

# THE NATURAL HISTORY

OF

# SOKOTRA AND ABD=EL=KURI

Being the Report upon the Results of the Conjoint Expedition to these Islands in 1898-9, by Mr. W. R. OGILVIE-GRANT, of the British Museum, and Dr. H. O. FORBES, of the Liverpool Museums, together with information from other available sources

FORMING

## A Monograph of the Islands

EDITED BY

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## PREFACE.

This volume contains the results of a conjoint Expedition undertaken in the winter of 1898-9 by representatives of the British and Liverpool Museums, for (chiefly) the Zoological exploration of Sokotra. By incorporating the results of previous or (where available) contemporaneous explorations, the work forms practically a Monograph of the islands visited.

The cost of the Expedition was borne by votes from the Government Grant of the Royal Society of London and the Museums Committee of the Liverpool City Council, supplemented by subsidies from the Councils of the Royal Geographical Society of London (in addition to a loan of instruments) and the British Association for the Advancement of Science.\*

This volume is issued, in accordance with a mutual agreement under the authority, and at the expense, of the above named Committee of the Corporation of Liverpool, as a special *Bulletin of the Liverpool Museums*, its official publication.

The Committee desires to thank very heartily the various distinguished specialists who have contributed sections on the different groups on which they are authorities, to whom the Editor would beg to add his acknowledgements of their forbearance over the delay in the publication of the work, which he deeply regrets, but which is due to circumstances quite beyond his control.

The grateful thanks of the two Institutions interested in the Expedition are due to the GOVERNMENT OF INDIA for so generously granting the service of the despatch boat *Elphinstone*, of the Indian Marine at Aden, for the conveyance of its members to and from their destination; for the loan of tents and for the protection, while on the islands, of a military guard consisting of a native sub-officer and a Sikh, as also for the use of camels in their excursions in Arabia: to General O'MOORE CREAGH, V.C., Political Resident at Aden, for the fullest official aid, and, together with Mrs. Creagh, for much private kindness: to Captain JACOB, First Political Assistant, from whom they received constant and valuable advice and ready assistance, besides his own and Mrs. JACOB'S hospitality in their delightfully-situated residence, on their return from Sokotra: to Captain MACARTHUR and the officers of the *Elphinstone*, who did everything possible for their comfort and assistance while on board: and, finally, but not less sincerely, to D. MACKINNON, Esq., and the British India S.S. Company, for generous concessions and privileges in the matter

\* The British Association Committee consisted of Dr. J. Scott-Keltie; Dr. H. O. Forbes; Dr. W. T. Blanford, F.R.S.; and Professor Weldou, F.R.S.

of fares and baggage on the voyages to and from Aden, on their ships *Manora* and *Ghoorkha*.

I am under special obligations to my friends Johnston Watson, Esq., M.A., and S. W. Lambert, Esq., of the Middle Temple, for their kindness in obtaining for the Expedition from the Eastern Telegraph Company the use, free of charge, of the cable from Aden. This privilege was most highly appreciated by Mr. Grant and myself, as, in possessing it, not only was telegraphic communication with Bombay and London (necessitated during the period of anxious delay referred to in the *Narrative*) expedited, and at a great saving to the resources of the Expedition, but also our families were able to be informed frequently of our welfare.

The *Narrative of the Journey*, by the Editor, as originally written, dealt at considerable length with observations made on the history, anthropology and ethnology of the Sokotran Archipelago, besides treating of subjects the interest and importance of which only became apparent on investigation after the return of the Expedition, such as, among others, the origin of the domestic cattle found on Sokotra; the marriage customs of the ancient Sokotri; and the question of the distribution of land and water in the Indian Ocean as indicated by a study of the fauna and flora of the islands. It was found, however, that the incorporation of this material would have brought the cost of publication beyond the sum provided therefor, and would have besides rendered the size of the volume inconveniently large, so that this section has had to be reduced to little more than a mere itinerary. These subjects, together with, it is hoped, the results of the topographical observations, will form a separate publication.

HENRY O. FORBES,

*Director of Museums.*

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ARTHROPODA.

**Arachnida.**

*By* R. I. POCKOCK, F.Z.S.

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PLATES XIV., XXVI.

# Scorpions and Spiders.

The literature of Sokotran Arachnida is at present scanty and scattered. A complete list of the papers that have been written and of the species that have been recorded from the islands of Sokotra and Abd-el-Kuri are given at the end of this report.

The fauna is a mixture of elements showing affinities both with the fauna of the Ethiopian and the Mediterranean areas, the Mediterranean elements on the whole predominating. The Scorpions—a group which furnishes valuable evidence for the determination of geographical areas—are distinctly more Mediterranean than Ethiopian. *Hemiscorpius* and *Butholus* have their headquarters in the desert countries of South-Western Asia. The one species of *Buthus*, too, belongs to a section of the genus which is represented by several forms in these same countries, has penetrated Africa as far south as the Zambesi, and has reached Cape Comorin in India, though its absence from Ceylon and Burma points to it as a late immigrant into Hindostan. The two Scorpions from Abd-el-Kuri attest the same fact, both being related to the Arabian and Syrian genus *Neba*, and occupying an intermediate stage between the latter and its only other known ally, the Central American *Diplocentrus*. The one Solpugid met with in Sokotra also belongs to a genus known hitherto from Asia Minor, Arabia, and North India. *Argyope clarkii* is another Mediterranean form. On the other hand, the Mygaloid Spider *Monocentropus*, although peculiar to Sokotra, forms a unit of the sub-family *Eumenophorina*, which is confined to tropical Africa and Madagascar. *Nephila hymenata*, too, and the one single known *Gasteracantha* are certainly African and not Mediterranean elements. The same may be said of the two forms of *Latrodectus* and of the one genus of Zodariidae, *Cypheris*. The remaining species of Spiders do not supply very satisfactory evidence either in favour of an Ethiopian or Mediterranean origin of the fauna.

On the negative side it is interesting to note the apparent absence from Sokotra of such forms as the Spiders *Heteropoda venatoria*, *Artema atlanta*, and the Scorpion *Isonetrus europaeus* (= *maculatus*), which have been artificially introduced by human agency into all tropical and subtropical countries to which commerce has extended.

# The Scorpions and Spiders of Sokotra.

## SCORPIONES.

### BUTHIDÆ.

#### *Buthus*, Leach.

#### 1. *Buthus socotrensis*, Pocock.

*Prionurus hottentottus*, Fabr. ; Taschenberg, Zeits. Naturwiss. (4), ii. p. 173 (1883).

*Buthus socotrensis*, Pocock, Ann. Mag. Nat. Hist. (6), iii. p. 337, pl. xv. fig. 3 (1889) ; Kraepelin, Das. Tierr. Scorp., etc., p. 20 (1899).

My original description of the Type, with a few emendations, is as follows :—

“*Colour* very characteristic. The whole body, above and below, with palpi, legs, tail, and cephalothorax uniformly ochraceous, testaceous, or a combination of the two ; the distal end of the chelicerae, the area of the lateral and median eyes and of the anterior cephalothoracic keels, black.

“The *species* bears considerable resemblance to *B. hottentotta* and *B. lamulus*, and undoubtedly appertains to that section of the genus of which *hottentotta* may be regarded as the type.

“*Cephalothorax*.—Much the same shape as in *B. hottentotta*, but the median eyes are larger and considerably more widely separated ; anterior keels not smooth between the eyes, diverging normally in front and joining each other in the middle line of the front edge of the cephalothorax ; the area between them almost smooth. The posterior keels almost parallel, joining, and being in almost the same straight line with the internal median keels, which are consequently themselves nearly parallel, the two on each side constituting only a slightly sinuous line ; the external median keel not prominent and not united by a transverse line of tubercles with the anterior end of the posterior keel, as it is in *B. europæus*. The rest of the cephalothorax sparsely granular.

“*Tergites*.—The first six marked with three keels, although the lateral keels of the first may be represented by a single large granule only ; these keels granular and becoming progressively more expressed from before backwards, the lateral diverging in front, but none of the keels are conspicuous on account of their being of the same colour as the rest of the segment ; keels of the seventh segment like those of, e.g., *B. hottentotta*.



the posterior median eyes on to the posterior slope, and one on each side, which, meeting its fellow of the opposite side in the middle of the clypeus, passes backwards, involving the anterior median, anterior lateral, and posterior lateral eyes; mandible with a large black patch on the upper half in front; palpi transversely banded; legs mottled with black, blackish beneath and in front, especially on the femora; upper side of abdomen ornamented with a broad, posteriorly narrowing dark band on each side, lateral surface clouded with black, ventral surface marked with three black stripes: integument sparsely covered with shortish, thick, white plumose hairs, with some yellow hairs of the same kind on the carapace, the superior abdominal bands thickly covered with deep brown hair.

*Carapace* scarcely or only a little longer than tibia of fourth leg. *Eyes* of posterior line very strongly recurved, the distance between the medians about two-thirds of the distance between the median and lateral on each side, posteriors lying so far back that a straight line joining their anterior edges would lie about three diameters behind the posterior median eye: upper edge of anterior medians higher than lower edge of anterior laterals. Height of clypeus less than length of ocular-quadrangle, which is about as wide as long. Area of *vulva*, with its posterior border emarginate, marked with a pair of pits set tolerably widely apart, with sharply defined edges, angular in front and rounded behind, each pit about as long as wide, the partition between them hairy, and much wider in front than behind; beneath the integument of the smooth area of the vulva are to be seen two conspicuous dark brown piriform patches, broader in front than behind, and converging posteriorly.

Total length 10 mm., carapace 4.

Sokotra: Adho Dimellus (3500-4500 ft.).

A single female specimen.

## OPILIONES.

### BIANTIDÆ.

#### *Biantes*, Simon.

#### 30. *Biantes flaviventris*, sp. n.

*Colour*: dorsal surface of abdomen brown, becoming paler, almost reddish-yellow on the cephalic area, eyes black, coxæ and anterior abdominal sterna bright reddish-yellow; mandibles flavous, legs flavous at the base, infusate distally. *Dorsal surface* of body, coxæ and sterna of abdomen densely and coarsely granular. *Cephalic plate* unarmed, its anterior border with a low, wide, bluntly-rounded median elevation. The third and fourth abdominal *terga* armed with a pair of sharp up-standing tubercles on each side of the middle line, sometimes a trace of these is visible also on the second, and on the third and fourth there are sometimes additional enlarged tuberculiform granules; fifth,



sixth, and seventh terga with a transverse row of sharp tubercles, eighth with two or more rows of tubercles.

*Mandibles* robust, unarmed, except for a pair of tubercles above at the base. *Palpi* a little longer than the body, the coxa unarmed externally, trochanter unarmed, femur long and slender, overlapping the femur of the first, but shorter than it; patella piriform, elongate, basally attenuate and bent, unarmed, about half the length of the femur; tibia a little longer than patella, twice as thick, piriform, distally attenuate, normally armed; tarsus of the same form as the tibia but thicker, normally spined. *Legs* with coxæ and trochanters granular; coxa of the first with a pair of longer hair-tipped tubercles in front below.

Total length 4.5 mm.

Sokotra: Hombil (1800-2500 ft.); Jema-agahan (1200-2500 ft.).

[These phalangids, like those recorded below from Abd-el-Kuri (p. 204), were found under stones, often in colonies. Their movements are very slow and deliberate, and resemble those of mites rather than spiders.—*W.R.O.G.*]

This species differs from *B. vittatus*, Sim., from Madagascar, and *B. longimanus*, Sim., from S. India (*Bull. Soc. Zool. Fr.*, 1885, p. 25), in the absence of a long conical tubercle on the coxa of the palp and of spine on its patella. From *B. lecithodes*, Thorell (*Ann. Mus. Genova*, xxvii. p. 671), from Burma, and *B. vitellium* (id. op. cit., xxx. p. 727), from Sumatra, by the shortness of the patella of the palp and the absence of the spine.

### [ACARIDA.

Occasionally I found on the paths frequented by camels and cattle a large pale blue tick, in size about  $\frac{1}{2}$  inch long by  $\frac{1}{4}$  inch wide. Our interpreter informed me they greatly infested the camels.—*H.O.F.*]

## II.—Scorpions and Spiders of Abd-el-Kuri.

### SCORPIONES.

#### DIPLOCENTRIDÆ.

##### Heteronebo, Pocock.

*Heteronebo*, Pocock, Bull. Liverp. Muss., ii. p. 7 (1899).

Genus of the *Diplocentrini*, with the *ocular-tubercle* shallowly sulcate or entire. *Hand* flat above, with strong external keel, or convex above and obsoletely keeled. *Tarsi* not distally lobate, the inferior angle nearly rectangular (about  $85^\circ$ ). *Tail* without definite half-moon shaped area at the posterior extremity of the lower surface.

*Type* of genus, *H. granti*.

Intermediate in character between the Arabian genus *Nebo*, and the Central American and Antillean genus *Diplocentrus*. Resembling the former in the conformation of the fifth caudal segment; the latter, in the structure of its tarsi and ocular-tubercle.

##### 1. *Heteronebo granti*, Pocock.

*Heteronebo granti*, Pocock, Bull. Liverp. Muss., ii. p. 7 (1899).

♀ *Colour*: dorsal integument of body yellowish-olive brown; legs clearer reddish-yellow, paler distally, tail deep olive brown, nearly black posteriorly; chela darker than trunk, deepreddish-brown with blackish crests and fingers.

*Carapace* very finely and closely granular at the sides, punctured; ocular tubercle not sulcate. *Terga* punctured, very finely granular laterally and in the central depression; the last more granular than the others, with two short granular crests on each side. *Sterna* smooth, punctured, the last obsoletely crested. *Tail* about four times as long as carapace, which about equals its first and second segments taken together in length, the first segment with eight keels, the inferior median obsolete, second keeled like the first with median lateral weaker, third and fourth like the second, but median lateral still weaker, practically obsolete on the fourth, the keels of these segments only crenulate or obsoletely granular, the superior crests high, angled behind, inferior lateral strong on all the segments, the superior and lateral intercarinal spaces lightly concave; fifth segment with strong keels, the three inferior being coarsely granular; vesicle granular below, with small tooth. *Chela*: humerus with its upper side coarsely granular in front, without definite crest, bounded behind by a granular crest;

no distinct antero-inferior crest, the anterior surface being merely coarsely granular below; brachium nearly smooth, its upper side with two crests, the anterior of which is the stronger, furnished with basal angular prominence; hand flattish above, with strong smooth external finger-keel and weaker median finger-keel, the inner surface weakly granular in front. *Legs* nearly smooth, tarsi without lateral lobes, armed with six pairs of spines. *Pectinal teeth* 8.

Measurements in mm.—Total length 48, carapace 5·5, tail 22.

Abd-el-Kuri, Gebel Saleh (800-1500 ft.).

## 2. *Heteronebo forbesii*, Pocock.

*Heteronebo forbesii*, Pocock, Bull. Liverp. Mus. ii., p. 8 (1899).

♀ Very distinct from the foregoing.

*Colour* more uniformly ochre-yellow, the tips of the mandibles, the fingers of the chela, the ocular region of the carapace, and the posterior end of the third, fourth, and fifth caudal segments infuscate. Upper side of *trunk* very finely granular. *Ocular tubercle* distinctly sulcate. Crests on the last abdominal tergite weaker than in *H. granti*, but *sternite* with four crenulate keels. *Tail* with the median lateral crest obsolete even on the first segment; first and second caudal segments with strong, smooth, inferior keels, these keels obsolete on the third and fourth segments, the remaining crests weaker than in *H. granti*, the superior not angular posteriorly, the lateral intercarinal spaces lightly convex; vesicle wider as compared with its length than in *H. granti*, with the tubercle distinctly larger. *Chela* with hand very different from that of *H. granti*, being evenly convex above from the keel of the hand back to the inner edge, without distinct finger keels. *Pectines* and tarsal spine-armature as in *H. granti*.

Total length 42 mm.

Abd-el-Kuri, Gebel Saleh (800-1500 ft.).

[Both this and the preceding species were found under stones on Gebel Saleh at an elevation of about 1000 ft. Both were apparently rare, as during several days' search only two examples of each species were met with.—*W.R.O.G.*]

These two species may be briefly diagnosed as follows:—

- |  |                   |
|--|-------------------|
| (a) Median keels on last abdominal sternite and first and second caudal segments obsolete; hand with strong external and weaker median finger keel . . . . . | <i>granti</i> .   |
| (b) Median keels on last abdominal sternite and first and second caudal segments strong; hand convex above, practically keelless . . . . .                   | <i>forbesii</i> . |

## ARANEÆ.

### ARGIOPIDÆ.

#### 3. *Argyope clarkii*, Blackw.

[Very common on the low bushes near the sea.—*W.R.O.G.*]

See page 188.

4. *Araneus cardioceros*, Pocock.*Araneus cardioceros*, Pocock, Bull. Liverp. Muss., ii. p. 40 (1899).

See page 191.

## OPILIONES.

## BIANTIDÆ.

5. *Biantes bicolor*, sp. n.

Closely resembling the Sokotran species *B. flaviventris*, p. 200, in structural features, but differing entirely in colour. The whole body above and below, with the coxæ of the legs, jet black; mandibles and palpi entirely flavous; first and second legs yellowish-white, with the tibiæ and protarsi black; third and fourth legs entirely yellowish-white, with the trochanters and basal half of femur black.

Total length 3.5 mm.

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 Literature regarding the Arachnida of Sokotra and Abd-el-Kuri.

**Taschenberg**, Zeits. Naturwiss. (4), ii. p. 173 (1883), records the following forms as collected by Riebeck:—

- (a) **Acarina**.—Some specimens of *Liodiæ* off *Corvus umbrinus*.
- (b) **Araneida**.—*Gasteracantha lepida*, O. P. Cambr.
- (c) **Scorpionida**.—*Prionurus hottentottus*, Fabr.

**R. I. Pocock**, Ann. Mag. Nat. Hist. (6), iii. p. 337, pl. xv. fig. 3 (1889).  
*Buthus socotrensis*, sp. n.

**R. I. Pocock**, *op. cit.* (6), xvi. p. 98 (1895).

*Paracleobis balfouri*, sp. n.  
(= *Gluviopsis balfouri*.)

**R. I. Pocock**, *id. op. cit.*

*Nephila hymenaea*, Gerst.

**R. I. Pocock**, Proc. Zool. Soc., Lond., 1897, p. 758, pl. xli.

*Monocentropus balfouri*, gen. et. sp. n.

**O. P. Cambridge**, Proc. Zool. Soc. Lond., 1898, pp. 387-391, pl. xxxi.

*Nephila bennetti*, sp. n., p. 387 fig. 2.

(= *Nephila hymenaea*, Gerst.).

*Selenops diversus*, sp. n., p. 390 fig. 1.

(= *Selenops radiatus*, Latr.).

*Gasteracantha sadalis*, sp. n., p. 388 fig. 3.

(= ? *Gasteracantha lepida*, O. P. Cambr.).

*Tetragnatha boydi*, sp. n., p. 389 fig. 4.

**R. I. Pocock**, Bull. Liverp. Muss., ii. (1899).

**Scorpiones.**—*Heteronebo*, *granti* and *forbesii*, gen. et. spp. nov., pp. 7-8.

*Hemiscorpius socotranus*, sp. n., p. 8.

*Butheolus insularis*, sp. n., p. 8.

**Araneæ.**—*Araneus hoplophallus*, sp. n., p. 40.

*Araneus cardioceros*, sp. n., p. 40.

*Scelidomachus socotranus*, p. 41.

*Capheris insularis*, p. 41.