REMARKS ON SOME NEMATODES FROM AUSTRALIAN REPTILES

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Host List

Amphibolurus barbatus Cuvier. *Strongyluris paronai* (Stoss.), Eidsvold, Brisbane; New England, New South Wales. *Oswaldofilaria chlamydosauri* (Breinl), Eidsvold.

Amphibolurus muricatus Shaw. *Oswaldofilaria chlamydosauri* (Breinl), Burnett River, Queensland. *Strongyluris paronai* (Stoss.) and *Physaloptera gallardi* Johnston and Mawson, Sydney. *Physaloptera antarctica* Linst., Sydney.

Chlamydosaurus kingii Gray. *Oswaldofilaria chlamydosauri* (Breinl), Eidsvold. *Strongyluris paronai* (Stoss.), Burnett River.

Physignathus lesueuri Gray. *Thamugadia physignathi* (Johnston 1912), Eidsvold.

Gehyra variegata D. and B. *Pharyngodon kartana* Johnston and Mawson 1941, Eidsvold. *Pharyngodon* sp. (perhaps *P. tiliquae* Baylis), Eidsvold.

Phyllodactylus guntheri. *Pharyngodon kartana* Johnston and Mawson, Lord Howe Island.

Intermediate host, Culex fatigans. *Oswaldofilaria chlamydosauri* (Breinl), Burnett River.

Oswaldofilaria chlamydosauri (Breinl)

(Fig. 1-2)

Syn. *Filaria chlamydosauri* Breinl 1913; *Foleyella chlamydosauri* (Breinl) Yorke and Maplestone 1926.

From *Amphibolurus barbatus, A. muricatus* and *Chlamydosaurus kingii,* all from the Burnett River, Queensland. The males are about 2-3 cm. long, the females 6-7 cm.

Distinct papillae were not observed on the head. The simple mouth opens directly into the oesophagus which is divided into a narrow anterior and a slightly wider posterior part, these being respectively ·35 mm. and 1·3 mm. long in the male, and 16 mm. and 1·9 mm. in the female. The nerve ring surrounds the base of the anterior portion.

The male tail is 2·5 mm. long and on its extremity bears a small rugosity, more pronounced in some specimens than in others (fig. 4). The caudal papillae are arranged exactly as described by Breinl. The spicules are ·11 mm. and ·21 mm. long, that is, slightly smaller than for the type specimen; both are greatly enlarged proximally, the longer ending in a spoon-shaped portion, the shorter in a round knob. In the female, not previously described, the reproductive tubes extend nearly to both extremities; the vagina is long and opens to the vulva just in front of the midbody. The uteri and vagina contain larvae.

Filaria chlamydosauri Breinl was transferred to *Foleyella* by Yorke and Maplestone 1926. Since that genus is characterised by the possession of wide

caudal alae in the male, and by the oesophageal position of the vulva, the species cannot remain there. The genera of Filarioidea so far recorded from reptiles are *Foleyella, Saurositus, Hastospiculum, Oswaldofilaria, Conispiculum, Macdonaldius, Thamugadia,* and *Setarospiculum.* We have been unable to procure a description of the last-named, but a key to the others has been compiled and may be found useful by other workers. *Filaria chlamydosauri* agrees generally with the genus *Oswaldofilaria,* species of which are recorded from the caiman and an iguana from South America. Breinl's species differs from *Oswaldofilaria* in the absence of a vestibule; but since a description of *Setarospiculum* is not available, we consider it inadvisable to erect a new genus.

KEY TO THE GENERA OF FILARIIDAE FROM REPTILES
(excluding *Setarospiculum*)

1	Oesophagus divided into two parts.	2
	Oesophagus not divided into two parts.	5
2	Spicules subequal. .... *Saurositus*	
	Spicules unequal.	3
3	Cuticle on each side of mouth thickened .... *Hastospiculum*	
	Cuticle on each side of mouth not thickened.	4
4	Vulva at about mid-body; no caudal alae in male .... *Oswaldofilaria*	
	Vulva just post-oesophageal: wide caudal alae in male .... *Foleyella*	
5	Vulva at mid-body; no caudal alae in male .... *Conispiculum*	
	Vulva just post-oesophageal; no caudal alae in male.	6
6	Chitinous ring around small vestibule; spicules unequal .... *Macdonaldius*	
	Mouth leading direct to oesophagus; spicules equal .... *Thamugadia*	

LIFE HISTORY—*Microfilaria chlamydosauri* was described by Breinl (1913, 42) from the host from North Queensland. The presence of microfilariae in a specimen of *Amphibolurus barbatus* in the London Zoological Gardens, but originally from Australia, was recorded by Plimmer (1912, 139). Johnston and Bancroft (1920, 16) mentioned their presence in the latter host species in the Upper Burnett region, Queensland, and stated that the intermediate host was *Culex fatigans.* The parasite was the species now under review, though it was not then identified. Mackerras (1938, 108) stated that *A. barbatus* was almost invariably infected with a species of *Filaria* in Queensland, but that the parasite had not been observed in that lizard in Canberra.

In 1919 experimental infection of *Culex fatigans* with microfilariae from *A. barbatus* was carried out in Queensland by Dr. J. M. Bancroft, working in collaboration with the senior author. Larvae were collected from the mosquitoes at varying periods after infection, but further studies were not undertaken at the time. The material has now been investigated as far as its condition has permitted.

Eight days after infection the larvae were short (90 μ) and relatively thick (10 μ), and the intestine was not formed. Fifteen days after infection the length varied between 305 and 530 μ, and the width 20-30 μ. The oesophagus and intestine were distinct, the former being 90-120 μ long and surrounded at 22-50 μ from the head end by the nerve ring. The intestine ended in a large clear chamber, the rectum, but the anal aperture was not recognised. At about the position of the future anus was a large, apparently unpaired, papilla visible in all specimens. No other caudal papillae were present, though a suggestive thickening of the hypodermis was seen near the end of the tail in some specimens. Distant from the tail, about one-quarter of the body length was a more deeply staining mass of cells along the body cavity.

Seven days later (after 22 days) a considerable elongation had taken place, the length being ·55-·82 mm. At 28 days greater differentiation was observable and the mouth and anal apertures were present; anal papillae were now absent;

and hypodermal cells had increased so greatly in number that the body cavity was almost obliterated. At 30 days larvae were found in the proboscis and some were escaping from between the labella and their length had reached ·9 mm. Larvae had not increased in size even after 49 days from infection.

These facts indicate that infected mosquitoes in the Upper Burnett district become infective in about thirty days and may remain so for about twenty (or more) days.

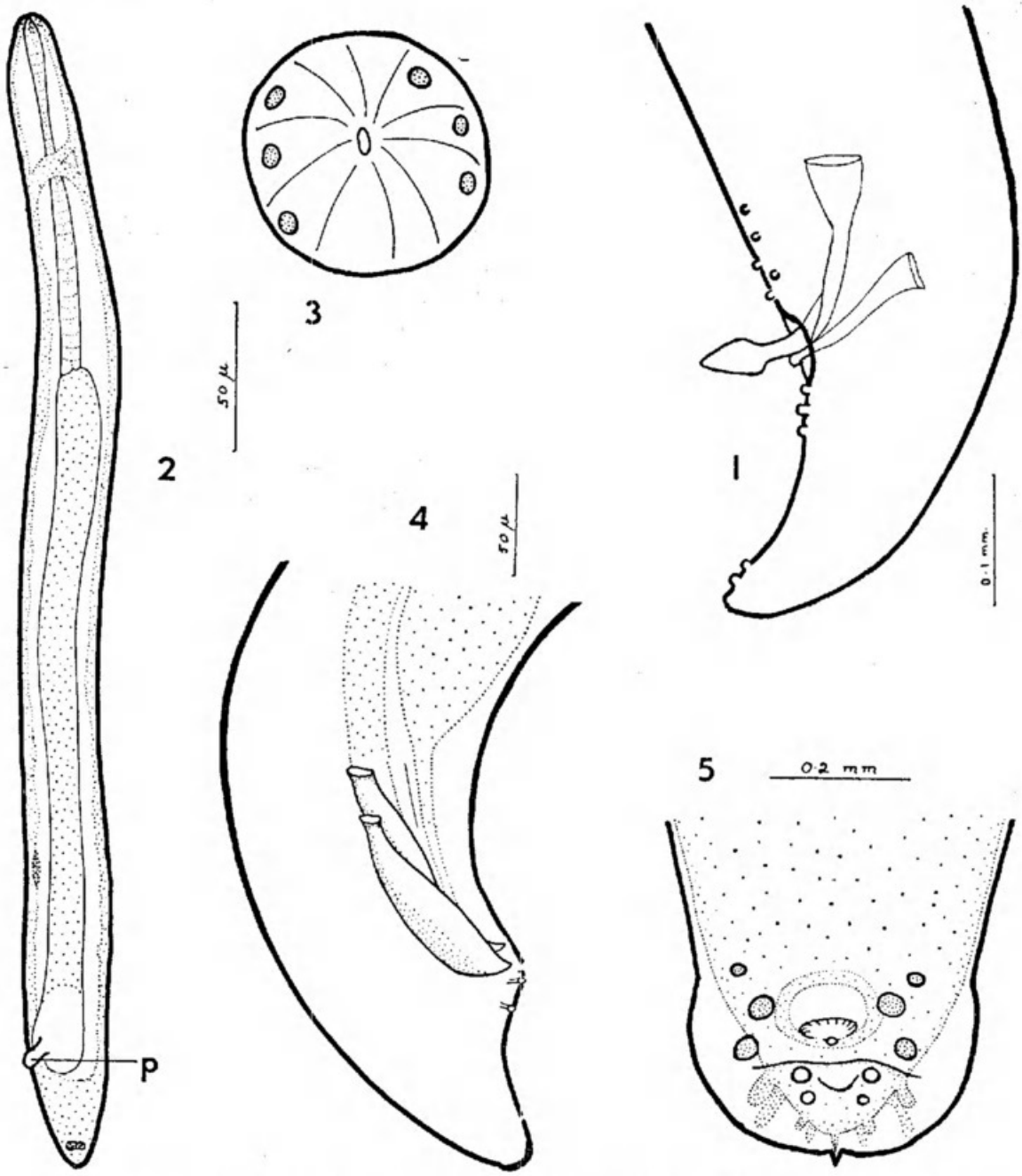

Fig. 1 and 2, *Oswaldofilaria chlamydosauri:* 1, posterior end of male; 2, 15-day larva from *Culex fatigans.* Fig. 3 and 4, *Thamugadia physignathi:* 3, en face view of head; 4, male tail. Fig. 5, *Strongyluris paronai,* male tail, p., anal papilla, Fig. 2 and 3 to same scale.

THAMUGADIA PHYSIGNATHI (Johnston 1912)

(Fig. 3-4)

From veins of liver and mesentery of the type host, *Physignathus lesueuri,* from Eidsvold, Queensland.

The specimens agree closely with the original description, except in regard to the male tail. The anal papillae, of which one preanal and two postanal pairs were mentioned, are extremely inconspicuous, the preanal pair not being seen in any specimen. The alae are so slight that they may be regarded for purposes of classification as absent. The spicules are subequal, about ·11 mm. long, as shown in fig. 4.

The original description mentioned the presence of "three small papillae" on head; this should read "three pairs of small papillae." The absence of a vestibule, the mono-partite oesophagus, the equal spicules and the absence of alae in the male, and the position of the vulva in the female, indicate that this species belongs to *Thamugadia*. The microfilariae were first described by Johnston and Cleland (1911, 489), and were also mentioned by Johnston (1911, 240) and by Cleland (1916, 256).

Pharyngodon kartana Johnston and Mawson 1941

P. kartana was originally recorded from a gecko from Kangaroo Island, and is now identified from another gecko, *Phyllodactylus guntheri*, from Lord Howe Island. The males in this collection show minor variations from the type. They differ in the greater length of the cloacal prolongation, the lesser degree of bifurcation of the second caudal papilla, and the lesser chitinisation of the spicules.

Pharyngodon sp.

Some males falling into the genus *Pharyngodon* were taken from a gecko, *Gehyra variegata*, from Eidsvold. They agree very closely with *P. tiliquae* Baylis 1930, but in the absence of females their definite identification as such is uncertain.

Strongyluris paronai (Stossich)

(Fig. 5)

From *Amphibolurus barbatus* from Eidsvold (Queensland), and New England; *A. muricatus*, Sydney; and *Chlamydosaurus kingii*, Burnett River. This species was re-described by us (1942) and stated to have seven pairs of caudal papillae in the male; in some particularly clear specimens amongst the present material three more pairs were observed (fig. 5).

Physaloptera gallardi Johnston and Mawson 1942

This species, originally described from *Amphibolurus barbatus* from Narara, New South Wales, is now recorded from *A. muricatus* from Sydney.

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