deeply punctate-striate; first two abdominal segments much longer than the following ones; posterior femora slightly incrassate; the four posterior tibiæ with a tooth near the apex; the first tarsal joint as long as the two following ones, claws appendiculate; prosternum proportionately broad, yet twice as long as broad, its base truncate.

The insect for which this genus is proposed is difficult to place in any of the earlier groups of Phytophaga, since it exhibits a number of characters peculiar to several of them; thus the widely separated antennæ and the broad head agree with *Megascelis*, the thorax is somewhat similar to *Orsodacna*, but the broad prosternum and the posterior tibiæ widened into a tooth at the apex are not found amongst any of these sections. The insect had perhaps best find its place near *Orsodacna* at present, but would form a special group if other similarly structured species should be found.

HEMYDACNE MACULICOLLIS, n. sp. (Plate XVII. fig. 3.)

Below black, above and the legs testaceous; head with one, the thorax with two black spots, remotely punctured; elytra deeply punctate-striate; the interstices longitudinally costate, flavous, the suture black.

Length $1\frac{1}{2}$ –2 lines.

Head with a few fine punctures, testaceous or flavous; the vertex with a triangular black spot; clypeus not separated from the face; labrum deeply emarginate; apex of the mandibles black; palpi rather robust; antennæ inserted below the inner margin of the eyes, not extending to the middle of the elytra, testaceous, the second joint one-half shorter than the third, this latter shorter than the fourth, the following joints elongate, the terminal ones shorter again and slightly thickened; thorax gradually narrowed towards the base, about one-half broader than long, the surface remotely but rather strongly punctured, with an obsolete transverse depression near the base, the disc flavous or testaceous, with a triangular black spot at the middle of the anterior margin and another at the middle of the base, the flanks of the thorax likewise black; elytra with rows of deep and regular punctures, all the interstices longitudinally costate, the lateral margin not visible from above, narrowly black, like the suture; underside black; legs flavous or testaceous.

Hab. Madagascar, Diego-Suarez (*C. Alluaud*).

MIOPRISTIS (LOPHOBASIS) *NATALENSIS*, n. sp. (Plate XVII. fig. 5.)

Black, pubescent, lower portion of the face flavous; thorax flavous with two large black spots, coarsely punctured; elytra finely and closely punctured, flavous or testaceous, the margins narrowly and a spot on the shoulders black, the base with a ridge.

Mas. The anterior legs very long, femora robust, tibiæ curved, tarsi slender.

Fem. Legs equal, entirely flavous; the elytra more closely and strongly punctured.

Length 3-3½ lines.

♂. Head black at the upper portion and closely pubescent, the sides prolonged below the eyes, these small, feebly notched below; clypeus flavous, deeply triangularly emarginate at the anterior margin; mandibles broad, flavous, strongly curved inwards at the tip, the latter black; palpi flavous, the apex black; antennæ extending to about the base of the thorax, black, the lower three joints fulvous, the basal joint black above, the second and third short, equal, the following joints very strongly triangularly dentate and widened; thorax twice as broad as long, the sides and the posterior angles rounded, the surface sparingly and coarsely punctured, flavous, shining, the disc more or less fulvous, with a large black subquadrate spot at each side of variable size; scutellum black, pubescent at its base, its apex truncate; elytra with a narrow transverse ridge at the basal margin, closely punctured in irregular rows, flavous, opaque, the sutural and lateral margins very narrowly black, the shoulders with a small black spot; underside and the legs black, the extreme base of the femora and the tibiæ more or less flavous; the first joint of the anterior tarsi in the male as long as the following two joints together.

Hab. Natal, Estcourt (*G. Marshall*).

This and the following species seem to me to find their places best in Lacordaire's subgenus *Lophobasis*, on account of the basal ridge of the elytra, although some of the other structural characters do not agree with the genus, but in that respect scarcely two species are similar amongst these variable insects. Of both sexes a good many specimens are before me: in some the elytra are without the dark margins and the thoracic spots are much smaller; the females differ much in the more strongly and closely punctured elytra, which are also more shining, and in having entirely flavous legs.

MIOPRISTIS SUBRUGOSA, n. sp. (Plate XVII. fig. 7.)

Black, pubescent; the clypeus and the legs fulvous; thorax remotely and strongly punctured, flavous with two large black spots; elytra very closely and strongly punctured, testaceous, a spot on the shoulder and three others placed triangularly near the apex, black.

Var. Some or all the elytral spots absent.

Mas. The anterior legs elongate, the tibiæ strongly curved.

Fem. Legs normal, thorax and elytra nearly rugosely punctured.

Length $2\frac{1}{2}$ –3 lines.

Head pubescent and of the same sculpture and colour as in the preceding species; the antennæ also exactly similar, as well as the thorax; elytra with the basal margin likewise in shape of a ridge, very closely and strongly punctured, with an elongate spot on the shoulders and three round spots near the apex black—of these latter, one is placed close to the suture and two near the lateral margin, forming together a triangle; legs fulvous, the femora above and the tarsi black.

Hab. Natal, Estcourt (*G. Marshall*).

Closely allied to the preceding species, but quite distinct on account of the almost rugose punctuation of the elytra and their pattern; and even if the spots of the elytra are absent, both sexes may be at once known from *M. natalensis* by their sculpture, which renders the elytra opaque, the female of the last-named species, on the contrary, having the elytra distinctly shining; the spots of the thorax are as variable as usual in these insects.

MIOPRISTIS ATROFASCIATA, n. sp. (Plate XVII. fig. 6.)

Fulvous, the upper part of the head, the tibiæ, tarsi, and sides of the breast black; thorax nearly impunctate; elytra with fine rows of punctures, fulvous, a triangular band at the base, and a transverse spot below the middle, black.

Mas. The anterior legs elongate; the first joint of the tarsi as long as the two following joints together.

Length 3 lines.

Head strongly covered with transverse and longitudinal strigæ, the vertex smoother, black, in shape of a transverse band with its anterior edge concave, lower portion of face fulvous, the anterior margin of the clypeus deeply triangularly emarginate, eyes moderate, distinctly notched, sides of the face produced into a

transverse ridge; mandibles robust, fulvous, the apex angularly curved, black; antennæ extending to the base of the thorax, black, the lower five joints flavous, basal joint widened and curved, third one-half longer than the second, fourth more elongate, the others triangularly widened; thorax twice as broad as long, the sides strongly rounded, the posterior angles distinct, the sides with a narrow reflexed margin, the disc very strongly convex, sulcate near the anterior margin at the middle, strongly punctured at the same place, the rest of the surface impunctate, reddish fulvous or rufous; scutellum broad, black, its apex slightly raised: elytra parallel, finely punctured in widely separated rows, fulvous, the base with a transverse black band, which is gradually widened towards the suture and is slightly obliquely cut at the same place; it extends as far as the shoulders only, where it ends in a spot; below the middle is another transversely subquartrate short band: the underside and the base of the femora fulvous, the apex of the anterior femora and all the tibiæ and tarsi, as well as the sides of the breast, black.

Hab. Natal, Estcourt (*G. Marshall*).

Both male and female specimens are before me; the anterior legs of the former are, as usual, very elongate and their tibiæ curved. The system of coloration in this species differs from any of those placed in this genus; but I see no structural differences of importance to separate it from *Miopristis*, although it might perhaps be equally well placed in *Antipus*. The females only differ in the shorter legs and less transverse thorax, the mandibles also are smaller.

MELITONOMA EPISTOMALIS, Lac.

The specimens which Mr. Marshall obtained at Mashonaland agree very nearly with Lacordaire's description. The species differs from any other contained in the genus by the truncate margin of the epistome, which leaves a cavity exposing broadly the labrum; this cavity is bounded at the sides by flattened projections, which are turned inwards (Lacordaire says "tubercles"). All the specimens before me have the thorax marked with two large black spots joined at the base, and the elytra instead of having five spots have only one on the shoulder, a transverse band at, and another below, the middle black; as the elytral spots are often confluent in these insects I do not think that the Mashonaland specimens represent a new species, but only a variety.

In the female the head is normal.

PEPLOPTERA QUADRIPUNCTATA, n. sp.

Black; thorax rufous, finely punctured; elytra rather strongly and closely punctate-striate, flavous, two spots near the base and two behind the middle, placed transversely, black.

Length $3\frac{1}{2}$ lines.

Head black, the vertex rather closely and finely punctured, the space between the eyes with a round fovea, strongly and closely punctured; antennæ not extending to the base of the thorax,

black, the lower three joints fulvous; thorax rather more than twice as broad as long, narrowed in front, the sides but slightly rounded, the surface very finely but not closely punctured, with a slight depression near the posterior angles, which is a little more strongly punctured, basal lobe broadly produced, narrowly margined with black as well as the anterior margin at the middle; scutellum broader than long, black, shining; elytra strongly lobed at the sides below the shoulders, very closely and rather regularly punctured in rows, flavous or fulvous, a small spot on the shoulders, another near the suture below the scutellum, and two rather larger ones below the middle, placed transversely, black, of these spots the inner ones are the largest; underside and legs clothed with yellowish pubescence, tarsi broad and robust.

Hab. Praetoria, also East Africa.

Closely allied to *P. eckloni*, Lac., but the thorax without any band or spots and the general size smaller. The two specimens contained in my collection agree in every way with each other; for all that, it may be that the species represents but a variety of *P. eckloni*.

PEPLOPTERA COLLARIS, n. sp.

Black; basal joints of the antennæ fulvous; thorax convex, impunctate, fulvous, the base with two large black spots; elytra finely and remotely punctured, flavous, a sutural and lateral narrow stripe black.

Length 4 lines.

Head black; the vertex convex and smooth, the other part finely rugose and depressed between the eyes; the clypeus more sparingly punctured; labrum and palpi black; antennæ only extending to the middle of the thorax, black, the lower four joints fulvous, basal joint strongly incrassate; thorax twice as broad as long, the sides rounded, the anterior margin concave, the surface rather strongly convex, impunctate, reddish fulvous, the base with a large subquadrate black patch at each side, extending upwards to the middle, but both well separated; scutellum black, its apex truncate; elytra finely but distinctly punctured in semi-regular but rather widely separated rows, flavous, the suture with a narrow black band, not extending to the base, the sides with a similar band (leaving only the basal lobe of the ground-colour), abbreviated near the apex, the extreme apical margin likewise narrowly black; underside and legs black, finely pubescent, the tarsi broad and robust.

Hab. Tabora, Ounyanyembe.

Of this species I possess a single example; it is a comparatively large species, and differs from its congeners in the broad subquadrate black patches of the thorax in connection with the sculpture and pattern of the elytra.

PEPLOPTERA FULVITARSIS, n. sp.

Subcylindrical, black; thorax extremely finely punctured, rufous a central elongate and two lateral round spots black; elytra

flavous, strongly and semi-regularly punctured, a spot on the shoulders and a transverse band near the apex black; tibiae and tarsi flavous.

Length $3-3\frac{1}{2}$ lines.

Head black; the vertex smooth, convex, the lower portion rugose-punctate; antennae scarcely extending to the middle of the elytra, black, the lower four joints fulvous; thorax with strongly deflexed sides, the lateral margins but slightly rounded, the surface subcylindrical, extremely sparingly and finely punctured, reddish-fulvous, a short elongate spot at the middle and a small spot at each side black; scutellum broad, black; elytra with closely approached rows of strong punctures, which are rather irregularly placed at the base, flavous, a spot on the shoulder and a transverse band at some distance from the apex extending to the sides black; underside closely pubescent, the greater portion of the tibiae and the tarsi flavous.

Hab. Delagoa Bay, Zambezi River.

Of this species I possess three specimens, which agree very nearly with each other, except that in two of them the small lateral spot on the thorax is wanting. I am unable to find any species or variety described by Lacordaire or others which agrees with the present insect; there are no lateral stripes of the elytra or sutural ones, as in so many species of this genus, and the punctuation of the elytra is strong and closely placed; the tibiae and tarsi in all the specimens are nearly entirely fulvous.

PEPLOPTERA ANGULATO-FASCIATA, n. sp.

Black; thorax fulvous, with a short central black stripe, the sides punctured; elytra paler, strongly punctured anteriorly; a spot on the shoulders and an angulate narrow band below the middle black.

Length $3\frac{1}{2}$ lines.

Subcylindrical; the vertex convex, finely punctured, with a deep central groove; lower portion of face rugose; antennae extending to half the length of the thorax only, fuscous, the lower four joints fulvous; thorax twice as broad as long, the sides nearly straight, narrowed anteriorly, the median lobe slightly produced, truncate, the surface convex, reddish fulvous, with some distinct punctures near the anterior margin and at the posterior angles, as well as along the basal margin, the latter at the middle narrowly black, the centre with another short longitudinal black stripe; scutellum black, impunctate, its apex truncate; elytra distinctly lobed at the sides below the shoulders, strongly punctured in closely approached, semi-regular rows, the posterior portion nearly impunctate; the shoulders with an elongate black spot, a strongly angulate narrow transverse band is placed immediately below the middle, the angulate portion being directed towards the apex; the suture is likewise black near the extreme apex; underside and legs strongly pubescent; legs and tarsi very robust.

Hab. Transvaal.

Of this species I possess two specimens; they are at once distinguished by the strongly angulate band which forms a right angle near the sides, without extending to either margin.

PEPLOPTERA HUMERALIS, n. sp.

Subcylindrical, black, clothed with grey pubescence below, above fulvous; thorax minutely punctured, the sides and the anterior margin fulvous, the base black; elytra regularly punctate-striate, fulvous, the suture and the lateral margin posteriorly, a broad transverse band near the apex, and an oblique stripe on the shoulder black.

Var. Thorax fulvous, with three black bands; elytra more finely punctured, the posterior band absent; rest as in the type; tibiae fulvous.

Length 4 lines.

Head finely and closely punctured, black; the vertex swollen, separated by a transverse groove from the face; eyes large, but slightly notched; antennae extending to half the length of the thorax, black, the lower three joints fulvous; thorax scarcely twice as broad as long, the sides nearly straight at the base, evenly rounded in front, the surface convex, extremely minutely and sparingly punctured, black, the sides and the anterior margin narrowly fulvous, this colour narrows gradually towards the base, but widens into the black portion at its anterior margin at each side; scutellum black, small; elytra rather strongly and regularly punctate-striate, the punctures much finer and irregular near the apex, the space between the shoulders and the lateral margins impunctate, each elytron with about nine or ten rows of punctures, of which some are more closely approached than others, especially those near the suture and at the sides, the colour flavous or pale fulvous, a broad black band is placed across the suture near the apex, sending upwards a narrow sutural branch as well as a marginal one, both of which extend slightly beyond the middle of the elytra, another oblique short stripe, directed inwards, is placed on the shoulders, not touching the lateral band, the extreme lateral and apical margins are likewise black; underside and legs of the same colour, densely clothed with silvery-grey pubescence; tarsi broad, prosternal ridge distinct.

Hab. Lake Nyassa; var. Port Natal.

This and the following species of *Peploptera* (*Diapromorpha*) seem to be distinct from any species described by Lacordaire or since, although closely allied to many of them, nor do they agree with any of the varieties given, and I must look upon them as distinct; the general coloration is, however, more or less the same in nearly all species, which makes their determination very difficult unless other characters are taken in connection. The present species seems closely allied to *P. postica*, Lac., but differs in several details, principally in the oblique elytral shoulder-stripe, which is not found in any of the allied species; the variety agrees in that respect, but the posterior band is absent and the thorax is fulvous,

with three longitudinal black bands; this design is peculiar to many species and subject to great variation; all the tibiae in this variety are likewise fulvous, and the locality is a different one, the elytral punctuation also differs: in spite of all this, the differences are so entirely those of degree, and the elytral pattern and direction of the bands are so similar, that I believe to be right in looking upon this form as a local variety only, more especially as the wide distribution of African insects is well known.

PEPLOPTERA LATERALIS, n. sp.

Black; thorax impunctate, rufous with a central black spot; elytra finely and semiregularly punctured, flavous; a sutural and sublateral stripe, as well as the lateral margins, black; tibiae fulvous.

Length $3\frac{1}{2}$ lines.

Head and antennae as in the preceding species; thorax rufous, very narrowly edged with black, the sides slightly rounded, straight at the base, the surface entirely impunctate, the space in front of the scutellum depressed, with a few punctures, the middle with a narrow black stripe not extending to the apex; scutellum black, small; elytra flavous, with rows of small punctures rather regularly placed, which nearly disappear near the apex; the suture to the whole extent narrowly black, forming a band which is slightly widened near the apex and angulate below the base, another narrow and regular band, slightly narrowed at its middle, extends from the shoulder nearly to the apex, the lateral margin from the middle downwards is likewise narrowly edged with black; underside clothed with silvery pubescence; tibiae fulvous; tarsi very broad.

Hab. Tabora, Ounyamyembe.

In this species the lateral black stripe of the elytra is placed not at, but before the margin, leaving a space as broad as the band itself between the latter and the lateral edge; in this respect the species differs from any of its allies. A single specimen is contained in my collection.

LACHNÆA MARSHALLI, n. sp. (Plate XVII. fig. 4.)

Black; the head and thorax finely pubescent, the anterior margin and the sides of the latter flavous; elytra very finely punctured, fulvous, each with four small black spots placed transversely (2. 2).

Length 4 lines.

Head closely rugose and sparingly pubescent, the vertex finely punctured, the front with a longitudinal central groove, anterior margin of the clypeus triangularly emarginate, mandibles large; antennae extending to the base of the thorax, black, the apex of the first, and the second and the third joint entirely, fulvous, third joint very short, fourth triangularly elongate, the following joints very strongly transversely widened; thorax more than twice as broad as long, the sides strongly rounded, as well as the posterior

angles, the surface finely and closely punctured, clothed with whitish long pubescence, black, the anterior and lateral margins narrowly flavous; scutellum raised, black, its apex truncate; elytra opaque, very finely punctured, fulvous, with four small black spots, one on the shoulders, another lower down near the suture, and two placed transversely immediately below the middle; underside and legs black, pubescent, anterior legs very elongate, the tibiae slightly curved and mucronate at the apex, the first joint of the tarsi elongate, as long as the following two joints together.

Hab. Natal, Ulundi, on flowers at the summit of Niginya, 6500 ft. (*Marshall*).

Very closely allied to *L. marginata*, Lac., but the epistome only moderately concave at the anterior margin; the first joint of the antennæ black, and the following two joints fulvous only, instead of the first four joints of that colour; the elytra reddish fulvous, not pale testaceous, and with four spots only instead of five, the spots of nearly equal size; there are two male specimens before me which are exactly similar in these respects.

GYNANDROPHTHALMA ELONGATA, n. sp.

Pale flavous or fulvous, antennæ (the three or four basal joints excepted) black; thorax impunctate; elytra with rows of very fine punctures.

Length $1\frac{1}{2}$ –3 lines.

Of narrowly elongate shape, the female double the length of the male; the head impunctate, the upper portion slightly swollen, obsoletely depressed between the eyes; the clypeus broad and flattened, impunctate, its anterior margin semicircularly emarginate; eyes prominent, slightly notched at their lower portion; antennæ extending to the base of the thorax, black, the lower three or four joints fulvous, the third extremely small, the fifth and following joints very strongly transverse; thorax twice as broad as long, the sides moderately rounded, but slightly narrowed anteriorly, the angles rather obtuse, posterior margin straight at the sides, its median lobe very slightly produced, straight, the base slightly depressed in front of this lobe, with a few distinct punctures, rest of the surface entirely impunctate; scutellum triangular; elytra subcylindrical, with rows of very fine punctures rather distantly placed; abdomen flavous like the rest of the underside; the first joint of the posterior tarsi as long as the following two joints together.

Hab. Sierra Leone, Rhobomp, also Togo, Central Africa.

Evidently very closely allied to *G. miochiroides*, Lefèbv., from Abyssinia, but the author describes his species as having a finely punctured thorax and smooth elytra, which is not the case in the present insect; the female is of very elongate shape, and double the size of the male, but differs in no other way: the insect cannot be mistaken for *Miochira filiformis*, Lac., which has a similar elongate shape and colour, but differs in the structure of the tarsi.

GYNANDROPHTHALMA NATALENSIS, n. sp.

Elongate, narrow, black, the vertex with two small fulvous spots; thorax impunctate; elytra very strongly and semi-regularly punctured, fulvous, a spot below the middle, near the suture, black.

Var. Elytra without spots.

Length 2 lines.

Of narrow, nearly cylindrical shape; the head impunctate at the vertex, the latter with a small fulvous spot above the eyes, lower portion rugosely punctured, the middle with a distinct round fovea; antennæ scarcely extending to the base of the thorax, black, the second and third joints obscure fulvous; thorax more than twice as broad as long, the sides obliquely rounded, narrowed in front, the surface rather convex, entirely impunctate, shining black; scutellum very broad, triangular, the apex slightly raised, the surface impunctate; elytra very strongly punctured in closely-approached semi-regular rows, the sides with a more or less distinct narrow costa from the shoulder to the apex, a small black spot is placed near the suture below the middle; underside and legs covered with greyish pubescence, black; the first joint of the tarsi scarcely longer than the second.

Hab. Natal.

The narrow subcylindrical shape of this species, the colour of the head and thorax, and the two small fulvous spots on the vertex will help to distinguish it from any of its allies. I possess three specimens, two of which are without the elytral spots.

GYNANDROPHTHALMA ATRIPENNIS, Lac.

Specimens were obtained by Mr. G. Marshall at Estcourt, Natal, which entirely agree with Lacordaire's description: a specimen in my collection is, however, of an entirely pale fulvous colour, but differs in no other way whatever; it was likewise obtained at Natal. Lacordaire in his description gives the thorax as twice as long as broad, which of course should be reversed, it being evidently a misprint.

GYNANDROPHTHALMA SEMINIGRA, Jac.

I have now found, unfortunately too late, that this species, described by me in the 'Entomologist,' 1891, is identical with *Clythra intersecta*, Illig.

CRYPTOCEPHALUS LIVINGSTONI, n. sp. (Plate XVII. fig. 11.)

Black; thorax coarsely punctured, flavous, with a transverse black band; elytra strongly punctate-striate, the interstices finely wrinkled, flavous, two connected spots at the base, another below the middle, and the extreme margins black.

Var. a. Thorax black, narrowly margined with flavous.

Var. b. Thorax as in the type; elytra with a single shoulder-spot only.

Length $1\frac{1}{2}$ – $1\frac{3}{4}$ line.

Head strongly rugosely punctured, black, sparingly pubescent; the anterior portion of the clypeus flavous; antennæ extending to the middle of the elytra, slender, black, the basal joint flavous below, the third joint slightly shorter than the fourth; thorax with the sides almost straight, much narrowed anteriorly, the surface strongly and closely punctured, especially at the sides, flavous, the middle of the disc with a broad transverse black band, the posterior margin of which is produced at each end and at the middle into a point; scutellum broadly triangular, its surface flattened; elytra with strong and regular rows of punctures, the interstices finely transversely wrinkled, flavous, all the margins very narrowly black, the shoulders with a black spot, which is more or less connected with another one near the scutellum, forming a short semi-interrupted band, another spot placed below the middle occupies about five rows of punctures in a transverse sense; the underside, pygidium, the femora, and the tarsi (partly) black; the anterior femora more or less flavous below.

Hab. Mashonaland (*G. Marshall*). In the collection of the British Museum and that of my own.

This species differs from most of its African congeners in the strongly and closely punctured thorax in connection with the transverse band of the latter; in respect to the latter, there are not many species which are similarly marked; the sculpturing of the elytra also differs from most African *Cryptocephalinae*, so that the species will not be very difficult to recognize. In the varieties, the black colour of the thorax predominates to such an extent as to leave the margins only of the flavous ground-colour, this latter being always wider, however, at the sides in all the forms; the elytral spots are likewise often reduced to one only, and are probably entirely absent occasionally; there are, however, only these three varieties before me, amongst the six specimens obtained by Mr. Marshall.

CRYPTOCEPHALUS DECEMNOTATUS, Suffr.

Of this very variable species, an interesting variety was obtained by Mr. Marshall in Mashonaland amongst the typical form with three elytral black spots. In this variety the spots are more or less enlarged, so as to form elongate short stripes, which in one specimen form a sutural and a transverse black band below the middle; this latter band has its upper margin deeply concave between each row of punctures. This variety has not been mentioned by Suffrian. The other characters peculiar to the species, viz. the four thoracic black spots and the punctured interstices of the elytra, are all present in this variety, thus proving its identity with the type.

CRYPTOCEPHALUS NIGROSUTURALIS, n. sp.

Black; the anterior margin and sides of the thorax flavous, the disc very finely rugose; elytra strongly punctate-striate and finely wrinkled, flavous, a spot on the shoulder and a broad sutural band, narrowed behind, black.

Length $1\frac{1}{4}$ – $1\frac{1}{2}$ line.

Head black, finely rugosely punctured and sparingly pubescent; antennæ rather short, entirely black, the third and fourth joint equal, the terminal joints slightly widened: thorax with moderately rounded sides, the posterior angles not much produced, the entire surface finely rugose or wrinkled, making the punctuation very indistinct, black, the anterior margin very narrowly and the sides broadly flavous, the yellow colour at the latter place separated from the black portion by a strongly sinuate margin; scutellum very broad, its apex pointed, minutely punctured, black; elytra with regular and deep rows of punctures, the interstices very finely transversely wrinkled, flavous, the shoulders with a black spot, the suture with a broad black band, which widens strongly at the base, so as to very nearly join the shoulder-spot, below the middle the band narrows, but again gets slightly wider near the apex, to which it does not quite extend, the extreme lateral margin from below the base and the apical one are likewise black; the pygidium, underside, and legs are entirely of that colour.

Hab. Mashonaland (*G. Marshall*); coll. Brit. Mus. and my own.

A well-distinguished species, on account of the sculpturing and pattern of its thorax and elytra.

CRYPTOCEPHALUS NATALENSIS, n. sp. (Plate XVII. fig. 8.)

Dark fulvous; thorax longitudinally strigose, its margins flavous; elytra deeply and closely punctured, the interstices longitudinally costate and with yellow short stripes.

Length $1\frac{1}{2}$ line.

Head with some strong punctures and a central groove at the vertex fulvous; antennæ extending to about the middle of the elytra, black, the lower four joints fulvous, third and fourth joint equal, the fifth more elongate, the following joints slightly shorter; thorax proportionally long, the sides straight, narrowed in front, the entire surface covered with longitudinal strigæ, dark fulvous, the margins narrowly flavous, the sides more broadly so and the base with two very narrow flavous spots; scutellum broadly truncate at its apex, flavous, margined with piceous; elytra slightly narrowed posteriorly, closely impressed with large, deep, and transversely-shaped punctures, the interstices strongly costate, those near the suture of sinuate shape, fulvous; every alternate costa with two or three bright yellow stripes of various length, those at the apex and at the extreme margins nearly entirely of that colour; underside and legs entirely fulvous, the latter robust.

Hab. Natal (my collection).

Of this species I have now seen two specimens, which I formerly referred to *C. araticollis*, Chap., from Zanzibar; with this it entirely agrees in the unusual and interesting sculpturing of the thorax and the elytra: the eyes are likewise closely approached at the top of the head as in Chapuis's species; but as this author says nothing about the yellow margins of the thorax nor of the similarly-

coloured stripes of the elytra, I cannot look upon his species as identical, unless he has forgotten to mention this fact.

CRYPTOCEPHALUS LATEFASCIATUS, n. sp.

Below flavous; head and thorax rufous, the latter impunctate, with two large black spots; elytra very strongly punctate-striate, rufous, a transverse black band at the base and another before the apex.

Length 3 lines.

Of broad and robust shape; the head strongly punctured, with a broad longitudinal depression between the eyes, the latter not very deeply notched; anterior margin of the clypeus semicircularly concave, labrum fulvous; mandibles black; antennæ scarcely extending to the middle of the elytra, fuscous, the lower five joints flavous, the third, fourth, and fifth joint very elongate, nearly equal; thorax twice as broad as long, with a comparative broad lateral reflexed margin, the posterior angles prominent, furnished with some strong teeth, the surface entirely impunctate, rufous, the sides with a broad black band, which does not extend to the anterior margin; scutellum very broad, its apex truncate, the base with a fovea, fulvous, margined with black; elytra with a deep depression within the shoulders, very strongly punctate-striate, distinct to the apex, but not quite extending to the base, the rows somewhat irregular here and there, sometimes with double punctures, the interstices smooth and impunctate, rufous, shining, the base with a broad transverse black band, extending as far as the first row of punctures, leaving the sutural portion round the scutellum, as well as the lateral margin between the last row of punctures, of the ground-colour; this band occupies nearly a third portion of the length of the elytra, a second narrower band is placed below the middle, but extends to the suture, the lower edge of the basal band and the upper margin of the second band are rather strongly sinuate; pygidium, underside, and legs pale fulvous, clothed with short yellow pubescence.

Niger-Benué Exped. (*Staudinger*) (my collection).

Evidently closely allied to *C. sulcifrons*, Suffr., but that species is described with a finely punctured thorax, with the elytral interstices likewise punctured, and with a black elytral band placed at the apex. *C. tempestivus*, Suffr., also resembles the present species in colour and in the position of the elytral bands, but has a black head, a distinctly punctured thorax, very regular elytral rows of punctures with punctured interstices, and is much smaller.

CRYPTOCEPHALUS WESTWOODI, n. sp. (Plate XVII. fig. 9.)

Pale flavous; the head partly and two longitudinal thoracic bands piceous; elytra deeply punctate-striate, the punctures piceous, each with a black spot on the shoulder, two others placed transversely below the middle, and a reddish-fulvous angular band before the middle.

Length $2\frac{1}{2}$ lines.

Head rugosely punctured, more or less dark brown, with the margins round the eyes and the clypeus flavous; antennæ short, not extending much beyond the base of the thorax, the lower five joints flavous, the others black, the second and third joint equal in length, the following two joints more elongate, equal, the others only about one-half longer than broad; thorax of usual shape, the sides moderately rounded, the surface very sparingly and finely punctured, flavous, the basal margin narrowly black, the others brownish, the disc with two longitudinal nearly black bands from base to apex, their margins stained with brown; scutellum flavous, the base black; elytra with the shoulders scarcely prominent, impressed with large, round, and distantly-placed piceous punctures, flavous, the sutural and lateral margins posteriorly brown, the shoulders with a black mark, followed by a transverse, short, strongly-angulate, reddish-fulvous band, which does not extend to either margin, four round black spots are placed transversely below the middle; pygidium with two large dark brownish patches; underside and legs pale fulvous, the breast darker; prosternum broad, its base bisinuate.

Hab. Natal, Estcourt (*G. Marshall*).

This is a curiously-marked species, of which two specimens are before me. I only know of one or two similar instances in which the elytral markings are of two shades amongst the African species of *Cryptocephalina*; as both the specimens are exactly similar in every respect, I have no doubt that it is the normal coloration of the species, which would find its place near *C. bifasciatus*, Fabr., or allies.

CRYPTOCEPHALUS AGGREGATUS, n. sp.

Dark blue or greenish; the tibiæ and tarsi more or less fulvous; thorax strongly rugose-punctate; elytra with deep and very close rows of punctures, the interstices also strongly and closely punctured.

Length $1\frac{1}{2}$ –2 lines.

Head closely rugose-punctate, the eyes rather closely approached at the top, broadly triangularly notched; antennæ black, the third and fourth joint equal, the following joints rather strongly triangularly widened; thorax with slightly rounded sides, strongly narrowed anteriorly, the posterior margin without teeth, the surface very strongly convex, deeply rugose-punctate, the punctures round, extremely closely placed, the interstices reticulate and partly confluent; scutellum broad, with a few fine punctures; elytra narrowed posteriorly, the shoulders rounded, not prominent, the surface closely and entirely covered by deep transversely-shaped punctures, which are rather indistinctly arranged in rows and divided by slightly smaller punctures; pygidium black, finely rugose; underside and the femora bluish black, finely punctured and pubescent; tibiæ and tarsi more or less fulvous; prosternum broad, its base nearly truncate.

Hab. Niger-Benué Expedition (*Staudinger*).

The sculpturing of this species is quite exceptional amongst the African representatives of the genus, but it approaches in that respect, as well as in colouring, *C. smaragdulus*, Fabr.; but the present species has entirely black antennæ, rounded shoulders, and the arrangement of the punctures in rows can only be seen in certain lights, as they are so closely approached and having the interstices nearly as strongly punctured.

CRYPTOCEPHALUS TRISULCATUS, Suffr.

Black, clypeus white; thorax and elytra fulvous, the former with two oblique black bands; elytra moderately strongly punctured, a spot on the shoulder and two others, obliquely-transverse, near the apex black; femora black and white.

Var. Thorax with four black spots, elytra without any spots.

Length 2 lines.

Head black, very finely punctured at the vertex; the clypeus and the sides below the eyes yellowish white; antennæ slender, black, the lower five joints testaceous, the third joint one-half longer than the second, the fourth shorter than the fifth joint, terminal joints elongate in the male, shorter in the other sex; thorax strongly narrowed in front, the sides evenly rounded, posterior margin bisinuate at the sides, the surface nearly impunctate, fulvous, the posterior angles flavous, all the margins narrowly black, the middle of the disc with two oblique longitudinal bands, not extending to the apex, and scarcely to the base; scutellum black; elytra rather finely punctate-striate near the suture, the punctures nearly obsolete at the base, the sides more strongly and closely punctured, with the interstices slightly convex, the lateral margins posteriorly as well as the apical ones narrowly black, a black spot is placed on the shoulder and two others near the apex, of these one is situated across the suture, the other rather larger one near the lateral margin and a little higher than the sutural spot; underside and the femora black, the anterior femora with their lower surface nearly white; tibiæ fulvous, or stained with piceous at the apex; prosternum with two small teeth at its base, yellowish white, as well as the mesosternum and the space between the posterior coxæ, the entire underside nearly impunctate.

Hab. Natal, Estcourt (*G. Marshall*).

The position of the elytral spots differs from that of any other African species except *C. erythromelas* with which I am acquainted, and the white clypeus, prosternum, and bicolored anterior femora are likewise characteristic of the present insect. The variety differs in no way from the type except in the absence of the elytral spots and in the breaking up into four spots of the thoracic bands; the former are placed quadrately, thus indicating the oblique shape of the bands in the normal form, marking their commencement and end.

I have given here a new description of Suffrian's species, with which the present insect agrees so closely that I must identify it with it, although the specimens before me are smaller than the size given by Suffrian; this author had also probably old specimens

before him in which the white colour of the clypeus &c. had become discoloured. The variety I mention has not been noticed by Suffrian, and my description of the spotted form is considered by him to represent a rare variety; that the Natal insect may, however, prove to be of another closely allied species is not impossible.

CRYPTOCEPHALUS UNICINCTUS, n. sp.

Black, the base of the antennæ and the tibiæ more or less fulvous; thorax very minutely punctured, fulvous, with more or less confluent black bands; elytra strongly punctate, the interstices finely punctured, fulvous, the margins narrowly and a short lateral stripe black.

Length 2 lines.

Head strongly rugose and finely pubescent, black; antennæ extending beyond the middle of the elytra, black, the lower five joints fulvous, the second and third joints short, nearly equal, terminal joints rather elongate, shorter in the female as well as the entire antennæ; thorax strongly narrowed in front, the sides but slightly rounded, the disc very minutely and irregularly punctured, reddish fulvous, the sides occupied by two broad black bands of variable width, often connected with another small black spot near the margin, but as frequently separated from it and narrower; scutellum not longer than broad, black; elytra with deep rows of slightly transversely-shaped punctures, the interstices also with a single row of minute punctures, the basal, sutural, and lateral margins (the latter at the posterior portion only) black, the surface pale fulvous, with a short black band from the shoulder to below the middle placed between the seventh and ninth rows of punctures; underside and pygidium black, finely pubescent; the prosternum, mesosternum, and a spot between the posterior coxæ yellow; legs black, the tibiæ more or less fulvous at the base and apex.

Hab. Natal, Estcourt (*G. Marshall*).

The single elytral stripe at the sides and the rugose and black head, as well as the other details pointed out, will separate this species from any of its African congeners. I have seen four specimens only, varying in the amount of black on the thorax and legs.

CRYPTOCEPHALUS BIMACULICOLLIS, n. sp. (Plate XVII. fig. 12.)

Fulvous, thorax impunctate, the disc rufous, the margins flavous, the base with two black spots; elytra finely punctate-striate, yellow, a transverse band at the base and a narrower one near the apex black.

Length 2 lines.

Head with a few fine punctures, the vertex fulvous or piceous, the lower portion flavous; labrum and palpi testaceous; antennæ extending to the middle of the elytra, shorter in the female, the lower five or six joints flavous, the others fuscous, third joint but slightly longer than the second, terminal joints elongate; thorax strongly narrowed in front, the sides nearly straight, the

surface only perceptibly punctured when seen under a strong lens, the entire disc almost occupied by two broad rufous bands, which sometimes unite or are only divided by a very narrow streak of the ground-colour, the anterior margin and the sides more broadly bright yellow, the base with two small black spots, all the extreme margins likewise black; scutellum slightly longer than broad, black; elytra slightly narrowed posteriorly, the space surrounding the scutellum rather raised, the punctures fine, nearly obliterated at the base, the interstices flat, slightly wrinkled here and there, flavous, the base with a transverse black band, which is gradually narrowed towards the suture, but leaves the extreme lateral margin of the ground-colour, another narrower black band is placed near the apex, with its upper and lower margins irregularly indented; underside, legs, and pygidium fulvous, finely pubescent.

Hab. Natal, Estcourt (*G. Marshall*).

This pretty species seems very nearly to resemble in coloration *C. decoratus*, Reiche, from Abyssinia, but the position of the elytral bands and that of the spots of the thorax is different: in the latter respect I am not acquainted with any other species from Africa being similarly marked with three shades of colour, except in the case of *C. decoratus*; but in that species the black spots of the thorax are placed at the middle and not at the base, the antennæ are entirely fulvous, and the elytral bands broader. *C. bifasciatus*, Fabr., has an entirely fulvous thorax, with two central black spots and differently shaped elytral bands. There are four specimens before me.

CRYPTOCEPHALUS ATROCINCTUS, n. sp.

Head, antennæ, and the breast black; thorax fulvous, with pale margins and two broad black bands, finely punctured; elytra moderately deeply punctured, flavous, with a sutural and two lateral black longitudinal bands abbreviated posteriorly.

Length 2 lines.

Head black, rather closely punctured; the clypeus and a narrow stripe in front of the eyes greyish or yellowish white; antennæ extending to about the middle of the elytra, slender, black, the lower four or five joints more or less fulvous at the base, third and fourth joint nearly equal, the following more elongate, terminal joints slightly thickened; thorax twice as broad as long, narrowed in front, the lateral margins nearly straight, the basal margin with some small teeth at the angles, the surface very finely and rather closely punctured, reddish fulvous, the margins flavous, the sides more broadly so, extreme basal margin black, the disc with two broad oblique black bands, not extending to the anterior margin and sometimes reduced to two small spots only; scutellum nearly subquadrate, black with a fulvous spot; elytra moderately strongly punctate-striate, the punctures at the sides larger and more closely placed, the surface bright yellow, with three black longitudinal bands, not extending to the apex, the sutural one narrowed at the base but widened into a slightly triangular shape at the apex and

extending to the second row of punctures, the lateral bands occupying four rows of punctures but of the same width as the sutural band, with the margins more regular and less dentate than in the last named, the lateral margin also more or less black posteriorly; underside black, more or less marked with flavous; legs flavous, the femora often partly black or fulvous; prosternum broad, flavous, impunctate; pygidium black, its apex more or less fulvous.

Hab. Natal, Estcourt (*G. Marshall*).

A pretty species allied to *C. vittiger*, Suffr., and *C. contrarius*, Chap., in coloration, but differing in the closely punctured head and the pale margins or stripes surrounding the eyes, and in the yellow clypeus: the stripes of the elytra are also differently shaped; but the amount of black at the underside and of the thorax is very variable, in one specimen the black bands of the latter are nearly united at the middle by a narrow transverse streak, leaving a fulvous patch at the base which is again divided by a central short narrow streak of piceous; the antennæ are also variable in colour. *C. vittiger* has an entirely black head, the elytral bands are differently shaped, and the underside also varies.

CRYPTOCEPHALUS ALLUAUDI, n. sp.

Black and yellow; head with two fulvous spots on the vertex; thorax impunctate, black, the sides, anterior margin, and a spot at the base yellow; elytra strongly punctate-striate, black, a narrow sutural and a broad lateral band yellow; legs flavous.

Var. Elytra black, the shoulders and the apex with a short yellow spot.

Length 1 line.

Of posteriorly slightly narrowed shape; the head rather closely punctured at the middle, black, the vertex with two obscure fulvous spots; the clypeus, a narrow space in front of the eyes, and the labrum yellow; antennæ extending slightly beyond the middle of the elytra, the lower five joints flavous, the others black, the basal joint much thickened, the third and fourth equal, the terminal joints gradually but rather strongly incrassate: thorax twice as broad as long, strongly narrowed in front, the sides straight or very nearly so, with a narrow reflexed margin, the angles not prominent, the surface nearly impunctate, a few scarcely perceptible punctures only being visible under a strong lens, black, the anterior margin narrowly, a broad band at the sides and a square-shaped spot in front of the scutellum yellow; scutellum rather broad, its apex truncate, yellow, narrowly margined with black; elytra narrowed posteriorly, with deep rows of punctures, distinct to the apex, the interstices slightly transversely wrinkled here and there, the colour black, a narrow, anteriorly widened sutural stripe, not extending to the apex, and a broad band at the sides not extending to the margins nor to the apex, but of variable width, yellow; underside finely pubescent, black; the prosternum, mesosternum, the last abdominal segment, and the legs flavous, the latter rather darker; prosternum subquadrate, its base slightly

concave, the sides with a raised margin; pygidium fulvous with a black patch at the middle.

Hab. Assinie, W. Coast of Africa (*Ch. Alluaud*).

Likewise allied in coloration to *C. vittiger*, Suffr., *C. jucundus*, Dohrn, but differing in the colour of the thorax, scutellum, &c. The amount of black and yellow is very variable, the bands of the thorax and elytra differing much in their width; in the variety there are only four yellow spots present on the elytra, indicating the bands, and it is probable that the other extreme in which the yellow predominates may be found: the small subquadrate yellow spot in front of the scutellum is a good mark of recognition in this species.

CRYPTOCEPHALUS PORICOLLIS, n. sp.

Dark brown; antennæ and legs flavous; thorax deeply punctured and longitudinally strigose, the margins and two spots flavous; elytra deeply punctate-striate, the interstices costate, flavous, an obscure transverse band before, another below the middle, and the apex dark brown.

Length 1 line.

Head with a few punctures at the vertex and round the eyes, the former brown, the latter closely approached at the top, the intermediate space and the clypeus flavous; antennæ nearly extending to the middle of the elytra, flavous, the basal joint much thickened, the second short, the third and fourth equal, slender, the terminal joints more elongate, slightly thickened; thorax twice as broad as long, the lateral margin straight, narrowed towards the apex, the surface very closely and deeply punctured, the punctures rather more widely placed near the base, the interstices everywhere longitudinally raised and obliquely directed towards the base, dark brown, the anterior and lateral margins, the former very narrowly, and two round spots near the base, flavous, extreme basal margin black; scutellum triangular, its apex raised; elytra subcylindrical, the punctured striæ deeply placed, all the interstices strongly costate, flavous, this colour interrupted by two obscure transverse brown bands before and below the middle, the second band is generally widened near the suture, the apices are likewise more less brown; the underside is sparingly punctured, dark brown; the prosternum is broad and widened towards the base, finely punctured.

Hab. Madagascar, Diego-Suarez (*Ch. Alluaud*).

A pretty little species, much distinguished by the sculpture of the thorax, and evidently closely allied to several other Madagascar species described by the late Duvivier, having the elytra similarly strongly costate; in none of these, however, is the thorax coarsely punctured and strigose.

CRYPTOCEPHALUS ARMATUS, n. sp.

Black; the clypeus, basal joints of the antennæ, and the legs flavous; thorax finely and closely punctured, flavous with two large black spots; elytra strongly punctate-striate, the interstices

closely punctured, flavous, a sutural band and two large spots at the sides black.

Length $1\frac{1}{4}$ line.

Head very broad, finely and closely punctured, black; the clypeus separated from the face by the perfectly straight lower edge of the latter and placed at a deeper level, flavous, bounded at each side by a long triangular projection of the head, mandibles large and broad; antennæ short, black, the lower five joints flavous, third, fourth, and fifth joints equal, short, terminal joints transversely widened; thorax strongly transverse, but slightly widened at the middle, the lateral margins nearly straight, the surface closely and finely but distinctly punctured, flavous, the extreme margins dark, the disc with two large transversely-shaped black spots, occupying the greater part of the sides; scutellum broad, its apex truncate, black; elytra with regular rows of strong punctures which get finer towards the apex, the interstices also very distinctly and closely punctured, flavous, the suture with a narrow black band which below the middle widens into a lancet-shaped spot, the sides with two large black spots, one on the shoulder and the other immediately below it, both large and of irregular shape, the lower spot ending at some distance from the apex; below black, the apex of the abdomen and the pygidium flavous, the latter with a small black spot at the apex; legs fulvous.

Hab. Niger-Benué Exped. (*Staudinger*).

Of this little species, which is much distinguished by the shape and structure of the head, I received a single example from Dr. Staudinger.

CRYPTOCEPHALUS MARSHALLI, n. sp. (Plate XVII. fig. 10.)

Head yellow, spotted with black; thorax flavous, finely punctured, with a transverse band at the middle and the base black; scutellum black; elytra moderately strongly punctate-striate, flavous, the margins narrowly, four spots placed quadrately at the base, and another Λ -shaped spot below the middle at the sides, black; underside and legs fulvous, spotted with black.

Length $2\frac{1}{2}$ lines.

Head closely and strongly punctured; the vertex black, with two small flavous spots; the lower portion flavous, with a black spot at the base of the antennæ, the latter scarcely extending to the middle of the elytra, fulvous; the terminal four or five joints more or less black, the third joint twice as long as the second, fourth slightly longer than the third, the following joints rather strongly widened; thorax strongly transverse, rather short, the sides rounded, strongly narrowed in front, the surface closely and finely punctured, flavous, the middle of the disc occupied by a narrow transverse black band, not extending to the sides but connected with another narrower band of irregular shape at the base by a narrow central streak of black and also sometimes at each end; scutellum not longer than broad, black; elytra not very strongly punctured, the interstices flat and impunctate, the

sutural, basal, and the lateral margin posteriorly black, below the base four black spots of irregular shape are placed in an oblique quadrate position, of these, one is situated on the shoulder, the other directly below it, the other two between the lateral spots and the suture, also below each other, occupying the third and fourth and the fifth, sixth, and seventh interstices respectively, the Λ -shaped marked is placed below the middle near the lateral margin and is sometimes divided into two irregular spots; pygidium fulvous, finely pubescent; underside and legs of the same colour; the sides of the breast and a spot on the upper portion of the femora blackish.

Hab. Natal, Estcourt (*G. Marshall*).

In the markings of the thorax this species resembles *C. denticulatus*, Suffr., of which it may possibly be an extreme variety; I have, however, two specimens before me which almost entirely agree with each other, and in these the elytral markings are quite different from the above-named species, especially in the very narrow black sutural and lateral margin (the last of which commences at the middle only). Suffrian also speaks of finely wrinkled and punctured elytral interstices, of which there is no trace in the present insect.

CÆNOBIUS FLAVITARSIS, n. sp.

Black, shining, the basal joints of the antennæ, the apex of the tibiæ, and the tarsi flavous; thorax strongly punctured; elytra very strongly punctate-striate, the interstices longitudinally costate at the sides.

Length $\frac{3}{4}$ line.

Head black; the entire vertex and the sides occupied by the eyes, which meet at the top; antennæ extending a little beyond the base of the thorax, black, the basal five joints flavous, third and fourth joint very small, terminal joints distinctly widened; thorax about one-half broader than long, the sides nearly straight and much narrowed anteriorly, the surface with a deep transverse oblique groove at each side, strongly and rather closely punctured, the punctures somewhat oblong in shape, the basal margin with a row of deep and closely placed punctures; scutellum narrowly elongate; elytra with very deep and close rows of punctures, the shoulders very prominent, the basal margin in shape of a ridge, the interstices longitudinally costate, more strongly so at the sides than at the disc; the underside, pygidium, and the legs black, the extreme apex of the tibiæ and the tarsi flavous.

Hab. Mashonaland (*G. Marshall*). A single specimen in the British Museum collection.

Allied to *C. nigritellus*, Suffr., but at once distinguished by the flavous tarsi and the sculpturing of the thorax &c. *C. suffriani*, Jac., has the head strigose at the vertex, the antennæ scarcely widened, the thorax without lateral depressions, and the tarsi black.

CHLAMYS NATALENSIS, n. sp.

Obscure fulvous or piceous; the antennæ and the tibiæ fulvous;

thorax with a central sulcate elevation, finely rugose; elytra with eight or nine strong tubercles, the disc with a fulvous or flavous oblique ridge, the interstices finely rugosely punctured; pygidium foveolate-punctate.

Length 1 line.

Of posteriorly slightly narrowed shape, varying in colour from fulvous mixed with piceous or nearly entirely of the latter colour, but the raised tubercles generally of paler coloration; the head entirely finely rugose or closely covered with round punctures, which are more or less of whitish corrugated appearance at the vertex; eyes transversely and narrowly notched; antennæ very short, fulvous, the second and following joints very short, the terminal five transversely shaped; thorax with the middle portion raised into a high bump, the centre of which is longitudinally sulcate, from this elevation three or four oblique ridges run downwards at the sides towards the margin, all the interspaces between these ridges are closely rugose like the head, and assume the same whitish appearance at the sides and in front of the elevation, the other portions remaining partly nearly black or fulvous, the lateral margins are nearly straight, the basal one is deeply sinuate at the sides; scutellum strongly transverse; elytra sculptured like the thorax; with a strongly raised oblique ridge of flavous or fulvous colour at the middle of the disc, at the commencement and at the apex of this ridge, two or three tubercles, placed obliquely, are situated, which are partly joined; of the other tubercles, a very highly raised one is placed at the base, one near the suture at the apex, and one near the lateral margin at the same place, as well as one at the sides close to the ridge near the middle of the elytra, the entire suture of the latter is finely serrate; underside and pygidium sculptured as the upper surface, the pygidium with several deeper dark-coloured foveæ; legs fulvous, stained with piceous; tarsi entirely dark.

Hab. Natal, Estcourt (*G. Marshall*).

Three African species of *Chlamys* have up to the present been described, from all of which *C. natalensis* differs in its coloration and peculiar sculpturing; in all specimens the curious whitish or mouldy appearance of part of the thorax and other portions is present, although variable like the coloration.

EXPLANATION OF PLATE XVII.

- Fig. 1. *Lema tarsata*, p. 241.
 2. " *marshalli*, p. 239.
 3. *Hemydactne maculicollis*, p. 244.
 4. *Lachnæa marshalli*, p. 251.
 5. *Miopristis natalensis*, p. 245.
 6. " *atrofasciata*, p. 246.
 7. " *subrugosa*, p. 246.
 8. *Cryptocephalus natalensis*, p. 255.
 9. " *westwoodi*, p. 256.
 10. " *marshalli*, p. 263.
 11. " *livingstoni*, p. 253.
 12. " *bimaculicollis*, p. 259.
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