Leptosomatum arcticum Filipjev.

(Fig. 1, a–c.)

Leptosomatum articum Filipjev 1916, Murman Coast ; 1925, Nova Zembla.

Kerguelen Island : Stations 5, 58, 59, 62, 63, 64, and coll. 752, 792.

♀ (30x) : L = 9.0–19.2 mm. ; α = 43–98 ; β = 7.2–10.8 ; γ = 78–137 ; V = 42–67%.

♂ (12x) : L = 9.0–17.5 mm. ; α = 67–96 ; β = 6.9–9.2 ; γ = 90–141.

Heard Island, Station 19.

♀ (1x) : L = 14 mm. ; α = 56 ; β = 7.7 ; γ = 140 ; V = 53%.

Crozet Group.

♀ (1x) : L = 13.5 mm. ; α = 90 ; β = 8 ; γ = 96 ; V = 50%.

Macquarie Island Station 83.

♀ (2x) : L = 8.2–11.9 mm. ; α = 54–55 ; β = 6.3–9.9 ; γ = 75–108 ; V = 71%.

The wide range in the α value shown in the list above for this species, is in part accounted for by the variability of the body shape, which is often flattened and strap-like ; this flattening may be dorso-ventral, as it is at the anterior end in about a quarter of the specimens, or from side to side, and may not be continuous throughout the body. The worms have never been subjected to any special flattening since they were collected and it is not clear whether the condition is natural to the species or if fixation had this peculiar effect. The shape of the anterior end in unflattened specimens is more or less cylindrical with rounded head, but in dorsal or ventral view of the flattened worms it is almost conical.

The cuticle is very thick ; under high power it shows fine crossed fibres as seen in many other members of the Leptosomatidae. The cephalic capsule is very poorly developed, seen only in outline, except in a very few larger female specimens, in which some cuticularized " rods " radiating from around the mouth region, as described by de Man (1893, 103) for *L. elongatum* and Timm (1953, 230) for *L. acephalatum*. There is however no such marked sexual dimorphism as described by Timm. The labial papillae are minute. The cephalic setae are very short, only just piercing the cuticle. The amphids are very clear, though small, as their lining is apparently cuticularized, and more so in the male than the female ; the openings however are of about the same relative size in both sexes, namely a tenth to a thirteenth of the corresponding head breadth.

The eyes consist of lenses associated with compact masses of pigment, in almost all cases accessory scattered pigment is absent. In the female the distance of the eyes from the anterior end is 2.6–4.0 (average 3.0) times that of the amphids, 1/4.0–1/7.5 (1/5.5) that of the nerve ring, and 1.3–2.2 (1.8) times the cephalic diameter. In the male these factors are respectively 2.2–3.3 (2.8), 1/3.9–1/6.2 (1/5.1), and 1.6–2.7 (2.3).

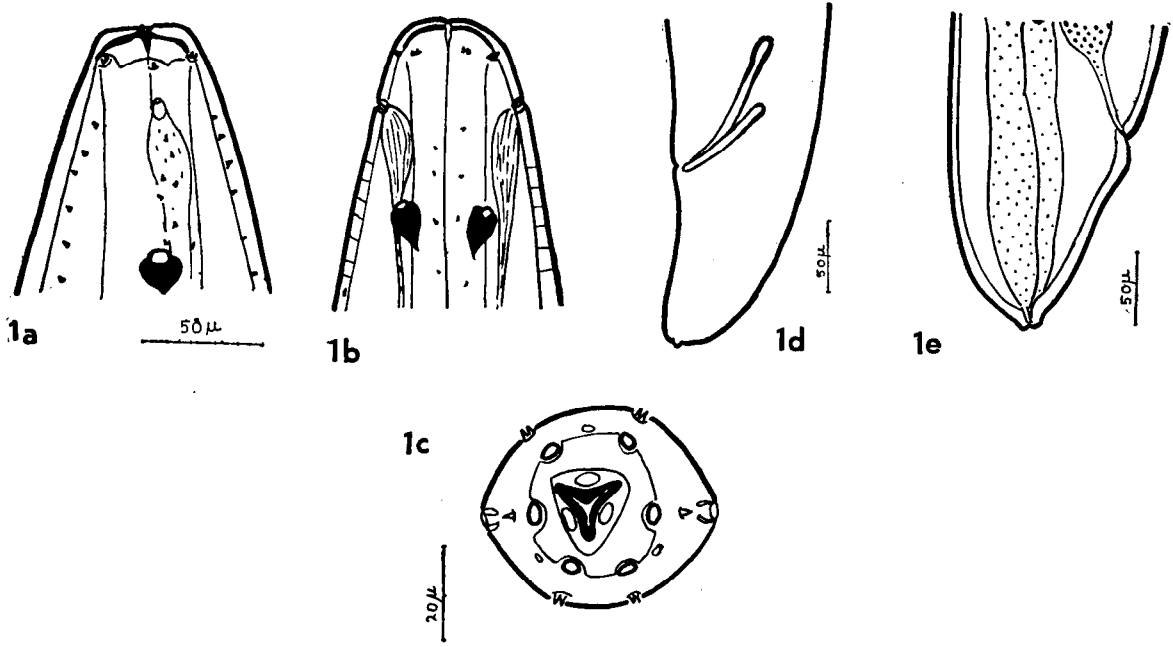
The mouth is triangular ; each lip has a strongly cuticularized median part and this appears to be continuous with the lining of the oesophagus. On the dorsal lip this thickening is much more conspicuous and extends forwards so that in some specimens it seems to be almost a tooth ; this structure is indicated by Filipjev's figure of the head (1916, pl. 4, fig. 1) and also in that of *L. grebnicki* (1916, pl. 4, fig. 2), but is not mentioned in the text for either species.

The oesophagus widens distinctly and suddenly at the end of the first half of its length, and it is surrounded at about 32–36% (av. 29%) of its length by the nerve ring. Filipjev states that the oesophagus is thin, barely widening towards the end. The excretory pore was not seen.

The tail is short and rounded with the lips of the caudal glands very prominent ; these glands extend far in front of the anus. In the female the tail length is 0.9–1.5 (1.0), in the male 1.1–1.3 (1.2) anal breadths.

The posterior end of the male is distinctly flattened dorso-ventrally and the spicular apparatus is hard to distinguish in lateral view. With special clearing it is seen that the spicule is 100–120μ long, slender and simple in structure but with a relatively heavy head. The gubernaculum is a little more than half this length. No preanal or caudal setae were seen in any specimen.

The worms have been assigned to *L. arcticum* (which has been recorded previously only from one female (Filipjev 1916, 66) and one juvenile (Filipjev 1925, 93) because of the similarity of the head structures and the proportion of the female tail. Nevertheless some of the measurements given by Filipjev do not fall within those given above.



1. *Leptosomatum arcticum*: a and b, lateral and ventral views of head to same scale; c, en face view of head; d, tail of male; e, tail of female.

KERGUELEN ISLANDS.

STATION 5 : D.R.S., 20m. Off Jeanne d'Arc. Trawling made near belt of kelp ; brownish green mud and some weeds. Echinoids most numerous, other groups represented.

STATION 9 : Shore collecting stations on islands in Bras Bossière. Nematodes from intertidal mussel bank.

STATION 12 : D.R.S., 4–5m. ; off Grave Island, Island Harbour ; kelp and red algae common ; many organisms on kelp holdfasts. All groups represented in haul. Polyzoa and a colonial ascidian most numerous.

STATION 15 : D.R.S., 55m. ; in channel between Hog Island and Blakeney Island. The striking character of the haul was presence of ascidians of several types ; many small invertebrates were found in a common globular silicious sponge.

STATION 47 : 49° 50′ S., 69° 33′ E., off south coast of Kerguelen ; D.R.L., 150m. Small stones and gravel ; main features were red ophiuroids and white holothurians.

STATION 48 : Swain's Bay, near Swain's Haulover. Shore collecting.

STATION 49 : D.R.S., 2–20m. Western end of Long Island in a little, sheltered harbour with steeply shelving bottom. Dredge full of kelp and red and green algae, bottom of grey-green sand. Ophiuroids, echinoids, and asteroids common ; polychaetes and crustacea numerous.

STATION 50 : D.R.S., 10m. Grotto Bay. Much kelp and other weed ; echinoids and polychaetes common.

STATION 51 : D.R.S., 40–50m. Supply Bay. Polychaetes common, many small invertebrates in " roots of common globular silicious sponge ".

STATION 52 : Bras Bolinder, near head of Greenland Harbour :

1. D.R.S., 20–30m., much kelp and large mussels ; many sponges, polychaetes and ascidians.
2. Intertidal collections from beneath boulders.

STATION 53 : D.R.S., 20–30m. Near mouth of Peace River. Calcareous worm tubes common, also silicious globular sponges, harbouring many invertebrates.

STATION 54 : head of Greenland Harbour ; intertidal collections. A rich fauna.

STATION 55A : D.R.S., 10–20m. Between Islets in Colbeck Passage, off N.W. end of Long Island. Some kelp, some stinking black mud ; fauna similar to that in other hauls at this depth.

STATION 55B : D.R.S., 1–5m. Near head of Bras Enzensperger, Royal Sound. Much sand, kelp, and *Ulva* ; numerous small gastopods attached to weed.

STATION 56A : Rivett Arm, intertidal collection. Very rich fauna in this area, extending down steeply shelving shore line.

STATION 56B : D.R.L., 50m. ; near Green Island. Good haul, common globular sponge plentiful, with slimy dark green mud. Polychaetes, nematodes, ophiuroids, holothurians, and a large variety of simple ascidians were noted as common.

STATION 58 : D.R.L., 50m. In Hydrography Channel, a short distance S.E. from Green Island. Good haul, with slimy dark green mud ; common globular sponge plentiful ; polychaetes nematodes, ophiuroids and holothurians, and a large simple ascidian noted as " common ".

STATION 59 : O.T.L., 47m. Royal Sound, about a mile N.E. of Suhm Island. Large haul of invertebrates from good trawling bottom. Main feature was large numbers of a big translucent ascidian and a rich pink holothurian.

STATION 60B : Shore collection from Suhm Island. Nematodes from " dripping rock 10 feet above sea level ".

STATION 60C : Shore collection from small island in Navalo Harbour.

STATION 61 : intertidal collection from southern part of Antares Island. Nematodes from rock pool.

STATION 62 : Poincaré Peninsula opposite Murray Island ; shore collections ; nematodes from intertidal rock pools.

STATION 64 : 49° 32′ S., 70° 33′ E., 2.3.30, O.T.L., 91m. ; off entrance to Royal Sound. A " very good haul of invertebrates ", including cidaroids, red ophiuroids, numerous lamellibranchs, and ascidians.

Collections 103, B100 : Jeanne d'Arc ; among algae on beach.

Collection B173 : Long Island, Royal Sound : Intertidal, under stones.

Collections 752, 753 : 15.2.30, Jeanne d'Arc. Low Spring Tide level, under stones.

Collection 755 : 15.2.30 ; Tarn at head of Greenland Harbour, in green slime.

Collections 771, 772 : 15.2.30 ; Jeanne d'Arc. From sponge washed up on beach.

Collection 788 : 15.2.30 ; Jeanne d'Arc. Low Spring Tide level, under stones, among coelenterates.

Collections 789, 790, 792 : 16.2.30 ; Jeanne d'Arc, intertidal.

Collection 855 : 23.2.30 ; Green Rock, near Island Harbour, Royal Sound. Semi-stagnant pool high up on beach.

Collection 865 : 23.2.30 ; off Murray Island, among kelp.

Collection 930 : 27.2.30 ; Antares Island, intertidal pool, with hydrozoa and crustacea.

HEARD ISLAND.

STATION 19 : 53° 05′ 30″ S., 73° 24′ E., Shore collection along beach of Atlas Cove. Nematodes from algae washed up on shore.

CROZET GROUP.

Collection from American Bay, Possession Island ; nematodes from algae taken at 12m.

MACQUARIE ISLAND.

B.A.N.Z.A.R.E. COLLECTIONS.

Station 81B : 54° 29′ S., 158° 58′ E. ; ashore at Buckles Bay. " Great masses " of *Durvillea* growing here.

Station 83 : 54° 42′ 30″ S., 158° 54′ 30″ E. Off Lusitania Bay ; D.R.L., 69m. Dominant forms were pectens, Veneridae, *Waldheimia* (brachiopod). Most invertebrate phyla represented.

A.A.E. COLLECTIONS.

The following collections were made at Macquarie Island by the A.A. Expedition during 1912–1913. The reference letters under which they are listed here follow in alphabetical sequence with those given to A.A.E. Antarctic collections recorded in Section 2 of this Report :—

G. Littoral.

H. Among seaweeds, probably at the north end of the Island.

I. Shore collection.

J. Low tide.

K. Below low tide.

L. Rock scrapings from below low tide, mostly sponges.

M. West coast, among green algae and oligochaetes.

N. North end of island, scrapings from rocks below low tide level.

O. Townet off North-East Bay, 19.6.12, " mainly Copepods, some Radiolaria ".