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REPORT ON SOME PARASITIC NEMATODES FROM THE AUSTRALIAN MUSEUM.

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(Figures 1-7.)

In 1943, Dr. A. B. Walkom, Director of the Australian Museum, Sydney, submitted to us for identification and report, a collection of parasitic nematodes from various hosts. Much of the material formed part of the "Old Collection" of the Museum and contained little or no information beyond the popular name of the host. Some of it was obtained by the Commonwealth Fisheries Investigation Steamer, "Endeavour", during 1909, 1910 and 1914. Unfortunately, during transit, some of the tubes became smashed and their contents distributed amongst the packing material, but by careful unpacking we have been able to associate most of these worms with proper labels. We have assumed, unless there are any reasons to the contrary, that unlocalized material came from New South Wales.

We express our thanks to Dr. Walkom for the opportunity to study the collection which has now been returned to the Australian Museum. Mr. G. P. Whitley, at the request of the Director, kindly endeavoured to identify some of the unnamed "Endeavour" fish hosts from which nematodes were collected, by reference to the records, reports and collections associated with the work of the vessel, but he reported that no data were forthcoming regarding those specimens which were not numbered but which had evidently been opened up and discarded many years ago. Mr. J. R. Kinghorn supplied identifications of some of the reptilian hosts. We acknowledge indebtedness to the Commonwealth Research Grant to the University of Adelaide. The host names and parasites identified are as follow:

ELASMOBRANCHS.

- Emissola* [*Mustelus*] *antarctica* Gnthr.—*Eustoma australe* (J. and M., 1945), N.S.W.;
Terranova chiloscyllyi, sp. nov., N.S.W.
Chiloscyllyium punctatum Mull. and Henle.—*Terranova chiloscyllyi*, sp. nov., Keppel Is., Queensland.
Heterodontus portusjacksoni Meyer.—*Paraleptus australis* J. and M., N.S.W.
Pristis zysron Bleeker.—*Stomachus* sp. (juveniles), Manly, N.S.W.
Pristiophorus cirratus Lath.—*Eustoma australe* (J. and M.), N.S.W.

TELEOST FISH.

- Conger muraena habenata* Richdsn.—*Stomachus* sp. larvæ, Storm Bay, Tasmania.
Genypterus blacodes Bl. and Schn.—*Stomachus* sp. larvæ, Storm Bay, Tasmania.
Gadus morrhua Cuv.—*Contracaecum* (*Thynnascaris*) *aduncum* (Rud.). This material is not Australian.
Coelorhynchus (*Paramacrurus*) *australis* Richdsn.—*Stomachus* sp. larvæ, Montague Island, N.S.W.
Neoplatycephalus macrodon Ogilby.—*Stomachus* sp. larvæ, N.S.W.
Platycephalus bassensis C. and V.—*Contracaecum* (*Thynnascaris*) sp., Oyster Bay, Tasmania.
Ichthyoscopus sannaio Whitley.—*Stomachus* sp. larvæ, N.S.W. coast.
Zeus faber Linn.—*Contracaecum* (*Thynnascaris*) *aduncum* (Rud.), off Tathra Head, N.S.W.
Promicrops lanceolatus Bloch.—*Contracaecum* (*Thynnascaris*) *legendrei* Dollfus, Hummocky Island, Queensland.

Neosebastes scorpaenoides Guichenot.—*Stomachus* sp. larvæ, N.S.W.

Sciaena antarctica Castln.—*Stomachus* sp. larvæ, N.S.W.

Thyrssites atun Euphr.—*Stomachus* sp. larvæ, Pambula, N.S.W.; Woollooware Bay, N.S.W.; Investigator Strait, South Australia.

Caranx georgianus C. and V.—*Contracecum* (*Thynnascaris*) *aduncum* (Rud.), Flinders Island, Tasmania.

Unnamed fish, "Endeavour" collection:—

- A. Taken between Devonport and Launceston, Tasmania, *Stomachus* sp. larvæ.
- B. Taken in 20 fathoms, off River Murray mouth, South Australia, June, 1909, *Contracecum* (*Thynnascaris*) *aduncum* (Rud.).
- C. Probably from "Endeavour" collection, ? locality, *Terranova* sp. larvæ.

REPTILES.

Varanus varius Shaw.—*Physaloptera antarctica* Linst., N.S.W.

Varanus gouldi Gray.—*Physaloptera antarctica* Linst., Mount Lyndhurst, South Australia.

Python spilotes spilotes Lacep.—*Ophidascaris filaria* Duj., N.S.W..

Python spilotes variegatus Gray.—*Ophidascaris filaria* Duj., N.S.W.; *Polydelphis anoura* Duj., N.S.W.; *Physaloptera* sp. encysted larvæ, N.S.W.

Pseudechis porphyriacus Shaw.—*Physaloptera confusa* J. and M., Tenterfield and Sydney, N.S.W.

Pseudechis australis Gray.—*Physaloptera confusa* J. and M., Immarna, East-West transcontinental Railway, South Australia.

Notechis scutatus Peters.—*Physaloptera confusa* J. and M., Sydney.

Denisonia suta Peters.—*Physaloptera confusa* J. and M., Narrabri, N.S.W. (host quoted as "*Denisonia frontalis*, black snake").

"Sea snake."—*Polydelphis* sp., "Old Collection".

BIRD.

Anous minutus Boie.—*Stomachus* sp. (as ingesta from fish), Great Barrier Reef.

MAMMAL (Cetacea).

Globicephalus ventricosus Lacep.—*Stomachus oceanicus*, sp. nov., "Old Collection", presumably off the N.S.W. coast.

ASCARIDATA.

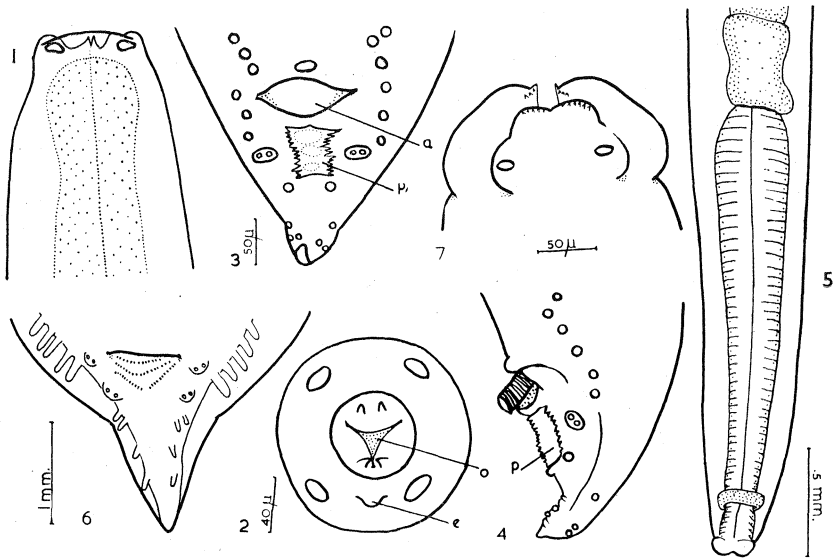
ASCARIDAE.

STOMACHINAE.

Eustoma australe (J. and M.)

This parasite was described by us (1945, p. 109) as *Anacanthocheilus australis* from *Mustelus antarcticus* from the Derwent River, Tasmania. We now record it from the same host species (*Emissola antarctica*) from the New South Wales coast; W.3361 off Jervis Bay, coll. G. P. Whitley, Dec. 1942; W.3370, W.3372, N.S.W. coast, coll. Miss E. Pope, July 1943; and from *Pristiophorus cirratus* W.3457, coll. Miss E. Pope, off N.S.W. coast.

Punt (1941) stated that *Eustoma* Beneden 1870 was sufficiently described to be considered a valid genus, its type being *E. truncata*, and that the latter was a synonym of *Ascaris rotundata* Rud. 1819. Hence *Anacanthocheilus* erected by Wülker in 1930 for Rudolphi's species falls as a synonym of *Eustoma*.



Figures 1-7.

1-4, *Terranova chiloscyllii*. 1 dorsal, and 2 "en face" views of head; 3 male tail, ventral; 4 male tail, lateral. (Figs. 1-2 to same scale; 3 and 4 to same scale.)

5-7, *Stomachus oceanicus*. 5 oesophageal region; 6 male tail; 7 head.
a, anus; e, excretory pore; o, oesophageal lumen; p, postanal "plaque."

Pseudanisakis rajae Yamaguti 1941, which we transferred (1945, p. 107) to *Anacanthocheilus*, bears a striking resemblance to *E. rotundatum*, as redescribed by Punt, the sole significant difference being the position of the vulva which was stated to be situated further forward in the Japanese species. The latter is now transferred to *Eustoma* as *E. rajae* and is perhaps synonymous with *E. rotundatum*.

Terranova chiloscyllii, sp. nov.

(Figures 1-4.)

This species was found in collections from the stomachs of two sharks, *Chiloscyllium punctatum* (type host), W.3551, coll. G. P. Whitley from Halfway Island, Keppel Islands, Central Queensland Coast; and *Emissola antarctica*, N.S.W. coast, W.3368, coll. G. P. Whitley, March 1943.

The worms are long and slender, the males 37-40 mm. in length, and .4 mm. in maximum diameter; the females 40-50 mm. long and .56 mm. in diameter. The lips, if present, are very much reduced. They are not distinguishable from one another on the outer surface of the head; in an "en face" view there appears to be a circular "mouth", leading to a depression in which lie three lobes, corresponding to the three parts of the oesophageal wall. We are uncertain as to whether these structures should be regarded as vestiges of the lips, or as the anterior end of the oesophagus, which latter they closely resemble. One of these is dorsal, the other two subventral, in position. The dorsal bears two teeth, the subventrals each one tooth. Four large papillae are present on the outer surface of the head, two subdorsally and two subventrally.

The oesophagus, excluding the ventriculus, is 2.4-2.5 mm. long in the male, 2.6 mm. in the female. The ventriculus is 2.7-3.6 mm. in length in the male, 3.6 mm. in the female. The intestinal caecum is as long as the ventriculus, except in the youngest male,

in which it is rather shorter. The ventriculus communicates with the intestine by an oblique foramen. The nerve ring and cervical papillæ are at almost the same level, namely, 4-5 mm. from the head end. The excretory pore opens between the two subventral cephalic papillæ.

The vulva is situated at the end of the first third of the body length. The eggs are thin-shelled and subglobular, 35-40 μ in diameter.

The spicules are equal, 1-1.2 mm. long, strongly chitinized and ending in rather blunt tips. The tail narrows greatly behind the anus which is .18 mm. in front of the tip. There are 35-45 pairs of small adanal and preanal papillæ; a pair of large double papillæ shortly behind the anus, and behind them four pairs of caudal papillæ. A median preanal papilla is present. On the ventral surface of the tail just posterior to the anus is a stout plaque-like structure of chitin, 60 μ long and about 30 μ wide, whose lateral edges are serrated, and in three oval areas in its central portion the chitin is very much thinner. This structure is comparable with similar chitinizations occurring in the male of other species of *Terranova* from elasmobranch fishes, namely *T. galeocerdonis* (Thwaite) and *T. scoliodontis* (Baylis).

T. chiloscyllyii resembles species of *Acanthocheilus* in the reduction of the lips, but the presence of a ventriculus and an intestinal cæcum allies it with *Terranova*. The male tail bears a marked similarity to that of other species of *Terranova* from elasmobranchs. The greater length of the ventriculus compared with that of the muscular oesophagus is a striking feature of our species.

The type of genus, *T. antarctica*, was described by Leiper and Atkinson (1915, p. 28) from a female worm from *Mustelus antarcticus* (*Emissola antarctica*) from the Bay of Islands, New Zealand. The parasite was 32 mm. long, 3 mm. in maximum breadth, and coiled in 1½ spirals; with three rounded squat lips, not markedly separated from the neck; without an oesophageal appendage but with a large intestinal cæcum. Baylis (1920, p. 258) re-examined the specimen and reported that a ventriculus, 1.4 mm. long, was present. Leiper and Atkinson stated that the anterior end of the cæcum was 1 mm. from the head of the worm, hence if their figure 1 is drawn to scale, the oesophagus was about 1.6 mm. in length and was therefore only slightly longer than the ventriculus as reported by Baylis. The vulva was stated to be 14 mm. behind the head, i.e., just in front of the midlength, whereas in *T. chiloscyllyii* it lies at the end of the first third of the body length. A re-examination of the type may indicate that our species is synonymous with *T. antarctica*.

We pointed out recently (J. and M., 1945) that the genus *Terranova* was valid because its species possessed head characters different from those of the closely related *Porrocaecum* with which it was usually synonymized.

Terranova sp. larva.

Among debris from several broken tubes was part of the mesentery of a fish (W.3563), containing numerous larval ascarids referable to the genus *Terranova*. The fish host presumably belonged to the "Endeavour" collection, but its name and locality were not indicated. In view of the fact that relatively few seals are found in Australian waters, and that the proportions in any case do not resemble those of *T. piscium* or *T. kogiæ*, the only recorded species of the genus from marine mammals, it is considered likely that the final host is an elasmobranch. The larvae might be those of a *Porrocaecum* sp., but no such species has been recorded from Australian fish-eating birds.

The larvae are all loosely coiled or curved, each lying in a cast skin with the head outwards, outside which is a capsule of host tissue roughly following the form of the worm. The lips are absent and a larval tooth is present. The alimentary canal is well differentiated. The nerve ring is .2 mm. distant from the head end in all specimens measured. The tail ends in a point without spines. The cuticle around the anus is very prominent.

The smallest larva in the collection is 3.65 mm. long, coiled in a loose flat spiral. In this specimen the oesophagus is .5 mm. long, excluding the ventriculus .2 mm. long; and the intestinal caecum is .4 mm. In the longest specimen, 7.2 mm. in length, the oesophagus is .85 mm. long, the ventriculus .35, and the caecum .7 mm. In the numerous specimens between these sizes the proportions of these parts are similar, i.e., the ratio of the ventriculus to the rest of the oesophagus is about 1 : 2.5, and the ratio of the ventriculus to the intestinal caecum is about 1 : 2 (1 : 1.8-1 : 2.2). There is no indication in this collection, nor in *Terranova piscium* larvae recorded by us from subantarctic fish (J. and M., 1945) of an increase in the relative length of the intestinal caecum with increasing length of the larvae. Such a growth was recorded by Baylis (1916) after his examination of material from a number of collections. It seems to us possible that he was dealing with larvae belonging to more than one species and genus. Since the very small encysted larvae in the present collection have well-developed intestinal caeca, it seems to us probable that the differentiation of the alimentary canal takes place at an earlier stage than in these presumably fourth-stage larvae. A comparison with *Contracaecum* larvae which are far commoner in fish examined by the present authors, may be helpful here. We described (J. and M., 1945, p. 126, Figures 13-20) very young larvae (Figure 13) penetrating the intestinal wall of the fish host as having no intestinal caecum (though an oesophageal appendix was present). Later stages with a rudimentary caecum (Figures 15-16) were found in cysts (Figure 14) in the mesenteries of fish. Still older larvae, presumably fourth stage (or third stage if Punt's suggestion of there being only three moults in *Contracaecum* spp. be correct) were found loosely encapsuled in the mesentery, at least one cast skin being present under the host-formed capsule, and in these fourth (or third) stage larvae an intestinal caecum was well developed. It is these larvae which are comparable in degree of development with those in the present collection.

***Stomachus oceanicus*, sp. nov.**

(Figures 5-7.)

Numerous worms from a "black fish" (W.3555, without number or locality) are identified as a new species of *Stomachus*. Since the adult stage of members of this genus occurs in cetaceans, we feel justified in considering the host to be *Globicephalus ventricosus* Lacep. (syn. *G. melas* Traill), which is popularly termed "black fish". Specimens of this small odontocete are occasionally found stranded along the coast of New South Wales and elsewhere.

The males are up to 45 mm. long; females to 55 mm. The dorsal lip is shorter than the ventral; each lip has two anterior lobes, each lobe bearing on its inner side a dentigerous ridge with about six to eight denticles. The oesophagus is 3.6 mm. in length in the longest specimens of both sexes, widening towards its base. The ventriculus is .6 mm. long, and constricted at its middle (Figure 5). The nerve ring is .42 mm., and cervical papillae .66 mm., from the head end.

The vulva is very small, 11 mm. from the head end in females 29 mm. long (1 : 2.6 of body length). The thick-shelled eggs are almost spherical, 35-40 μ in diameter.

Spicules are slightly unequal, the smallest pair measured being .16 and .17 mm., the longest .24 and .27 mm. The shorter spicule is more slender. Caudal alae are developed in the region of the anus and support the most posterior of the 50 or more pairs of preanal papillae. There are two pairs of large double papillae immediately postanally, and four pairs of single papillae behind these (Figure 6). Three rows of denticles lie ventrally just behind the anus.

The general appearance of the male tail strongly resembles that of *Terranova kogiae* (J. and M., 1939), but an intestinal caecum is absent. The species appears definitely to belong to *Stomachus*, most closely resembling *S. physeteris* (Baylis), from which it differs in the relative proportions of the ventriculus and oesophagus, as well as in the smaller size of both sexes.

Stomachus sp. larva.

Closely coiled larvae, enclosed in flat circular cysts and belonging to *Stomachus* (*Anisakis* of authors), have been recorded by us on several occasions (J. and M., 1943, p. 22, as *Capsularia marina* L.; 1943a; 1945, 98–100, 102–105 as *Stomachus marinus* L.) from a number of species of bony fish, as well as a few elasmobranchs, the worms from the latter host being considered to have been ingested along with their proper hosts and therefore not to be regarded as parasitic in sharks. We have not been able to distinguish between these larvae and no doubt most of them should be regarded as young stages of *Stomachus marinus* whose adult is a widely distributed parasite of cetaceans. Similar larvae from subantarctic fish we have assigned to *S. similis* which occurs in the elephant seals that spend part of their time ashore on subantarctic islands (J. and M., 1945, p. 105). We should mention that another species, *S. diomedea* (Linstow), occurs in various albatrosses in the Southern Ocean (J. and M., 1942, p. 67). The sperm whale, *Physeter macrocephalus*, which is the host of *S. physeteris* (Baylis), is not sufficiently common in southern Australian waters to be considered in connection with these larvae that occur so abundantly in some of our fish, especially the barracouta, *Thyrstes atun*.

These larvae of *Stomachus* sp. are represented in the present collection by specimens from *Neoplatycephalus macrodon*, W.3549, N.S.W.; *Coelorhynchus (Paramacrurus) australis*, W.2710, from Montague Island, N.S.W., August 1929; *Neobastes scorpaenoides*, W.3547, N.S.W. without locality; *Ichthyoscopus sarnio*, W.3546, N.S.W. without locality; *Thyrstes atun*, W.909, Pambula, N.S.W., coll. D. G. Stead, Jan. 1903; W.3553, old coll., Wooloware Bay, N.S.W., July 1905, and W.3542, "Endeavour" coll., Investigator Strait, South Australia, August 1909; *Sciaena antarctica*, W.2772, coll. D. G. Stead, N.S.W., June 1930; ling, *Genypterus blacodes*, E.6800, "Endeavour" coll., Storm Bay, Tasmania, July 1909; "conger eel," E.6798, "Endeavour" coll., Storm Bay, Tasmania, July 1909 (A. R. McCulloch in Endeavour Fisheries Reports, Part I, 1911, p. 18, recorded *Conger muraena habenata*, the little conger eel, as having been collected in that locality, off Port Arthur); the saw shark, *Pristis zysron*, W.2338, Manly, Sydney, Nov. 1926; and, from an unnamed fish, E.6797, "Endeavour" coll., taken off the northern Tasmanian coast between Devonport and Launceston; and also, as ingesta (W.999), from a noddy tern, *Anous minutus*, from the Great Barrier Reef. It is to be noted that Stead (1914, p. 20) recorded the presence of "immature Ascaris" from the subperitoneum of *Sciaena antarctica* from Port Kembla, N.S.W. We recorded the occurrence of the parasite (as *Capsularia marina*) in the latter host species as well as in several other South Australian fish (1943, p. 22).

In his account of *Anacanthocheilus*, Wülker (1929) reported that its larval stage occurred spirally rolled or somewhat elongate in cysts found mainly under the peritoneum of the viscera of North Sea fish, especially Gadidae. This larva was reported to have the dorsal portion of its oesophagus more or less replaced by glandular tissue. After considering the reports of Wülker and Kahl (1939), we stated (1945, p. 108) that it was probable that the larval stage of *Anacanthocheilus rotundatus* was the true *Gordius marinus* of Linnaeus.

Unfortunately we were not aware of an important paper by Punt (1941) dealing with larval and adult ascarids from the chief species of food fishes brought from the North Sea into the Belgian markets. This author referred (pp. 34–5) to the confusion which had become associated with the names *Filaria piscium*, *Ascaris capsularia*, *Filaria capsularia* and *Capsularia halecis*. He pointed out that some of these names had been applied to worms which belonged to *Anisakis* (i.e., our *Stomachus*), and that the same name had been given to larvae belonging to more than one genus. He went on to give an account of an *Anisakis* larva from *Gadus* (pp. 53–5), quoting a long list of synonyms. He pointed out that although Wülker had stated that the larva which he regarded as that of *Anacanthocheilus rotundatus* had its excretory pore at the level of the peri-oesophageal nerve ring, Wülker's figure actually showed the aperture (which he did not

recognize) adjacent to the ventral perforating tooth. Punt also pointed out that the figure showed the presence of anal glands which are absent from the larva of *Eustoma* (syn. *Anacanthocheilus* Wülker), but are present in the larva of *Anisakis*. The latter larvae in their last larval moult possess well-marked lips, whereas in adult *Eustoma* these organs are only feebly indicated. Punt's view is that Wülker probably was dealing with the larva of *Anisakis* (i.e. *Stomachus*) and not that of *Eustoma*. Punt stated (p. 53) that the larvæ of *Anisakis* were slender worms, ordinarily lying coiled in a flat spiral in a cyst, with the head usually at the centre. In view of the foregoing summary we return to our earlier view that Linnaeus' *Gordius marinus* was a *Stomachus* larva whose adult stage was *Anisakis simplex* of authors, a parasite of dolphins and some other cetaceans.

Contraecaecum (Thynnascaris) legendrei Dollfus.

This ascarid in its adult stage has already been recorded by us from the southern tunny (*Thunnus maccoyi*), while young stages were reported from the tiger flathead (*Neoplatycephalus macrodon*) from New South Wales (1943, p. 20), *Threpterus* and *Upeneichthys* from South Australia (1944, p. 61), *Caranx georgianus*, *Platycephalus bassensis*, *P. fuscus* and *P. laevigatus* from the Derwent River, Tasmania, and *Upeneichthys porosus* from south Western Australia (1945, p. 133).

In the present collection are two very poorly preserved worms which we regard as belonging to this species. The host is the Queensland groper, *Promicrops lanceolatus*, W.3560, from Hummocky Island, Keppel Bay, "Endeavour" coll., July 1910.

Contraecaecum (Thynnascaris) aduncum (Rud.).

This parasite is recorded for the first time as occurring in Australian fish, the present collection containing specimens from the trevally, *Caranx georgianus*, W.18, from Flinders Island, Bass Strait, and E.693, "Endeavour" coll., May 1909; *Zeus faber*, E.5434, "Endeavour" coll., May 1914, from 70 fathoms off Tathra Head, N.S.W.; and from an unnamed fish, W.3548, "Endeavour" coll., June 1909, from 20 fathoms, off the mouth of the Murray River, South Australia; as well as from *Gadus morrhua*, W.3541, not an Australian collection.

An excellent account of this common parasite of Gadidae in the North Sea was given by Punt (1941, pp. 8-37, Figures 1-27). Amongst the synonyms he included ? *Ascaris gadi* Muller 1786. We (1945, p. 132) considered the correct name of the species to be *C. (Thynnascaris) gadi* (Muller). Punt pointed out that the adult stage occurred especially in Gadidae and that the larger species (*Gadus morrhua* and *G. virens*) had a percentage infection of nearly 100%, while in smaller species it ranged from 25 to about 90%, probably associated with the different food habits of the smallest species where 25-45% were infected. The parasite was found in some other North Sea fish. A list of those species in which he found larval or adult stages was published (pp. 88-101).

Contraecaecum (Thynnascaris), sp.

From a flathead, *Platycephalus bassensis*, E.6799, Oyster Bay, Tasmania, "Endeavour" coll., July 1909.

ASCARINAE.

Ophidascaris filaria (Duj.).

This large species is represented in the present collection from New South Wales snakes; *P. spilotes spilotes* (diamond snake of the Sydney district), W.3538, old collection, June 1890, and W.3552, "diamond snake"; as well as from *P. spilotes variegata* (carpet snake), W.3244, W.3562, W.3545, and W.3536. It had been recorded previously by Baylis (1920, p. 414) from *P. spilotes* from "Australia"; and by us (1948, p. 104) from south-eastern Queensland.

Kreffit (1871, p. 214) reported the presence of *Ascaris* sp. from *Morelia spilotes* and *M. variegata*. One of us (Johnston, 1911, pp. 234, 235) recorded that a large *Ascaris* sp. occurred rather commonly in *Python variegatus* and *P. spilotes* in New South Wales and Queensland. Some of the Museum material examined by us was probably collected by Krefft, because some of the hosts were indicated as *Morelia spilotes* and *M.s. variegata*. *Ascaris* sp. of the two authors mentioned is a synonym of *Ophidascaris filaria* and *Polydelphis anoura*.

***Polydelphis anoura* (Duj.).**

This ascarid was identified from *Python spilotes variegatus*, W.326 and W.327, N.S.W. It had been recorded previously by us (1948, p. 104) from this host species from New South Wales and Queensland.

***Polydelphis* sp.**

Females of a species of the genus were found in a "sea snake", W.3556, old collection, presumably from New South Wales.

SPIRURATA.

PHYSALOPTERIDAE.

***Physaloptera confusa* (J. and M.).**

This common parasite of the stomach of Australian venomous snakes was present in several collections: *Pseudechis porphyriacus*, W.322, W.3544, N.S.W.; W.3558, Moore Park, Sydney; G.1234, Tenterfield, N.S.W., coll. C. A. Lee; and a female, W.3543, probably belongs to the same species; *Notechis scutatus*, W.921, Randwick, Sydney; *Denisonia suta*, W.3535, Narrabri, N.S.W. The last-named host was indicated as "*D. frontalis* (black snake)". Mr. F. J. Mitchell, of the South Australian Museum, has been kind enough to assist us in regard to the name. Ogilby in 1889 described the species as *Hoplocephalus frontalis* from a specimen from Narrabri; Boulenger (*Cat. Snakes, Brit. Mus.*, 1896, p. 340) transferred it to *Denisonia*; and Kinghorn (*REC. AUSTR. MUS.*, 13 (3), 1920, p. 110) placed the species as a synonym of *D. suta* (Peters, 1863) Boulenger, 1896. As the parasite belonged to the old collection it probably came from Ogilby's snake, hence the locality, Narrabri, assigned to it by us.

P. confusa was also identified (W.891) from a "large snake" taken at Immarna, East-West Railway, near Ooldea, South Australia. Mr. Kinghorn has informed us that two species of snakes, *Demansia psammophis* and *Pseudechis australis*, were obtained at that locality. The use of the term "large snake" by the collector indicates *Pseudechis australis* rather than the other species as the host from which these nematodes were taken.

P. confusa was recorded by us from *Notechis scutatus* in South Australia (1942, p. 90), *Pseudechis porphyriacus* and various other snakes from Queensland and N.S.W. (1948, p. 106), as well as from *Varanus* sp. (1947, p. 24).

***Physaloptera antarctica* Linstow (emend. Irwin-Smith).**

The collection contains specimens from the stomach of *Varanus varius*, W.3556, old coll., N.S.W., Sept. 1895; and *V. gouldi*, W.1066 and W.1071, both from Mt. Lyndhurst, near Farina, South Australia. We have already recorded it from *V. varius* from Kangaroo Island (1942, p. 91) and Queensland (1947, p. 24).

***Physaloptera* sp. (larvae).**

Some larval cysts were identified from *Python spilotes variegatus*, W.3537, N.S.W., old collection. They probably belong to *P. confusa* whose larval stage we have recorded (1942, p. 91) from frogs from New South Wales and South Australia.

***Paraleptus australis* J. and M.**

Two poorly preserved worms from *Heterodontus portusjacksoni*, W.2576, collected by Capt. K. Moeller, N.S.W. coast, December 1928, are referred to *Paraleptus australis*, which is a common species in this host (J. and M., 1943, p. 188).

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