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BULLETIN

DU

Musée royal d'Histoire
naturelle de Belgique

Tome IX, n° 6.

Bruxelles, mars 1933.

MEDEDEELINGEN

VAN HET

Koninklijk Natuurhistorisch
Museum van België

Deel IX, n° 6.

Brussel, Maart 1933.

THE COLLECTIONS OF GEPHYREANS IN THE
ROYAL MUSEUM OF NATURAL HISTORY OF BELGIUM.

by Elise WESENBERG-LUND (Copenhagen).

Introduction.

The present material contains in all 10 species of Gephyreans :
1 Echiurid, 3 Priapulids and 6 Sipunculids. They date from
2 different areas, viz. the Channel, and the northpolar seas (the
Spitzbergen, the Kara Sea, and East-Greenland).

The following species are from the Channel :

1. *Echiurus echiurus* Pall.
2. *Phascolosoma vulgare* de Blainv.
3. *Ph. elongatum* Kef.
4. *Ph. abyssorum* Kor. & Dan.
5. *Phascolion strombi* Mont.

The following date from N. of Eurasia :

6. *Priapulus caudatus* Lam.
 7. *Pr. bicaudatus* Dan.
 8. *Halicryptus spinulosus* v. Sieb.
 9. *Phascolosoma margaritaceum* Sars.
- Phascolion strombi* Mont.

From East-Greenland :

Priapulus caudatus Lam.

Finally there is one species from the Mediterranean :

10. *Sipunculus nudus* L.

Of the 5 species from the Channel *Phascolosoma abyssorum* is of particular interest. It is not formerly known from the Channel and in the present material it is represented by only one specimen. By closer examination it will certainly appear to be anything but rare. It is easily confounded with *Ph. elongatum* which is very common in the Channel. The other species are all previously known from the Channel.

Priapulus caudatus was not hitherto known east of the Kola Peninsula; in the present material there is 1 specimen from the Kara Sea; thus the hitherto known area of distribution of this species is considerably increased.

I beg to express my most cordial thanks to the direction of the Royal Museum of Natural History of Belgium for placing this material at my disposal and especially to M. le Docteur E. Leloup for his kind informations.

Zoological Museum of Copenhagen.
Jan. 1933.

Echiurus echiurus Pall.

Locality : Close to the light-ship of Wandelaar, — Bank of Ostende, light-ship of Wandelaar — 51° 25' 45'' N., 2° 54' 30'' E. 3 specimens.

Distribution : The species is widely distributed in the arctic, both in the northern part of the North Atlantic and in the North Pacific. It is found as far south as at 45° N. Lat. It is especially common in Danish waters, the North Sea, and is reported from the Channel both from England, Belgium, and France; from the Atlantic coast of France it is, however, only reported once, namely from Charente-Inférieure.

Priapulus caudatus Lam.

Locality : Matochkin Char, close the Cape Marjov, 73° 24' 5'' N., 54° 51' E. — 1 m. The ship riding at anchor. — Kulùssuk, Angmagssalik, East-Greenland.

From Nova Zembla 1 specimen, from Greenland 3 specimens at hand; the species is already known from both localities.

Distribution : Spitzbergen, the White Sea, the Murman coast, Kamtchatka, north of North America, Greenland, North Atlantic, the Danish Waters, the Baltic Sea, the Channel. — Antarctic.

Priapulus bicaudatus Dan.

(Pl. I, fig. 1).

Locality : Strait of Kara, east of the Isle of Waigatsch, 70° 39' N., 58° 33' E., 127 m.

One specimen of this species is at hand, dredged by the « *Belgica* ».

Hitherto the species was not known east of Kola Peninsula, the most easterly locality being 72° 30' N., 36° 39' E. (Norwegian North-Atlantic Expedition). The occurrence in the Strait of Kara considerably increases the known area of distribution of this species in the waters north of Eurasia. This area now ranges from the Davis Strait to the Kara Sea.

Distribution : West- and East coast of Greenland, Iceland, Norwegian Sea, northern part of the Atlantic Ocean, Spitzbergen, and Finmarken. The species is a more typical cold water form than *Priapulus caudatus*.

Halicryptus spinulosus v. Sieb.

(Pl. I, fig. 2).

Locality : Matochkin Char, close to Cape Marjov, 73° 24' 5'' N., 54° 51' E., 1 m., 1 specimen.

The specimen is a little contracted; it measures 33 mm. The species is previously known from the area north of Eurasia.

Distribution : West- and East coast of Greenland; THÉEL (1906) mentions the species from the Mackenzie Bay, north of Franz Joseph's Land. The western boundary seems to be at West-Greenland, and the most easterly point from which it is known is the Taimyr Strait, north of Byranga (« *Vega* » Expedition, 1878). Furthermore the species is known from the Baltic Sea, and the Kattegat; for instance from the outlet of the Götaelv. In the Danish waters it is to be regarded as a relict.

Phascolosoma vulgare (Blainv).

(Fig. 1, Pl. II).

1827. *Sipunculus vulgare* de Blainville. Dict. Sci. nat. Vers. 49.

1862, 1865. *Phascolosoma vulgare* Keferstein. Zeitschr. f. wiss. Zool., 12, p. 1, and 15, p. 438.

1875. *Ph. luteum* Théel. Bihang til kungl. Svenska Vetensk. Akad. Handl. III, N° 3.

1875. *Ph. validum* Théel. Ibid.

1875. *Ph. dubium* Théel. Ibid.

1875, 1877. *Ph. papillosum* (Thompson 1840) Koren & Danielssen. Fauna littor. Norv., III.

1875, 1877. *Ph. Harveii* (Forbes 1841) Koren & Danielssen. Ibid.

1885. *Golfingia Mc Intoshi* Lankester. Trans. Linn. Soc. London (2) 11, p. 469.

Localities : 52° 02' N., 1° 04' 30'' E. — 51° 47' 40'' N., 1° 55' 15'' E. — 51° 26' 30'' N., 2° 27, 30'' E. — 51° 26, 15'' N., 2° 30' 45'' E. — 51° 25' N. to 51° 24' 20'' N., 2° 31' 30'' E. to 2° 32' E. — 51° 21' 40'' N., 2° 30' 30'' E. — 51° 20' 50'' N., 2° 30' 30'' E. — 51° 12' N., 2° 41' E. — 51° 05' N., 1° 21' 15'' E. — 51° 04' 30'' N., 1° 20' 35'' E. — 50° 50' N., 1° 34' 30'' E. — Off Ostende. — Off the light-ship of Wandelaar. — 18 specimens.

The specimens were taken at depths from 16 m. to 66 m. and from much varying bottom e. g. stone, gravel, sand, fat clay, muddy sand, black mud and shells. A great number of the specimens have the Endoproct *Loxosoma phascolosomatium* Vogt fixed to the skin especially at the hindmost tip of the trunk and to the granulous part at the base of the proboscis.

The long list of synonyms is due to the great diversity in the exterior appearance of this species. The total length varies in the material at hand from 10 to 150 mm. ; the proboscis is always a little longer than the trunk. The skin is not transparent, not even in the young individuals ; it is of a yellowish-brown colour always a little darker and often with a reddish tint at the hindmost tip of the trunk and round the base of proboscis ; between the differently coloured parts there always is a sharp boundary. Numerous small papillæ are found in the skin ; at the extremities of the trunk they are long, cylindrical, in large specimens visible to the naked eye. In all the specimens the tip of proboscis was withdrawn so that the tentacular crown only could be subjected to examination after dissection of the proboscis. I must therefore confine myself to state that the number of tentacles varies much. A broad girdle of hooks consisting of numerous, dark, slightly curved thorns quite irregularly scattered is always present.

The intestinal coil is rather short, in the specimen, which was subjected to an anatomical investigation, the distal end of the rectum was distinctly set off from the rest as figured and described in the Report from the « Ingolf » Expedition (E. WESEN-

BERG-LUND 1930, p. 25). A diverticle and a contractile vessel were found as was a spindle muscle; this latter was not fastened posteriorly. The two long, slender segmental organs open

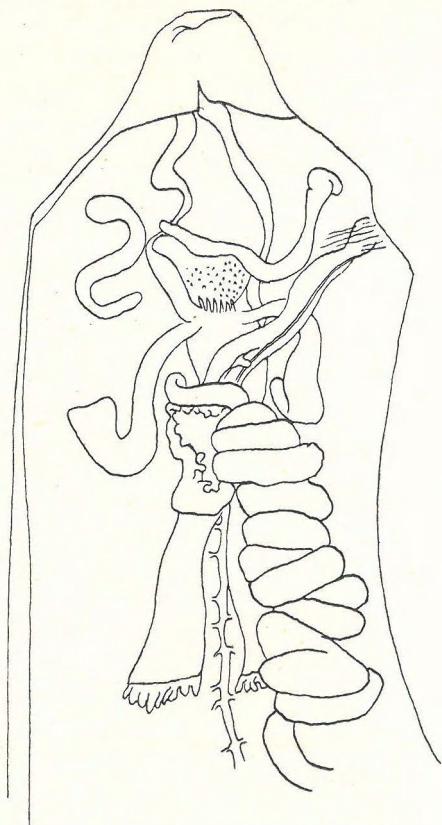


Fig. 1. — *Phascolosoma vulgare* Blainv.

to the exterior in front of the anus. The genital organs formed well developed fringed bands at the bases of the ventral retractors.

Distribution : Coasts of Belgium, Holland, France, Ireland, England, the coast of Norway, Danish waters. The Azores, the Cape Verde Islands, the Mediterranean, the Red Sea, Indian Ocean. — The species is most commonly found in shallow waters but may be found in the deep sea (1050-1900 m.).

Phascolosoma elongatum Kef.

(Fig. 2, Pl. III).

1900. *Phascolosoma pellucidum* Kef. (Shipley).1903. *Ph. teres* Hutton.1913. *Ph. vulgare* de Blainv. (I. Fischer part.).

Localities : 51° 57' N., 1° 51' 40'' E. — 51° 34' 30'' N., 2° 32' 15'' E. — 51° 33' 45'' N., 2° 33' 30'' E. — 51° 29' 10'' N., 2° 36' 30'' E. — 51° 28' 15'' N., 2° 34' 30'' E. — 51° 28' 15'' N., 2° 29' 15'' E. — 51° 28' N., 2° 32' E. — 51° 27' 45'' N., 2° 35' 30'' E. (in the centre of the buoy). — 51° 27' 30'' N., 2° 34' 30'' E. — from 51° 27' 30'' N. to 51° 26' 45'' N., from 2° 25' 30'' E. to 2° 26' 30'' E. — 51° 26' 45'' N., 2° 52' 45'' E. — 51° 26' 30'' N., 2° 33' 15'' E. — 51° 26' 30'' N., 2° 27' 30'' E. — 51° 26' 15'' N., 2° 30' 45'' E. — 51° 26' 15'' N., 2° 33' 45'' E. — from 51° 25' N. to 51° 24' 20'' N., from 2° 31' 30'' E. to 2° 32' E. — 51° 24' N., 2° 31' 30'' E. — 51° 24' N., 2° 28' 20'' E. — 51° 22' 30'' N., 2° 30' E. — 51° 20' 50'' N., 2° 25' 30'' E. — 51° 20' 45'' N., 2° 33' 30'' E. — 51° 16' 54'' N., 2° 27' 30'' E. — 51° 12' N., 1° 49' E. — 51° 04' N., 1° 21' 20'' E. — 51° 03' 52'' N., 1° 21' 10'' E. — Off Blankenberghe. — Off the light-ship of Wandelaar. — West Hinder. — West of the northern point of North-Hinder. — Close to Kentish Knock, England. — Off Kvinte Bank. — Off the light-ship, West-Hinder. — Off Cape Gris-Nez. — 67 specimens.

The depth is varying from 24 m. to 47 m. and the bottom of the finding-places has been : Sand, gravel, fat, grey clay, muddy sand or shells. This species is very often found living in the same localities as *Ph. vulgare*; in the material at hand this also takes place. The *Loxosoma* which is a commensalist on *Ph. vulgare* is never found living on *Ph. elongatum*.

This species is found in great abundance in the material; the largest one is 76 mm. long, the smallest abt. 10 mm. Many of them are highly contracted and often in a very irregular manner, so that they very much resemble the *Ph. teres* described and figured by HUTTON (1903). In a fully expanded animal which measures 48 mm. the proportions are as follows : the trunk (from anus to posterior extremity) 35 mm.; the proboscis 13 mm. The body is cylindrical, 4 mm. in diameter, the proboscis 2 mm. The colour is reddish, the skin is tough, semitransparent, perfectly smooth without any trace of papillæ but with numerous spindle-formed glands imbedded in the hypodermis. The tenta-

cular crown is formed of 22 tentacles in the specimen mentioned above, a fact which coincides with the statements of THÉEL (1905) who in a specimen, 50 mm. long, also found 22 tentacles. Just behind the tentacular crown a smooth space, abt. 1 mm. long, is seen, then follows the girdle of hooks. They are arranged in distinct rings, the number of which varies. In one sample I have counted 14 complete rings, in another one only 8. THÉEL no doubt is right in maintaining that the number of rings increases during the growth of the animal and then later on becomes reduced. In the smaller specimens only few rings are found, in the bigger ones the number is considerably higher, furthermore the rings close to the tentacular crown are always complete, whereas the remotest are not, so that it may be suggested that the latter rings are the eldest and that the hooks of them gradually disappear (drop off). The hooks are yellowish-brown, rather straight (vid. THÉEL's figures).

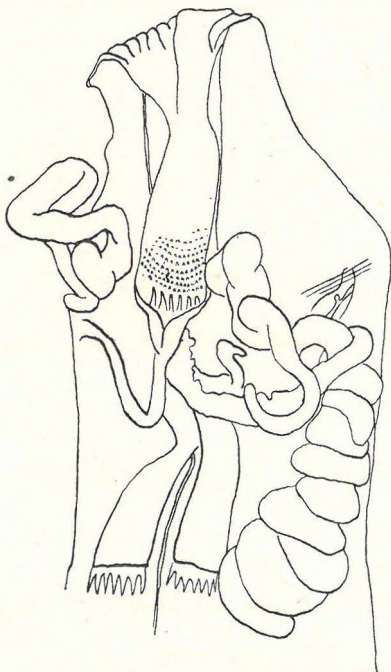


Fig. 2. — *Phascolosoma elongatum* Kef.

As to the internal anatomy the following remarks may be given : The intestine is very long ; it reaches as far as 3 mm. from

the hindmost tip of the trunk. It consists of abt. 30 coils and lies freely fluctuating in the body-cavity. No muscular strands fastening it to the body wall could be found. A spindle muscle is present but not attached at the distal end. A delicate muscle sheath consisting of a few fibres transverses the rectum and fastens on both sides of it. The distal part of rectum is not swollen as in *Ph. vulgare*. A contractile vessel and a diverticle are present. The two long and slender segmental organs open to the exterior some mm. in front of anus. Of the four retractor muscles the ventral pair is by far the strongest and broadest; in the specimen examined they fasten 9 mm. posterior to the anus i. e. in the second fifth of the trunk. The more slender dorsal retractors fasten nearly in the same height as the anus. At the base of the ventral retractors the genital organs form big fringed bands.

Both exteriorly and in the internal anatomy *Ph. elongatum* very much resembles *Ph. vulgare*. I. FISCHER (1913) therefore regards them as one species. There are, however, two good and constant characters which separate the two forms from each other, and after having examined a great number of them both from the Channel and from Danish and Swedish waters I have convinced myself that they must absolutely be considered as two distinct species. These separating characters are: 1) The presence of papillæ at the base and the hindmost tip of the trunk in *Ph. vulgare*, and the complete absence of them in *Ph. elongatum*; 2) The arrangement of the hooks: distinct rings in *Ph. elongatum*, scattered in *Ph. vulgare*. These characters are always distinct in adult specimens. A mistake is only possible when we have to discern between young specimens in which the proboscis is withdrawn, as in the young ones of *Ph. vulgare* the papillæ are very little conspicuous.

Distribution: The species has a much more limited range than *Ph. vulgare*. It is rather common in the Channel; furthermore it is reported from the Belgian coast: Thornton Bank (HERUBEL), English and Irish waters (SOUTHERN) from the North Sea, the French coast, the Mediterranean, Danish and Swedish waters.

Phascolosoma margaritaceum Sars.

Locality: Strait of Kara, 70° 25' N., 57° 56' E., 120 m., 1 specimen.

The species is known both East and West (the Murman Coast) of this new finding-place.

Distribution : On the northern hemisphere the species is known from Spitzbergen, the North-Atlantic Ocean, both coasts of Greenland, North coast of North America and the Behring Strait. Furthermore it is reported from the eastern coast of North America from New Foundland and the Gulf of St. Lawrence. — Danish Waters, Morocco and the Azores. — Antarctic.

Phascolosoma abyssorum Kor. et Dan.

(Fig. 3, Pl. II).

Locality : 51° 15' 30" N., 2° 35' E.

Of this insufficiently known species a single specimen is at hand, and with no hesitation I refer it to the above mentioned species.

The specimen measures 27 mm., the distance between anus and the posterior extremity of the trunk is 21 mm.; as 3 mm. of the proboscis is drawn in, this latter is thus 9 mm. long. The body is club-shaped oblong, the posterior end truncated, the skin firm rather tough, semitransparent, smooth, without true papillæ. Exteriorly the specimen has a great resemblance to *Ph. elongatum* Keferstein. The proboscis is provided with a broad girdle of hooks distinctly arranged in rings, 11 in number. The hooks are brownish and slightly curved downwards, just as described and figured by THÉEL (1905). The hindmost rings are incomplete and furthermore composed of smaller hooks than the foremost ones; the hindmost hooks are worn out, loosen and drop. As regards the tentacular crown, I cannot agree with the statement of THÉEL who says : « ... the tentacles are short and thick and their number amounts to twenty or slightly more ». In the specimen at hand 12 rather long and slender, deeply bifurcated tentacles are present, a fact which much more coincides with the description of the specimen which SOUTHERN (1912) gives.

As to the internal anatomy the following remarks are to be mentioned :

The two long and strong ventral retractor muscles are issuing from the middle third of the trunk close to each side of the ventral nerve cord. In their foremost half part they are united. At the bases of their roots ripe genital festoons are present. The intestinal canal is long and composed of a very great number of coils; a spindle muscle is present but not attached to the posterior end. In the original description of the species KOREN and DANIELSSEN maintain that a contractile vessel is present. In the

specimen examined by me neither contractile vessel nor diverticle were to be found.

Anus has no spout-like protrusion exteriorly; it is fastened to the body wall with a broad, delicate band of transversal muscle

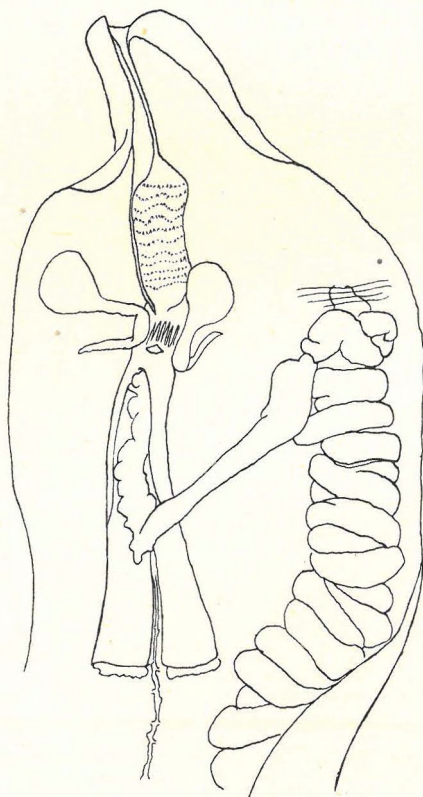


Fig. 3. — *Phascolosoma abyssorum* Kor. et Dan.

fibres. Some few, slender muscle strands keep the intestine in situ. Two rather small pear-shaped segmental organs open to the exterior in the same height as anus.

Distribution : Only a few records of this species are found in the literature. In my opinion a closer examination of the specimens of *Ph. elongatum* may show that a number of them ought to be referred to *Ph. abyssorum* as it is practically impossible exteriorly to separate the two species from each other, and the result may be that the species is by far not so rarely met with as hitherto recorded.

Ph. abyssorum was originally described by KOREN & DANIELSEN (1877) from the West coast of Norway, Bergensfjord, 200-300 fms. « Stony bottom, in the canals formed on the *Lima excavata* by the *Clyona abyssorum* Sars » (THÉEL 1905). — Furthermore it is reported from Spitzbergen (W. FISCHER 1928). — West coast of Ireland, 54° 17' N., 11° 33' W, 706 m. (SOUTHERN). — 54° 11' N., 6° 12' E. (I. FISCHER).

Phascolion strombi (Mont.).

(Pl. IV).

The specimens of this species in the material at hand date from two different areas, viz. 1) from the Kara-Sea (« Belgica ») and 2) from the Channel.

Locality : 1. The Kara-Sea : 71° 44' N., 55° 56' E., 115 m. — 71° 42' N., 56° 58' E., 2 m. — 71° 39' 5'' N., 56° 02' E., 134 m. — 71° 26' N., 56° 59' E., 200 m. — 71° 22' N., 56° 57' E., 166 m. — 71° 19' N., 57° 00' E., 169 m. — 71° 02' N., 57° 50' E., 210 m.

2. The Channel. Ostende, off Blankenberghe, three miles from the coast, 27 m.— Off the bank of Sandettie.— Off the light-ship of West Hinder, 34 m. — Off the light-ship of Wandelaar, 26 m. — 51° 32' 10'' N., 2° 43' E. — 51° 33' 15'' N., 2° 36' 15'' E. — 51° 16' 54'' N., 2° 27' 30'' E. — 18 specimens. The arctic specimens are found in tubes of the Serpulid *Apomatus* or in shells of *Dentalium*; the lusitanian ones in shells of *Scalaria communis*, *Trivia europæa*, *Natica intermedia*, *Nassa pygmaea* and *Dentalium entale*.

Distribution : In the northern hemisphere circumpolar, especially widely distributed in the northern part of the Atlantic area. Furthermore the species is common in Danish waters and at the coast of Great Britain. At the Atlantic coast of North America it is found as far South as 35° N. More sporadically it is known from the Mediterranean.

Sipunculus nudus L.

Locality : Cannes ; 1 specimen.

The specimen at hand is very much defect, the hindmost part of the trunk (glans) is lacking, and the introvert too is incomplete. The intestine is partly torn into pieces; it is filled with coarse gravel, is much distended and therefore it is impossible to make it an object to a closer anatomical investigation. — No-

ticeable is the length of the segmental organs; they measure 53 mm., the total length of the fragmentary specimen is 130 mm.

Distribution : The species is cosmopolitan; it is found from the 56° N. Lat. to the 6° S. Lat., rather common at the French coast, in the Mediterranean; more sparsely it is reported from the northern seas.

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PL. I.

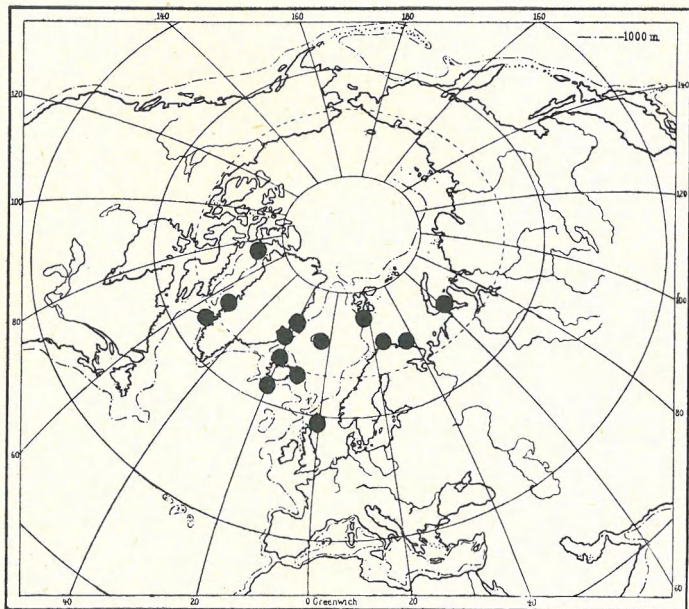


Fig. 1. — Distribution of *Priapulus bicaudatus* Dan.

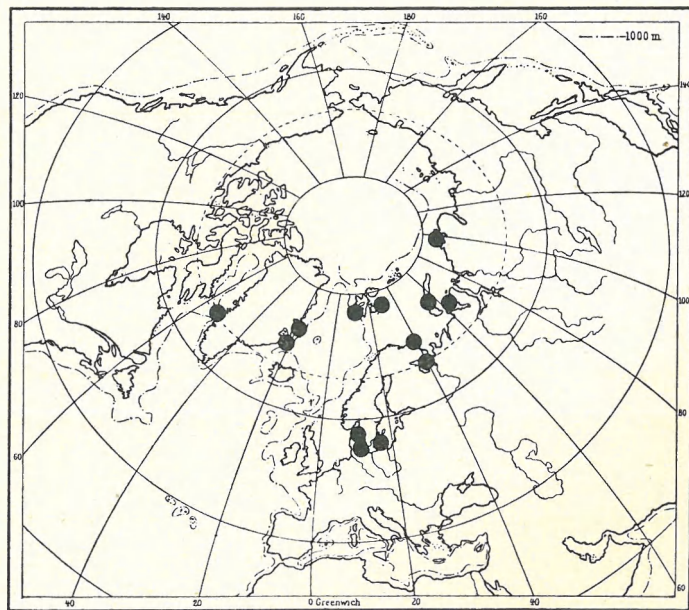
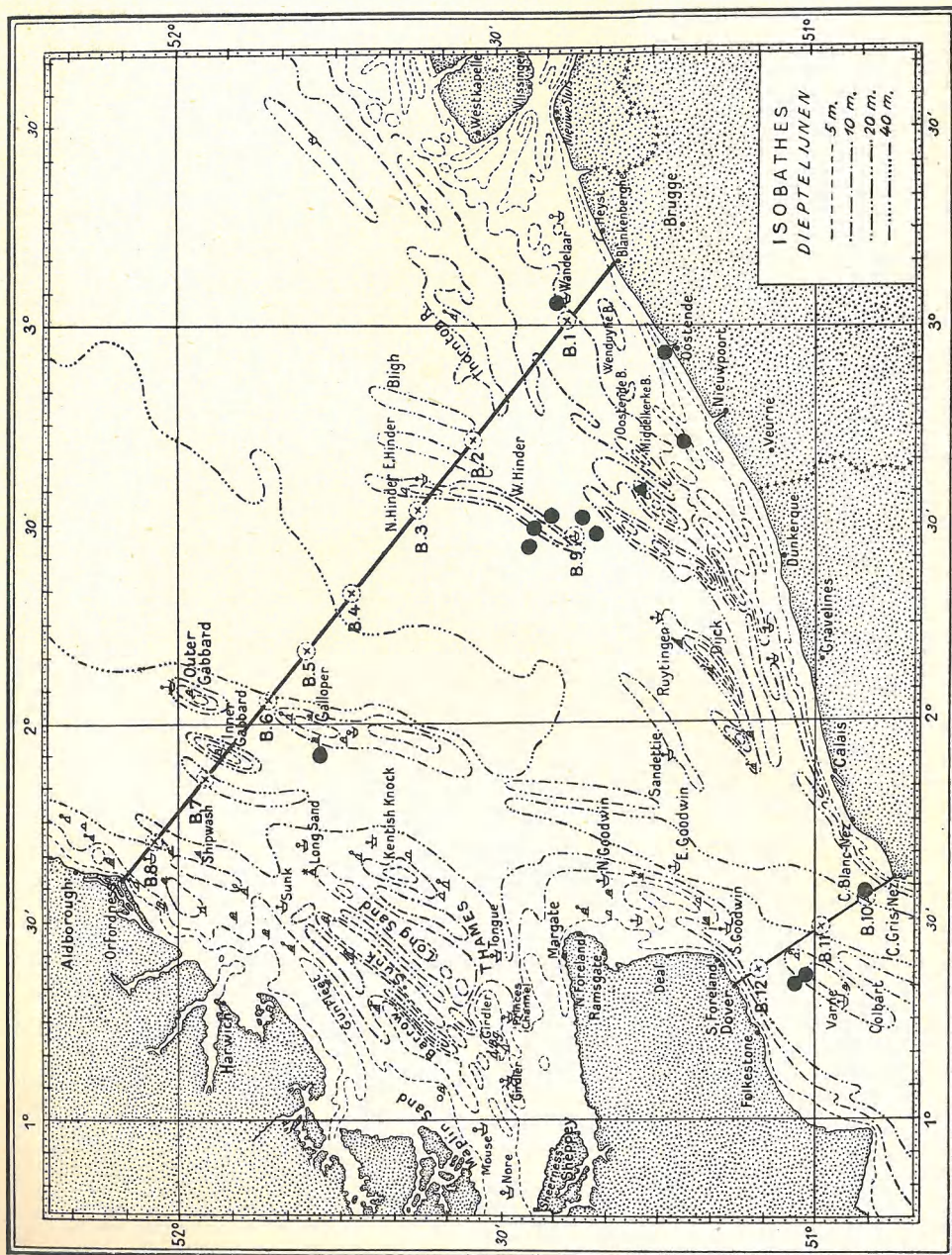
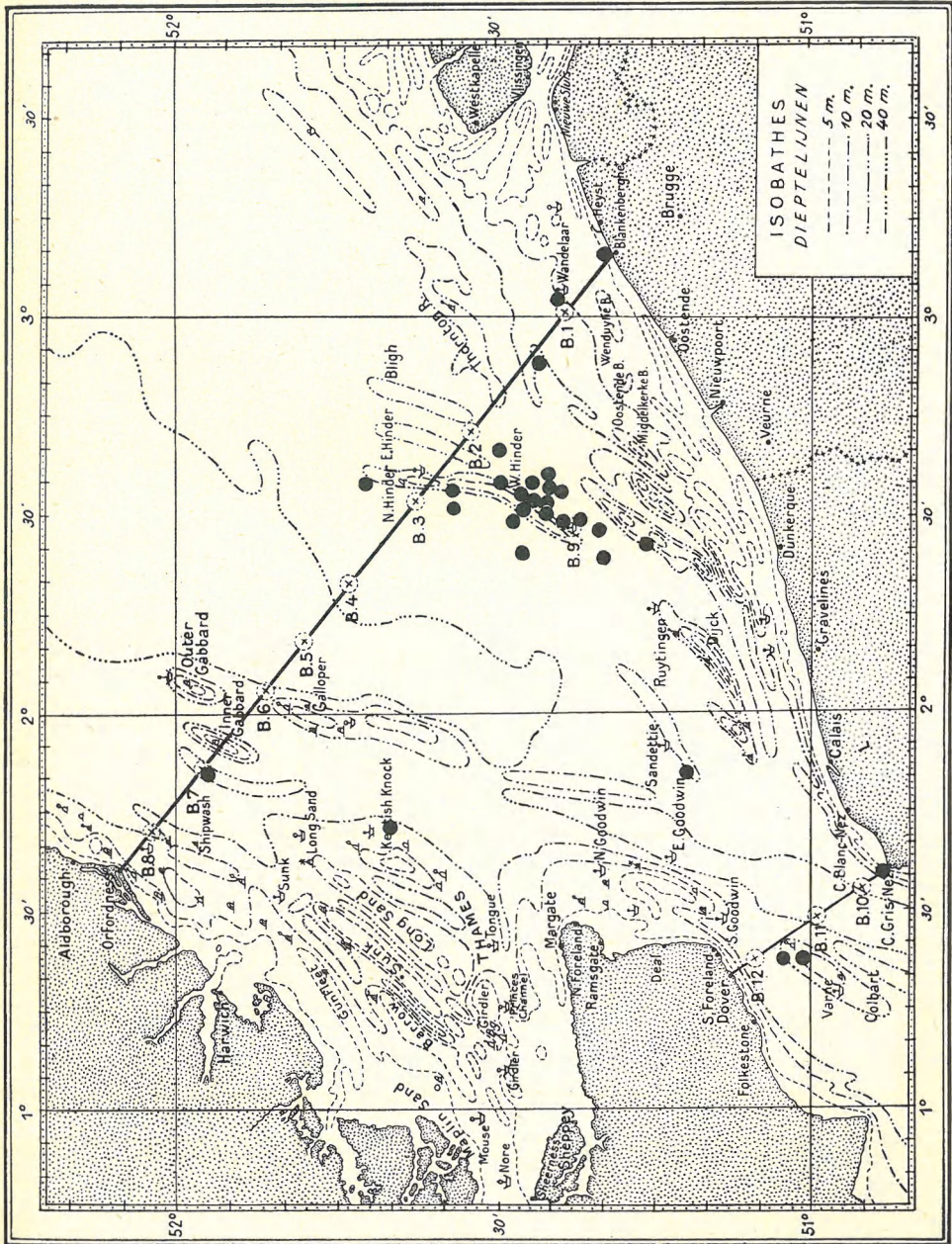


Fig. 2. — Distribution of *Halicyptus spinulosus* v. Sieb.

PL. II.

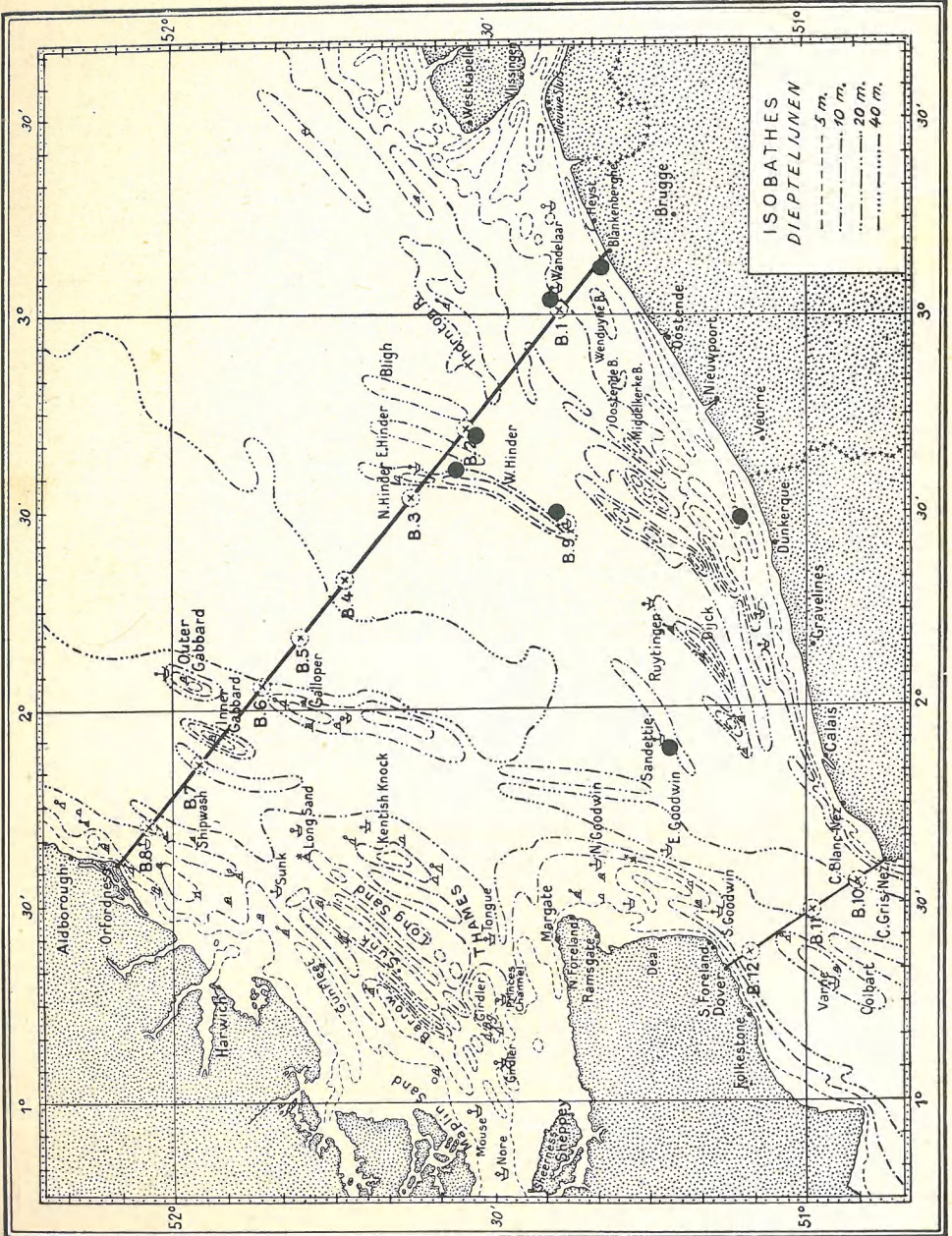


Finding places in the Channel of *Phascolosoma vulgare* Bl. ●
and *Ph. abyssorum* Kor. and Dan. ▲



Finding places in the Channel of *Phascolosoma elongatum* Kef.

PL. IV.



Finding places in the Channel of *Phascolion strombi* Mont.