

## Some Undescribed Species of the Nematode Genus *Physaloptera* Rud., together with a Key to the Sufficiently Known Forms.

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THE species discussed in the ensuing pages, except *P. dispar* von Linst., 1904, comprise some of the material which has from time to time been sent to this institute for determination. As this genus comprises a considerable number of species, and as the writer has found the accompanying key to be of considerable help in his determinations, he has thought it advisable to place this key at the disposal of other workers, and at the same time give a description of those new forms which he has been able to study.

A paper by Schultz (1927b), which appears to be very comprehensive, deals with the fam. Physalopteridae and the principles underlying the classification of its members. Unfortunately, the writer has not been able to master the contents of the Russian text and he therefore does not think he would be doing justice to Schultz's paper by passing any comments based solely on the brief German summary.

The key only deals with those species of which sufficient data is available for their inclusion. Unfortunately the recently described species *P. achari* Mirza, 1935, *P. leiperi* Skrj., 1924, and *P. seurati* Issaitchikov, 1926, had to be omitted as no descriptions of these were available. The subspecies have also been omitted.

PHYSALOPTERA DISPAR von Linstow, 1904.

syn *P. CLAUSA* Rud, 1819 of Seurat, 1917.

not *P. CLAUSA* Rud, 1819.

In a previous communication (1922) the writer expressed the view that the material described by Seurat (1917) as *P. clausa* Rud. was not the same as the material on which Rudolphi had based his description, which material the writer had examined, and that it probably represented a new species. Seurat considered that his specimens were the same as *P. dispar* v. Linst., which species he listed as a synonym of *P. clausa* Rud. The writer, however, expressed the view that

until the types of von Linstow's species were re-examined, Seurat's and von Linstow's materials should not be regarded as co-specific. Baylis (1928) has fortunately been able to re-examine von Linstow's type material from *Erinaceus albiventris* which are in the British Museum, London, and he found that this material agreed "in every important respect with the description of '*P. clausa*' given by Seurat (1917)", and that von Linstow's description was inaccurate in several respects; further that the length of the left spicule was more in accord with von Linstow's findings than with Seurat's. In consequence of Baylis' observations the identity of Seurat's material is now certain and it does not represent a new species as the writer thought.

Stomach: *Atelexia spiculus*, *A. spinifex*, *A. hindei sotikae*, *Erinaccus algerus*, *E. deserti* and *E. albiventris*, North and Central Africa.

#### PHYSALOPTERA IMMERPANI sp. nov.

The material on which the description of this species is based was recovered from the stomachs of two hedgehogs\* obtained one from Mr. J. Todd's farm at Immerpan and the other from Mr. R. V. Mitchell's farm Pienaar's River; both these farms are in the Northern Transvaal and are about 100 miles distant from each other. Each hedgehog was parasitised by about a dozen worms, all of which were the same. The parasites, which were firmly attached to the stomach, were recovered soon after death of the hosts, and they were killed and fixed in warm 70 per cent. alcohol.

The cuticle is finely striated and is partially or wholly reflected over the lips. The cervical papillae are symmetrically placed and occupy a varying position from the level of the junction of the two oesophageal parts to about 0.2 mm. behind this level: the excretory pore follows the position of the papillae and is found just posterior to them.

The lips are hemispherical and each carries a dome-shaped papilla towards each of its latero-dorsal and latero-ventral borders. At its apex there is a massive and well chitinized external tooth having a rounded tip, and internal to it there is a tripartite tooth of the same size. No other teeth are present. The oesophagus is straight and becomes thickened posteriorly; it consists of the usual two parts, muscular and glandular. In the larger females it is from 5.6 to 7.75 mm. long and occupies from one-seventh to one-sixth of the body length: its muscular portion is from 0.56 to 0.78 mm. long, forming about one-tenth of the whole organ. In the larger males the oesophagus is from 5.1 to 5.3 mm. long and occupies from one-fifth to two-ninths of the body length; its muscular portion varies in length from 0.52 to 0.58 mm. forming from one-tenth to one-ninth of the total length of the oesophagus. The nerve ring encircles the oesophagus in its posterior quarter.

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\* The writer wishes to express his sincere thanks to Mr. W. O. Neitz, B.V.Sc., for having placed these carcasses at the writer's disposal.

*Female*.—The females are large and robust and reach a length of 53 mm. and thickness of 1.4 mm.; they are thickest in their middle, and from this level the body becomes attenuated anteriorly, and slightly less so posteriorly. The tail is relatively short, stumpy and pointed and varies in length from 0.26 to 0.3 mm. In ten females examined the vulva was situated anterior to the end of the oesophagus in all; the distance varied, however, from 0.5 to 2.5 mm.; it is non-protuberant. The vagina passes straight back and is from 2 to 2.5 mm. long; its outer outline is slightly corrugated, and its thickness averages about 0.07 mm. The egg chamber, which is somewhat spindle-shaped, is from 1.3 to 1.5 mm. long with a maximum thickness of 0.34 mm.; it contains very few eggs, even in specimens whose uteri are completely filled and expanded by mature eggs. The two uteri take their origin immediately posterior of the egg-chamber, a trunk portion being absent; in some specimens, however, the origins of the uteri may be closely opposed and so give a false impression of a trunk. The eggs are small, oval and embryonated *in utero*; their shell is about 0.003 mm. thick. Their size is 0.055 to 0.061 mm. long by 0.038 to 0.041 mm. broad.

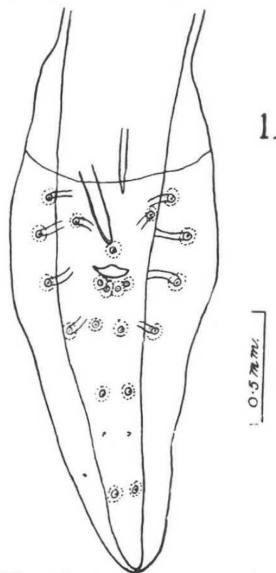


Fig. 1. *Physaloptera immerpani* sp. n.  
Ventral surface of male tail.

*Male*.—The males are considerably smaller and thinner than the females, and may reach a length of 25 mm. with a maximum thickness of 0.58 mm. just in front of the caudal expansions. Anteriorly the body tapers, but posteriorly except for the tail region, this is not marked. The tail is bent ventrally and is from 1 to 1.2 mm. long; its ventral surface is covered for the most part by longitudinal rows of tubercles. When flattened out the caudal expansion gives the posterior extremity a spear-head shape supported by the pedunculated lateral papillae; the cuticle in front of the papillae is inflated ventrally giving this portion a bulbous shape in side view. The arrangement of the caudal papillae (Fig. 1) is very similar to that

found in *Ph. dispar* and *Ph. tacapensis*, the only difference being that the third pair of post-cloacal ventral papillae is sessile and not stalked.

The spicules are small and subequal, that of the left being the more slender and tapers to a fine point; it is from 0.23 to 0.33 mm. long; the right spicule is robuster, has a rounded tip, and is similar in shape to that found in *Ph. dispar* and *P. tacapensis*; it is from 0.29 to 0.32 mm. long; it is sometimes longer and sometimes shorter than the left.

*Host: Atelerix frontalis.*

*Habitat: Stomach.*

*Occurrence: Northern Transvaal.*

Types in helminthological collection, Onderstepoort.

*Affinities.*—*Ph. immerpani*, together with *Ph. dispar* and *Ph. tacapensis* form a very closely inter-related group; they all have two uteri, originating directly from the base of the egg-chamber; short spicules of which the right is somewhat thimble-shaped; the caudal ornamentation in the male is very similar and the lips are provided with the same type of teeth. In *Ph. immerpani* and *Ph. tacapensis* the vulva is in front of the end of the oesophagus, whereas it is post oesophageal in *Ph. dispar*. The above described species can be differentiated from *Ph. tacapensis* by its much larger size (53 mm. as against 22 mm. in female), much thinner egg-shell (0.003 against 0.007 mm.); longer spicules and sessile nature of the third pair of ventral papillae.

Von Linstow (1908) described a new species—*Ph. incurva* from the same host obtained from the Kalahari; apart from the lips, which von Linstow states are dorsal and ventral, his species differs from the writer's in that the vulva is post oesophageal and the spicules are much longer (right 0.36 and left 0.57 mm.).

*Specific Diagnosis.*—Fairly large worms, females up to 53 mm. and males up to 25 mm. long. External tooth massive and with blunt tip; internal tooth of same height, with tripartite tip. Vulva in oesophageal region; two uteri; trunk portion absent; caudal papillae of male as in *Ph. dispar*, except that third ventral pair is sessile. Spicules subequal, the left sometimes longer, sometimes shorter than the right; left spicules 0.23 to 0.33 mm. long, right spicule 0.29 to 0.32 mm. long and somewhat thimble-shaped.

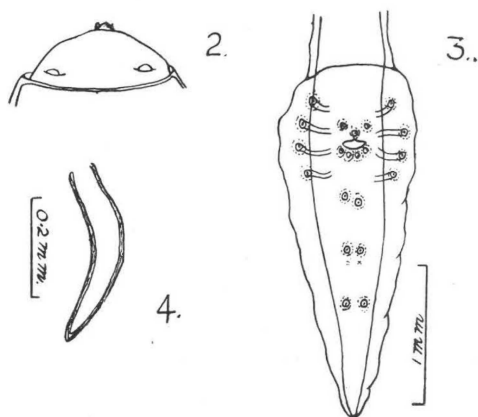
Stomach, *Atelerix frontalis*, Northern Transvaal.

#### PHYSALOPTERA LOSSENI sp. nov.

The material consisted of three adult females and one adult male; in addition the posterior body half of another male was also present. The material had been collected from a hawk by Mr. R. Lossen, Ongeama, S.W. Africa and was submitted to this institute for identification. Mr. Lossen stated that about 25 specimens were collected from the pharynx.

The body is fairly robust and is covered by a finely annulated cuticle which is partially reflexed over the lips. The cervical papillae are symmetrically placed, small and spike-like and are found from 0.2 to 0.28 mm. behind the posterior end of the muscular oesophagus; the excretory pore occupies the usual position, just posterior to the cervical papillae.

The two lateral lips are dome-shaped and each carries two prominent papillae towards their dorsal and ventral margins (Fig. 2). The external tooth is large and cone-shaped and the inner membranous tripartite tooth is also large and only slightly shorter than the outer; lateral teeth and denticles are absent. In the females the oesophagus is from 4.2 to 4.3 mm. long and in the single male it is 3.7 mm. long. In the former the muscular portion is from 0.57 to 0.62 mm. long and in the male 0.45 mm. The nerve ring encircles this portion at about the junction of its second and last thirds.



Figs. 2-4. *Physaloptera losseni* sp. n.

- „ 2. Lateral view of lip.  
 „ 3. Ventral view of male tail.  
 „ 4. Right spicule.

The three females are respectively 29, 31 and 32 mm. long with thickness of 1 to 1.3 mm. They are attenuated towards both extremities and the body is terminated by a pointed tail 0.6 to 0.62 mm. in length. The vulva is non-protuberant and is situated just posterior to the hind end of the oesophagus; it leads into a vagina 2.3 mm. long by 0.08 mm. thick; the following egg-chamber is just slightly shorter (2.1 mm.) and had a maximum diameter of 0.4 mm.; the trunk is about 0.75 mm. long by 0.09 mm. thick and gives rise to the two uteri. The eggs, which were confined to the uteri, were oval, smooth, thick-shelled and embryonated; they were from 0.047 to 0.049 mm. long by 0.035 to 0.037 mm. broad.

The solitary complete male was 24 mm. long with a maximum thickness of 0.84 mm. just anterior to the caudal expansions. Anteriorly the body becomes slightly attenuated. The tail is ventrally flexed and is 1.9 mm. long. When opened out the caudal expansions give the tail a lanceolate shape (Fig. 3). The four circum-cloacal

stalked papillae are situated two pre- and two post-cloacal, and the centre two have longer stalks. The three pre-cloacal ventral papillae form a flattened triangle and the central papilla is the largest. The 1st and 2nd pairs post-cloacal ventral papillae are small and situated in a transverse row on the posterior lip of the cloaca; the distances between these and the 3rd, 4th and 5th pairs are about equal and these three pairs are found at the posterior limits of the 1st, 2nd and 3rd fifth of the tail respectively; in one tail the 5th ventral papilla on the right is shifted forwards and lies adjacent to the 4th papilla, forming a single double papilla. The spicules are very unequal but unfortunately all, except one right spicule, are broken; the entire right spicule is boomerang-shaped and pointed, 0.4 mm. long and 0.058 mm. thick (Fig. 4); the remaining portions of the left spicules are respectively 1.86 and 3.2 mm. long and 0.046 and 0.05 mm. thick; they are filiform but their tips have unfortunately broken off. The greater portion of the central area of the tail is ornamented with longitudinal rows of tubercles typical for the genus.

*Host: Spizaetus bellicosus.*

*Habitat: Pharynx.*

*Occurrence: South West Africa.*

Types in the helminthological collection, Onderstepoort.

*Affinities.*—The tripartite nature of the inner tooth and mode of origin of the two uteri allies this species to *P. maxillaris*, from which species it may, however, be differentiated by the boomerang-shape of its right spicule, its much longer left spicule, the position of its ventral pre-cloacal papillae, and by the difference in cuticular ornamentation on the ventral surface of its tail.

*Specific Diagnosis.*—Robust forms up to 32 mm. long, with large conical outer and tripartite inner teeth. Two uteri arising from a common trunk; vulva post-oesophageal. Spicules very unequal, right boomerang-shaped and less than 0.5 mm. long; left long and filiform more than 3 mm. long.

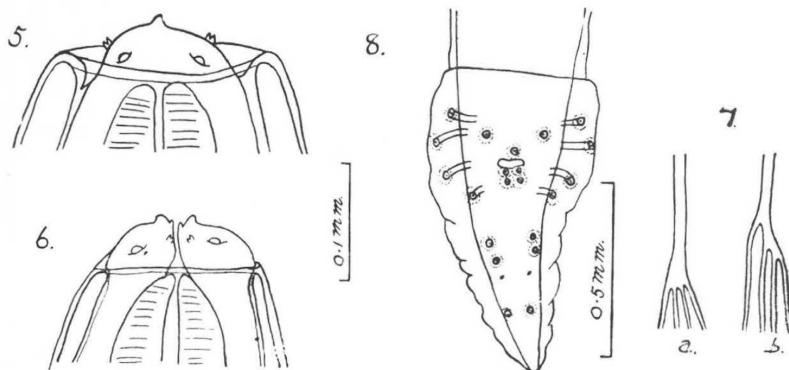
Pharynx, *Spizaetus bellicosus*, S. W. Africa.

*Physaloptera tasmani* sp. n.v.

This material consisted of about a dozen males and females collected by the Rev. Tasman from a chameleon at Kutuma, Southern Rhodesia. Unfortunately the specimens are all adolescent, no females possessing eggs and some males and females were still unsheathed in the cuticle of the previous stage. These specimens not being mature the writer is not giving a detailed description but is confining himself to the salient features only.

The largest specimens are only about 15 mm. long and the cuticle is only slightly reflected over the lips. The position of the cervical papillae, excretory pore and nerve ring are typical for the genus. The two lateral lips (Figs. 5 and 6) are conical and rounded and each carries two dome-shaped papillae, a prominent triangular external tooth, a small spike-like inner tooth and two bifid lateral teeth; between these teeth there is a single row of small denticles.

The vulva has a post-oesophageal position, just behind the oesophagus; the vagina is about 1 mm. long and 0.035 mm. thick and leads into a poorly developed egg chamber about 0.3 mm. long by 0.09 mm. in diameter. A relatively long trunk portion follows (0.4 mm.) and gives rise to the four uteri at the same level as in *Ph. paradoxa*; in one of four females in which this origin could be clearly followed, one uterus originated slightly more anterior to the remaining three (Figs. 7a and b).



Figs. 5-8. *Physaloptera tasmani* sp. n.

- „ 5. Lateral view of anterior extremity.  
 „ 6. Ventral view of anterior extremity.  
 „ 7. Variations in mode of origin of uteri.  
 „ 8. Ventral view of male tail.

In the males the caudal expansions are present although not very prominent, and the outline of the tail is spear-shaped (Fig. 8). The arrangement of the papillae are as seen in *P. paradoxa*, except that the 3rd and 4th post-cloacal ventral pairs are not adjacent to each other. The spicules are only weakly chitinized and appear to be only slightly unequal. The right is about 0.178 to 0.2 mm. long, and is somewhat spear-shaped; the left is slender and pointed and appears to be about 0.2 mm. long.

*Host*: *Chamaeleon macrolepis*.

*Habitat*: Stomach.

*Occurrence*: *South Rhodesia*.

Types in helminthological collection, Onderstepoort.

*Affinities*.—This species appears to be closely related to *Ph. paradoxa* von Linstow, described from *Varanus albigularis* and various snakes; it differs from it, however, in that the denticles do not extend laterally beyond the lateral teeth; the position of the third and fourth post-cloacal ventral papillae is different and in the apparently much shorter left spicule.

Two species of Physaloptera have been recorded from chamaeleons namely *Ph. leptosoma* (Gervais, 1848) Seurat, 1917 (syn. *Ph. chamaeleontis* Gedoelst, 1916) and *Ph. ortleppi* Sandground, 1928. Gedoelst's material originated from *Chamaeleon gracilis*, Belgian Congo, while Sandground obtained his from *Chamaeleon dilepis*, Tanganyika. The former species can be excluded from comparison in that it is didelphic, but Sandground's species appears to be closely related; this species may, however, be distinguished from the writer's by the absence of lateral teeth, the dichotomous branching of its uteri, and the great inequality of the two spicular lengths.

*Specific Diagnosis.*—Tetradelphic forms, with the uteri arising at the same level; lips provided with external triangular and lateral bifid teeth; between these a row of small denticles; internal tooth small and spike-like. Vulva post-oesophageal. Spicules differ apparently only slightly in length, left slender and pointed, right robust and spear-shaped; and 0.2 mm. and 0.178 to 0.2 mm. long respectively.

Stomach, *Chamaeleon macrolepis*, South Rhodesia.

## KEY TO SPECIES OF PHYSALOPTERA.

1. Two uteri present (Group <b>Didelphys</b> ).....	—	
Three uteri present (Group <b>Tridelphys</b> ).....	<b>P. cebi</b> Ortlepp, 1923.	
Four uteri present (Group <b>Tetradelphys</b> ).....	—	40
More than four uteri present (Group <b>Polydelphys</b> )	—	61

## GROUP DIDELPHYS.

2. Uteri arise direct base of egg chamber.....	—	3
Uteri connected to egg chamber by a common trunk	—	16
Mode of origin of uteri not definitely stated.....	—	36
3. Uteri arise from sides of egg chamber like two horns	—	4
Uteri arise close together from base of egg chamber	—	9
4. Cuticle reflexed over tail.....	—	5
Cuticle not reflexed over tail.....	—	7
5. Ventral surface of male tail ridged.....	—	6
Ventral surface of male tail rugose.....	<b>P. praeputialis</b> v. Linstow, 1889.	
6. External and internal teeth of same height.....	<b>P. malayensis</b> Ortlepp, 1922.	
External tooth shorter than internal tooth.....	<b>P. canis</b> Mönnig, 1929.	
7. Lateral teeth on shoulder of lips; female only known	<b>P. quadridentata</b> Walton, 1927.	
No lateral teeth on shoulder of lips.....	—	8
8. Left spicule over 1 m.m. long.....	<b>P. acuticauda</b> Mol., 1860.	
Left spicule less than 1 m.m. long. Vulva near middle of body	<b>P. terdentata</b> Mol., 1860.	



9. Vulva near middle of body; female only known..	<b>P. brevivaginata</b> Seurat, 1917.	10
Vulva towards anterior part of body.....	—	
10. Tip of left spicule spear-shaped.....	<b>P. bonnei</b> Ortlepp, 1922.	11
Tip of left spicule pointed.....	—	
11. Right spicule robust and somewhat thimble-shaped	—	12
Right spicule slenderer and pointed.....	—	14
12. Vulva post-oesophageal.....	<b>P. cispar</b> v. Linst., 1904.	
Vulva in oesophageal region.....	—	13
13. Third pair ventral post-cloacal papillae stalked....	<b>P. tacapensis</b> Seurat, 1917.	
Third pair ventral post-cloacal papillae sessile....	<b>P. immerpani</b> sp. n.	
14. Vulva generally in oesophageal region.....	<b>P. getula</b> Seurat, 1917.	
Vulva post oesophageal.....	—	15
15. No denticles on lips.....	<b>P. clausa</b> Rud. 1819.	
Traces of denticles on lips.....	<b>P. mydai</b> Baylis, 1926.	
16. Muscular and glandular oesophageal parts equal..	<b>P. rara</b> Hall & Wigdor, 1918.	
Muscular portion much shorter.....	—	17
17. Lateral papillae all precloacal and in two widely separated groups	<b>P. longissima</b> Ortlepp, 1922.	
Lateral papillae not all pre-cloacal and not in two widely separated groups	—	18
18. Left spicule more than 1 m.m. long.....	—	19
Left spicule less than 1 m.m. long.....	—	21
19. Lateral teeth on lips present.....	<b>P. leptosoma</b> (Gerv., 1848).	
Lateral teeth on lips absent.....	—	20
20. Left spicule less than 2 m.m. long.....	<b>P. maxillaris</b> Mol., 1860.	
Left spicule greater than 2 m.m. long.....	<b>P. losseni</b> sp. n.	
21. Left spicule over 0.5 m.m. long.....	—	22
Left spicule less than 0.5 m.m. long.....	—	23
22. Vulva at level of end of oesophagus.....	<b>P. semilanceolata</b> Mol., 1860.	
Vulva post-oesophageal.....	<b>P. subalata</b> Sch., 1866.	
23. Tip of left spicule spear-shaped.....	—	24
Tip of left spicule not spear-shaped.....	—	25
24. Vulva at level of end of oesophagus	<b>P. monodens</b> Mol., 1860.	
Vulva post-oesophageal.....	<b>P. obtuissima</b> Mol., 1860.	
25. Rugosity on male tail on cloacal pad only .....	<b>P. gracilis</b> Ortlepp, 1922.	
Rugosity on male tail not on cloacal pad only..	—	26
26. Right spicule hooked or slightly bent.....	<b>P. retusa</b> Rud., 1918.	
Right spicule not hooked or slightly bent.....	—	27
27. Single tooth (external) on each lip.....	<b>P. phrynosoma</b> Ortlepp, 1922.	
Two or more teeth on each lip.....	—	28

SOME UNDESCRIBED SPECIES OF NEMATODE GENUS PHYSALOPTERA.

28. External and internal teeth small.....	<b>P. muris-brasiliensis</b> Dies., 1861.	29
External and internal teeth large.....	—	
29. Teeth equal or subequal.....	—	30
Teeth unequal.....	—	31
30. Cuticle inflated: Spicules feebly chitinized.....	<b>P. bedfordi</b> Ortlepp, 1932.	
Cuticle not inflated; spicules well chitinized.....	<b>P. anomala</b> Mol., 1860.	
31. External tooth smaller than internal tooth.....	—	32
External tooth larger than internal tooth.....	—	34
32. Vulva near middle of body.....	<b>P. galinieri</b> Seurat, 1914.	
Vulva towards anterior end; 5 pairs lateral papillae.	—	33
33. Five pairs ventral postloacal papillae.....	<b>P. rapacis</b> Mönnig, 1926.	
Six pairs ventral postloacal papillae.....	<b>P. reevisi</b> Chu, 1931.	
34. Large forms up to 68 m.m. long from Edentates....	<b>P. papillotruncata</b> Mol., 1860.	
Smaller forms from hawks.	—	35
35. Unpaired papilla between last pair of ventral caudal papillae	<b>P. crossi</b> Seurat, 1914.	
Unpaired papilla absent.....	<b>P. alata</b> Rud., 1819.	
36. Vulva in posterior body half.....	<b>P. bispiculata</b> Vaz & Per- eira, 1935.	
Vulva in anterior body half.....	—	37
37. Caudal alae and papillae reduced; spicules feebly chitinized	<b>P. torquata</b> Leidy, 1886.	
Caudal alae and papillae not reduced; left spicule chitinized	—	38
38. Only one ventral caudal papilla.....	<b>P. spinicauda</b> McLeod, 1933.	
Several ventral caudal papillae.....	—	39
39. Left spicule less than 0.5 m.m. long.....	<b>P. squamatae</b> Harwood, 1932.	
Left spicule greater than 0.5 m.m. long.....	<b>P. cerdocyona</b> Sprehn, 1932.	

GROUP TETRADELPHYS.

40. Single tooth (external) only on each lip.....	—	41
Lips carry more than one tooth.....	—	42
41. Small forms up to 8 m.m. long.....	<b>P. colubri</b> (Rud., 1819)...	
Large forms up to 44 m.m. long.....	<b>P. simplicidens</b> Ortlepp, 1922.	
42. Male unknown.....	—	43
Male known.....	—	44
43. From Gerbil, N. Africa.....	<b>P. numidica</b> Seurat, 1917.	
From Australian reptiles.....	<b>P. clelandi</b> Irwin-Smith, 1922.	
44. Left spicule over 3 m.m. long.....	—	45
Left spicule less than 3 m.m. long.....	—	46

45. Left spicule over 4 m.m. long.....	<b>P. caucascia</b> v. Linst., 1907.	
Left spicule less than 4 m.m. long.....	<b>P. africana</b> (Mönnig, 1924).	
46. Left spicule over 1 m.m. long.....	—	47
Left spicule less than 1 m.m. long.....	—	55
47. Uteri do not arise by dichotomous branching....	<b>P. paradoxa</b> v. Linst., 1908.	
Uteri arise by dichotomous branching.....	—	48
48. Tip of left spicule spear-shaped.....	<b>P. antarctica</b> v. Linst., 1899.	
Tip of left spicule pointed.....	—	49
49. Denticles absent.....	—	50
Denticles present.....	—	51
50. Tip of right spicule bent and blunt.....	<b>P. vandenbrandeni</b> Gedoelst, 1924.	
Tip of right spicule straight and sharp.....	<b>P. varani</b> Parona, 1889.	
51. Inner tooth absent or indistinct.....	—	52
Inner tooth present.....	—	53
52. Vulva near middle of body.....	<b>P. physignathi</b> Baylis, 1924.	
Vulva in anterior body third.....	<b>P. ortleppi</b> Sandground, 1928.	
53. Denticles on lower angles of lips only.....	<b>P. bancrofti</b> Irwin-Smith, 1922.	
Denticles on anterior margin of lips.....	—	54
54. Dichotomous branching of uteri very short.....	<b>P. quadrovaria</b> Leiper, 1908.	
Dichotomous branching of uteri fairly long.....	<b>P. abbreviata</b> Rud., 1819.	
55. Uteri arise directly from base of egg chamber...	<b>P. tumefaciens</b> , Henry & Blanc, 1912.	
Uteri arise by branching of common trunk.....	—	56
56. Denticles absent.....	—	57
Denticles present.....	—	58
57. Inner tooth large and tripartite.....	<b>P. magnipapilla</b> Mol., 1860.	
Inner tooth small and spike-like.....	<b>P. leidyi</b> Walton, 1927.	
58. Vulva in oesophageal region.....	<b>P. pallaryi</b> Seurat, 1917.	
Vulva post-oesophageal.....	—	59
59. Inner tooth absent.....	<b>P. amaniensis</b> Sandgr., 1928.	
Inner tooth present.....	—	60
60. Uteri arise by dichotomous branching of common trunk	<b>P. polydentata</b> Walton, 1932.	
Uteri do not arise by dichotomous branching of common trunk	<b>P. tasmani</b> sp. n.	

SOME UNDESCRIBED SPECIES OF NEMATODE GENUS PHYSALOPTERA.

GROUP POLYDELPHYS.

61. Five uteri present.....	<b>P. musculi</b> Thwaite, 1927.	
More than 5 uteri present.....	—	62
62. Six to 7 uteri.....	—	63
Number of uteri more than 7.....	—	64
63. Very large forms with lateral teeth (from Suidae)...	<b>P. aduensis</b> Baylis, 1928.	
Smaller forms without lateral teeth (from Rodents)	<b>P. joyeuxia</b> Gendre, 1928.	
64. Uteri arise by dichotomous branching.....	<b>P. capensis</b> Ortlepp, 1922.	
Uteri do not arise by dichotomous branching....	—	65
65. Outer tooth truncated.....	<b>P. multi-uteri</b> Canovan,	
Outer tooth conical.....	1929.	
	—	66
66. Fourth and fifth post-anal papilla in a transverse row	<b>P. turgida</b> Rud., 1819.	
Fourth and fifth post-anal papilla not in a transverse row	—	67
67. Third, fourth and fifth post-anal papillae equidistant and in anterior half of tail	<b>P. torresi</b> (Trav., 1920).	
Third, fourth and fifth post-anal papillae not equidistant and in posterior half of tail	<b>P. dilatata</b> Rud., 1819.	

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