

This article was downloaded by: [University of Arizona]
On: 05 November 2012, At: 22:26
Publisher: Taylor & Francis
Informa Ltd Registered in England and Wales Registered Number:
1072954 Registered office: Mortimer House, 37-41 Mortimer Street,
London W1T 3JH, UK



Journal of Natural History Series 6

Publication details, including instructions
for authors and subscription information:
<http://www.tandfonline.com/loi/tnah12>

LXI.—Lateral eyes in the Galeodidæ

H.M. Bernard^a & M.A. Cantab F.L.S.F.Z.S.^a

^a Huxley Research Laboratory, South
Kensington

Version of record first published: 06 Oct
2009.

To cite this article: H.M. Bernard & M.A. Cantab F.L.S.F.Z.S. (1894):
LXI.—Lateral eyes in the Galeodidæ, Journal of Natural History Series 6,
13:78, 517-520

To link to this article: <http://dx.doi.org/10.1080/00222939408677746>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study
purposes. Any substantial or systematic reproduction, redistribution,
reselling, loan, sub-licensing, systematic supply, or distribution in
any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or
make any representation that the contents will be complete or
accurate or up to date. The accuracy of any instructions, formulae,

and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

fulvous coloration of the wings; the corneous knob at the extreme base of the inner margin of the posterior wings of the male is small, rounded, and pale in colour; the costal area in these wings slightly dilated for a short distance near the base.

Length of body, ♂ 40-48 millim., ♀ 42-54 millim. Expanse of wings, ♂ 93-110 millim., ♀ 95-131 millim.; breadth of anterior wing 12-18 millim.

Apparently common. Thirteen examples are before me, and I have seen at least fifty. Probably the largest species of *Myrmeleon* as restricted. In form and general structure, and even in the markings of the head and thorax, evidently allied to *M. quinquemaculatus*, Hag., *M. polyzonus*, Gerst., and *M. lethalis*, Walk. (partim), of the African continent, but abundantly distinct. In my analysis of Walker's species (Journ. Linn. Soc., Zool. ix. p. 279) I stated that, of the examples named by him, the one bearing the label "*lethalis*" is identical with *quinquemaculatus*, and that the other two equal *Formicaleo leucospilos*, Hag. Walker's description was apparently drawn up from these latter.

LXI.—*Lateral Eyes in the Galeodidæ.* By H. M. BERNARD, M.A. Cantab., F.L.S., F.Z.S. (from the Huxley Research Laboratory, South Kensington).

THE Galeodidæ have hitherto been thought to be unique among the larger Arachnids in not possessing lateral or accessory eyes. Such eyes, however, occur in all the specimens which I have so far examined, but in a position which fully accounts for their having been overlooked.

Passing the Arachnids in review, we have what I am now inclined to consider as the most primitive condition in the Mygalidæ. The ocular tubercle persists in this family, with the paired median eyes and the accessory eyes grouped upon it. As I have elsewhere* explained, the ocular tubercle may be considered to be the remains of the original dorsal surface, left like an island between the cephalic lobes, which have elsewhere met in the middle line.

In other Araneids the ocular tubercle is obliterated, and the eyes are scattered about on the forehead.

In *Phrynus* the ocular tubercle persists in its original position at the anterior end of the suture between the cephalic lobes. The accessory eyes have apparently *wandered off* laterally, and are found as a small group on each side, halfway

* "On the Head of *Galeodes* and the Procephalic Lobes of Arachnidian Embryos," Zool. Anz. no. 426 (1893).

between the ocular tubercle and the lateral edge of the dorsal surface.

In *Thelyphonus* the ocular tubercle appears to persist near its original position, while the lateral eyes have moved further back than in *Phrynus*, and are close to the lateral edge of the dorsal surface.

In *Scorpio* the median eyes persist, as a rule, upon an ocular tubercle, which has, however, in many cases travelled back along the suture between the cephalic lobes. The accessory eyes appear to have travelled off sideways while the ocular tubercle still occupied its original position, *i. e.* was at the anterior end of the suture between the cephalic lobes. They are found along the fronto-lateral edge of the dorsal surface.

In the Chernetidæ the median eyes appear to have atrophied, while the lateral eyes persist in one or two pairs at the edges of the dorsal surface.

In the Phalangidæ, as a rule, only the median eyes are developed; but lateral eyes also occur in rare cases, although those figured by Blanchard* have been shown to be glands.

In the Galeodidæ we have the median eyes on a sharply demarcated ocular tubercle situated in the original position, that is, at the anterior end of the suture between the cephalic lobes. The accessory eyes apparently, as in *Scorpio*, wandered off laterally, *i. e.* in the transverse plane, thus retaining their frontal position. But the enormous development of the mandibles, which is doubtless a secondary acquirement, together perhaps with the development of the curious foldings of the cuticle (to form the buttresses upon which the mandibles rotate), have led to the shifting of the eyes down, over the edge of the dorsal surface, on to the lateral surface, so that they now look downwards and forwards (fig. 1).

In spirit-specimens the eyes themselves appear, when looked at with a pocket-lens or even with the naked eye, as whitish patches, which vary greatly in form and arrangement. In fig. 1 they are seen to have run together to form a long oval patch; in fig. 2 there are two eyes—the anterior an oval, and the posterior a minute, nearly circular mass of pigment; whereas in fig. 3 they appear about equally developed. I have not yet seen more than two on each side.

That these eyes are atrophying I think is apparent from their irregular forms and, perhaps, from their position. But, on the other hand, in some cases (*cf.* fig. 3) they have a well-developed ganglion and regularly arranged retinal cells, the

* 'Les Arachnides,' pl. xxx.

Fig. 1.

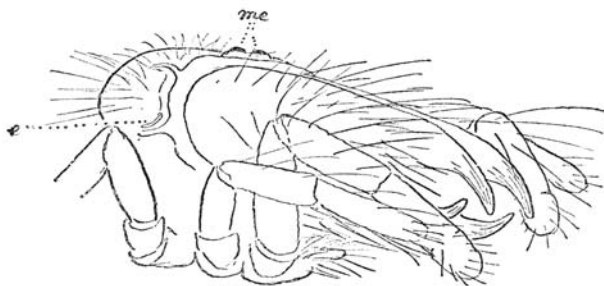


Fig. 3.

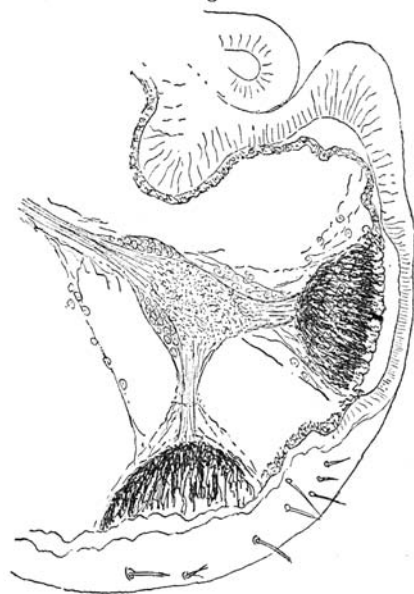


Fig. 2.



Fig. 1.—Outline drawing of the anterior end of a specimen of *Rhax melana*, Oliv., showing the position of the lateral eyes (*e*); *me*, median eyes on the ocular tubercle.

Fig. 2.—Portion of cuticle from a specimen of *Galeodes arabs*, Koch, cleared, showing the thickness of the cuticle, and a pair of eyes like plugs of pigment in chitinous pits.

Fig. 3.—Tangential section through the same region of a small (and perhaps young) *Rhax* (from Tashkend); two eyes are seen, with nerves and ganglion. As the fragment of the section was not *in situ*, its position in the sagittal plane is only approximate. A portion of the complicated infolding of the cuticle which forms the mandibular buttress appears in the section.

finer structure of which I have been unable as yet to make out. I could find no trace of a hypodermis between the retinal cells and the cuticle.

The eyes have completely lost all traces of a lens. The chitin is thinned away over them, so much so that very minute eyes are little more than plugs of pigment in deep chitinous pits (fig. 2).

I have thought it advisable to publish these notes in advance, as some time must still elapse before my work on the Galeodidae is ready for publication.

LXII.—*Description of a new Longicorn Beetle of the Genus Diaxenes, which has been found injuring some imported Orchids.* By C. J. GAHAN, M.A.

THE genus *Diaxenes*, Waterh., has up to the present included but a single described species, and with regard to the locality of that species nothing very definite was known. The one example of *D. Taylora*, Waterh. (Ann. & Mag. Nat. Hist. ser. 5, vol. xiii. p. 128), which the British Museum contained was found in the Royal Nursery, Chelsea, where it was gnawing off the stems of an orchid from Manilla, of the genus *Phalaenopsis*. Three additional examples are, I find, contained in the Pascoe collection; these are ticketed "Moulmein," though on what authority is not stated, and cannot now be ascertained. My reasons for giving Burma as the habitat of the new species are stated below. This new species has also, like its congener, exhibited a special taste for orchids, especially those of the genus *Dendrobium*.

Diaxenes dendrobii, sp. n.

Fortiter punctatus; pube fulvo-brunnea sat dense vestitus; prothorace elytrisque albescente lineatis, lineis elytrorum dorsalibus sinuatis; scutello fusco, puncta centrali et limbo externo albis; antennis griseo-fulvis, articulis 4° ad 6^{um} plus minusve infuscatis. Long. 10-16, lat. $3\frac{1}{2}$ -5 $\frac{1}{2}$ mm.

Hab. Burma. On species of *Dendrobium*.

Strongly and rather closely punctured, with the punctures partly concealed by the close pubescence; this is mostly of a fulvous brown or drab colour, but there are darker brown areas on some of the interspaces between the whitish lines; the pronotum bears three white lines, one median and one towards each side, the two latter converging anteriorly. Each