

Government Printing office abound with gall scales. I do not recall encountering anything of the sort in the large amount of material from the Mayflower (Walker) Hotel site which I examined.

I have not attempted to identify them, nor do I recall any records of such objects as fossils except in the recently published account of the Pleistocene flora from Santa Cruz Island, California, in which the gall scales were found to have formed on *Cupressus*,³¹ the hypertrophy being due to a chalcid fly.

ZOOLOGY.—*On the morphology of Deontostoma californicum n. sp. (Leptosomatinae, Nematodes).*¹ G. STEINER and FLORENCE M. ALBIN, Bureau of Plant Industry.

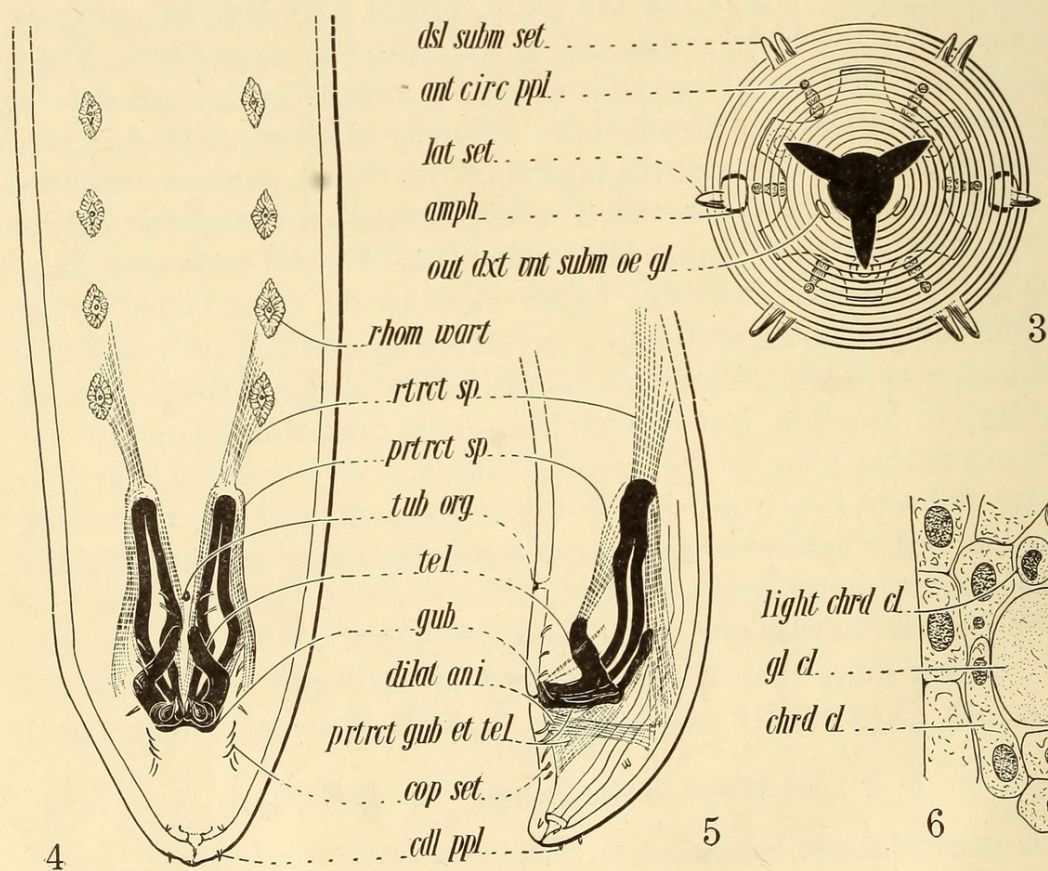
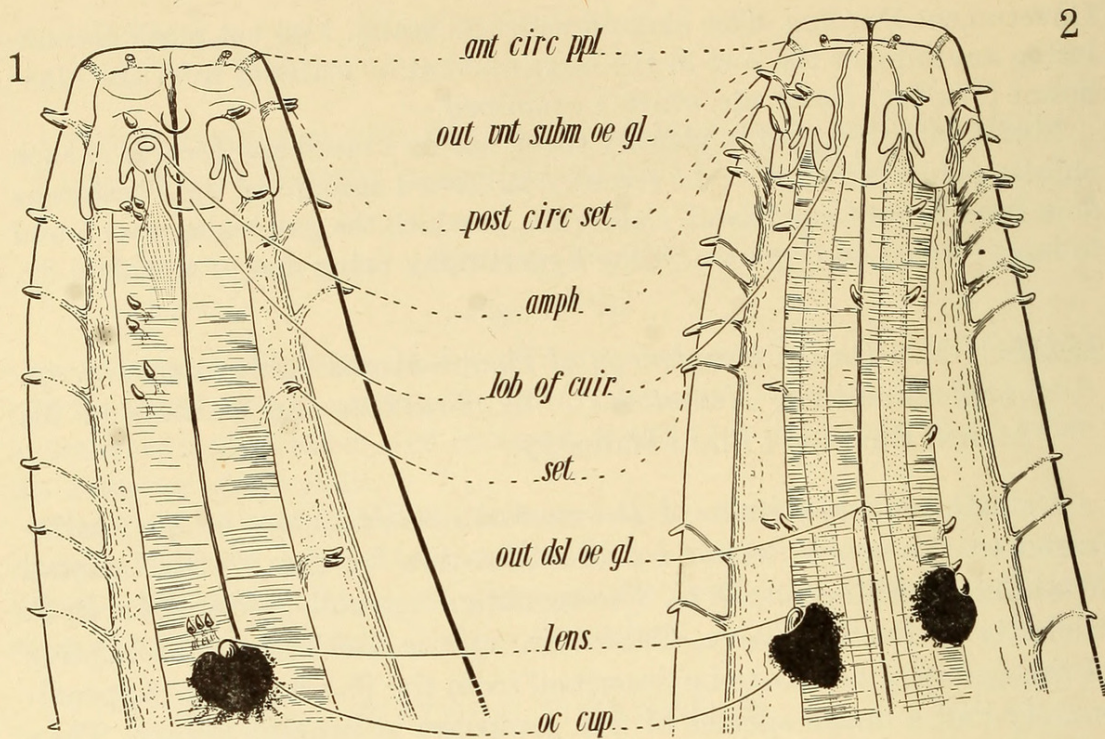
A single male specimen of *Deontostoma californicum* n. sp. was referred to the senior writer for identification by the U. S. National Museum, Washington, D. C. The specimen was collected by Mr. E. F. Ricketts at Pacific Grove, California, and is the first representative of this group of nemas to be described from the Pacific coast. Approximately half a dozen species of this genus are at present known. They all belong to a group of the largest of free-living nemas as yet described. *Deontostoma californicum* is of filiform shape, the head broadly truncate, the tail of the male conical with the end obtusely rounded. The top layer of the cuticle exhibits fine cross fibers. Fig. 6 represents a portion of one of the lateral chords, which consists of three to four series of at least three different kinds of cells; first, the normal chord cells; second, the lateral chords which contain cells that are distinguished from the chord cells proper by a somewhat lighter color and the slightly sausage-shaped nucleus (Fig. 6); and third, large glandular cells with an outlet rather close to the dorsal edge of the chord. Such glands are also found in related species and genera. Their significance is not known. Some investigators consider them perhaps excretory in function, but this supposition is doubtful. The only fact supporting this view is the possible absence of a ventral gland or renette cell and its outlet. Beginning in the region of the nerve-ring these glandular cells are seen at quite regular intervals all along the lateral chords almost to the tail end.

The ventral chord is also well developed (Fig. 7).

Numerous short conical setae are seen in the region anterior to the nerve-ring. They closely resemble the cephalic setae and are arranged

³¹ Chaney, R. W., and Mason, H. L., Carnegie Inst. Publ. 415, p. 11, pl. 7, figs. 4-9, 1930.

¹ Received August 30, 1932.



more or less distinctly in longitudinal series,—lateral, submedial, and medial (Figs. 1 and 2). To what extent their number and position is constant is not known. Special mention should be made of a group of three, side by side, just in front of each ocellum. Caudad of the nerve-ring, the setae are replaced by fine nerve fibers, penetrating the cuticle and sometimes ending in a tiny hair (Fig. 7). However, they are much less numerous than those farther cephalad.

The head has the circles of papillae and setae typical for the genus. Their arrangement and shape is much like that of *D. antarcticum* (deMan) Filipjev (= *Thoracostoma antarcticum* deMan²): six papillae in an anterior and ten setae in a posterior circle. The anterior ones do not protrude above the surface (Figs. 1 and 2) but can well be seen penetrating the cuticle in front of the cuirass.

The form and position of the amphids may be seen in Figs. 1, 2, and 3, being essentially the same as in *D. antarcticum*. A small, transverse, oval opening leads into a cavity almost lemon-shaped (Fig. 1), at the inner and posterior wall of which the amphidial nerve connects. Terminals have not yet been seen; the only notable structures observed are two small, rodlike, cuticular thickenings at the base of the cavity. The amphidial nerve is surrounded by a narrow tube which soon widens to a spindle-shaped cavity containing what appears to be the usual sensillar structures.

A front view of the head end reveals the presence of three lips and a very small pharynx with no armature. The subdermal cuticular

Figures 1-6

Fig. 1. *Deontostoma californicum* n. sp. Head end, lateral view, male, and

Fig. 2. Same, dorsal view, *amph*, amphid; *ant circ ppl*, anterior circle of papillae; *lens*, lens; *lob of cuir*, lobe of cuirass; *oc cup*, eye cup; *out dsl oe gl*, outlet of dorsal oesophageal gland; *out vnt subm oe gl*, outlet of ventrosubmedial oesophageal gland; *post circ set*, posterior circle of setae; *set*, setae. $\times 720$.

Fig. 3. Front view of head. *amph*, amphid; *ant circ ppl*, anterior circle of papillae; *dsl subm set*, dorsosubmedial setae; *lat set*, lateral setae; *out dxt vnt subm oe gl*, outlet of dextroventrosubmedial oesophageal gland. $\times 1090$.

Fig. 4. Male tail, ventral view, and

Fig. 5. Same, lateral view. *cdl ppl*, caudal papillae; *cop set*, copulatory setae; *dilat ani*, dilatator of the anus; *gub*, gubernaculum; *prtrct gub et tel*, protractor gubernaculi et telamonis; *prtrct sp*, protractor spiculi; *rhomb wart*, rhomboid wart; *rttrct sp*, retractor spiculi; *tel*, telamon; *tub org*, tubular organ. $\times 120$.

Fig. 6. Portion of left lateral chord. *Chrd cl*, chord cell; *gl cl*, gland cell; *light chrd cl*, light colored chord cell. $\times 1090$.

² DeMan, J. G., Nematodes libres: Expédit. Antarctique Belge. Résultats du Voyage du S. Y. Belgica en 1897-1898-1899, Zoologie Anvers., pp. 51, 1904.

structure, commonly called a cuirass, is almost as wide anteriorly as posteriorly. The six lobes are all of similar shape and size (Fig. 3); they are not perforated.

The cylindrical, strongly muscular oesophagus has a yellowish brown pigmentation posterior to the eyespots. This latter is different from, and has nothing to do with, the dark, carmine colored pigment that forms the eye cups. These are not at the same level on both sides, the left one being slightly more caudad. It might be said that some of the carmine pigment is "scattered" outside the proper pigment cups.

The arrangement of the oesophageal glands is the same as in *D. antarcticum*. As may be seen in Fig. 2, the outlets of the ventro-submedial glands occur at about the anterior rim of the head cuirass while the dorsal one (Fig. 2) empties a short distance in front of the ocelli.

The spicular apparatus of the male consists of three kinds of elements: first, the spicula, paired, comparatively long, sharply curved at the beginning of their distal third; second, an apparently single gubernaculum, slender, not quite half the length of the spicula, dorsal in its position and flat and wide in its distal portion; and third, a pair of knee-shaped telamon-like pieces, one on each side of the distal part of the spicula, forming a pointed angle if seen in side view, and fronting the spicula on their ventral side. The muscles moving this rather complicated apparatus are partly sketched in Figs. 4 and 5. A point for special attention is the connecting muscle between the proximal end of the telamon and the proximal end of the related spiculum, suggesting a high correlation in their copulatory movements. This spicular apparatus clearly differentiates the present species from all other members of the genus as yet described.

The bursal muscles are very numerous and extend far forward (Fig. 7). Strong circular muscle fibers are seen all along the ejaculatory duct (Fig. 7).

The tubular, ventromedian outlet apparently common to males of all species of the genus has a position similar to that in *D. antarcticum*, that is about even with the middle of the spicula (Figs. 4, 5, and 7). It is supposed to be the outlet of a gland, but in this nema the gland has not yet been seen, perhaps because of the opaque condition of this portion of the body. A somewhat irregular series of eleven stiff setae is seen on each side of the anal opening, beginning anteriorly as far forward as the aforementioned tubular gland outlet and ending posteriorly about halfway down the tail (Figs. 4 and 5). The number and arrangement of these setae seem to be characteristic of the pres-

ent species. Cephalad of the spicula a third group of accessory male copulatory organs is present; on each side there is a ventrosubmedian series of four rhomboid, warty structures (Figs. 4 and 7) each with what appears to be a central pore or seta. The wart itself does not seem to be a part of the cuticle but to consist of secreted substance. The region in front of and around these warts and some of the latter themselves were covered with another kind of coagulated sticky substance suggesting a secretion produced during copulation for cementing the male to the female and only partly loosened or dissolved at the time this specimen was fixed. Its position would rather suggest a secretion through the pores (?) of the warts. On the other hand, the ventromedian tubular outlet, found in other species to be connected with a gland, may be its proper source. It is difficult, however, to see how such a mass of substance as seen here could all have originated from this one source.

As sketched in Figs. 4 and 5 there are short setaceous papillae on the tail, some close to the terminus, that are not connected with the sexual apparatus. The terminus is perforated by the so-called spinneret or outlet of the caudal glands, which, in turn, are found in front of the spicular apparatus and connect with the outlet by long tubular canals.

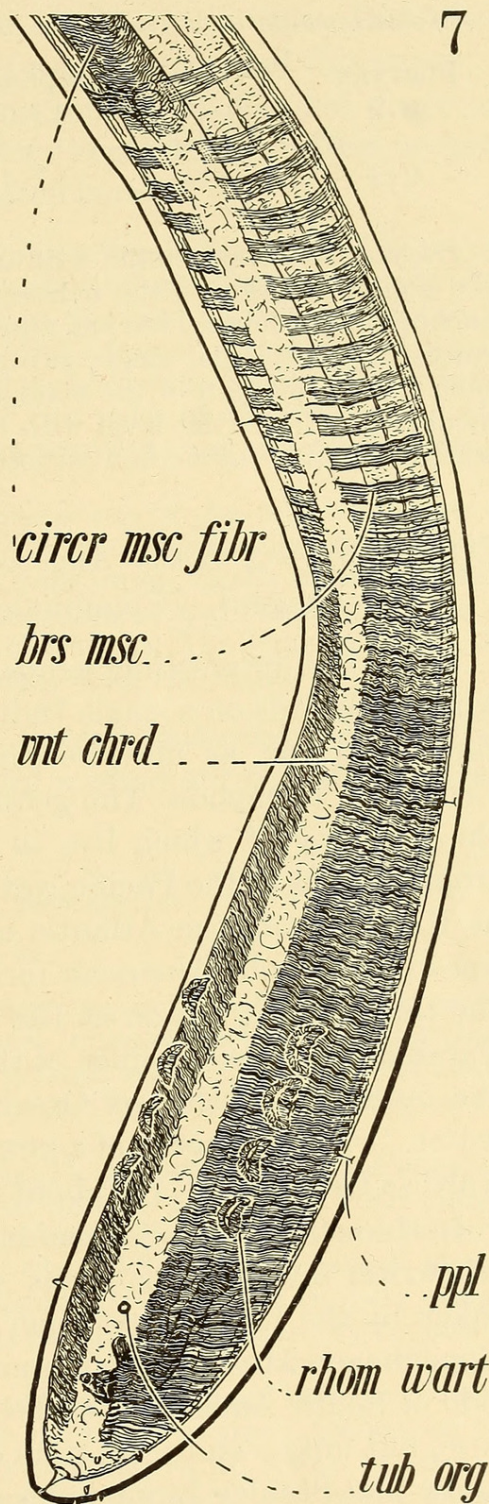


Fig. 7. *Deontostoma californicum* n. sp. Male tail, lateral view showing bursal muscles. *brs msc*, bursal muscle; *circr msc fibr*, circular muscle fibers of ductus ejaculatorius; *ppl*, papillae; *rhomb wart*, rhomboid wart; *tub org*, tubular organ; *vnt chrd*, ventral chord. $\times 85$.

Measurements:

Pharynx	—	Oesophagus	M	Anus	
0.2	—	12.0	50.0	99.0	
					15.2 mm.
0.3	—	1.4	1.8	1.2	

Diagnosis: Deontostoma with ocelli and a large number of short setae in the region anterior to the nerve-ring. Cuirass with six equal, imperforate, anchor-shaped lobes. Pharynx almost none; no armature. Spicular apparatus consisting of spicula, single gubernaculum, and knee-shaped telamon. On each side of the anus of the male an irregular series of eleven setae. Ventro-median tubular outlet level with the middle of the spicula. Four rhomboid wartlike ventro-submedian structures in front of the spicula.

ZOOLOGY.—A *North American species of Acetes*.¹ H. J. HANSEN, Copenhagen. (Communicated by WALDO SCHMITT.)

The very interesting genus *Acetes*, established in 1830 by H. Milne-Edwards on a single Indian species, belongs to the Sergestidae, the lowest, or, as may be said, the most primitive family among Crustacea Decapoda. The genus comprises scarcely a dozen species, the majority of which live in the Indian Ocean and the adjacent tropical areas of the Pacific, yet a single species goes so far northward as Korea. From the Atlantic only three species have hitherto been known, all South American forms, viz.: two species from Brazil and the third from a lagoon at Rio Paraguay, near its junction with Rio Parana. (A single specimen of the last-named form was also taken "in the outlet of Riacho del Oro in Rio de la Plata in feebly brackish water.") The discovery of a new Atlantic species secured as far northward as Beaufort, N. C. (about lat. 34° 47' N.) seems interesting.

In the report "The Sergestidae of the Siboga Expedition"² the present writer reviewed the genus *Acetes*, describing not only the species taken by the Dutch expedition but also other forms preserved in the Copenhagen Museum, and among these two species from the western side of South America. Besides, the species mentioned in the literature, but unknown to me, were enumerated. Unfortunately, I did not know that Stanley Kemp in his series, "Notes on Crustacea Decapoda in the Indian Museum," had published an excellent paper, "The genus *Acetes* Milne-Edwards,"³ in which he described and gave

¹ Received Oct. 20, 1932.

² Siboga Exp., vol. 38, 1919.

³ Records of the Indian Museum, vol. 13, pp. 43-58, 1917.



1933. "On the morphology of *Deontostoma californicum* n. sp. (Leptosomatinae, Nematodes)." *Journal of the Washington Academy of Sciences* 23, 25–30.

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