AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Briggs, E. A., 1930. Studies in Australian athecate hydroids. No. III. The histology of *Myriothela harrisoni,* Briggs.. *Records of the Australian Museum* 18(1): 5–14, plates i–iii. [10 November 1930].

doi:10.3853/j.0067-1975.18.1930.714

ISSN 0067-1975

Published by the Australian Museum, Sydney

STUDIES IN AUSTRALIAN ATHECATE HYDROIDS.

No. III. The Histology of *Myriothela harrisoni*, Briggs.*

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(Plates i-iii, and Figure 1.)

Introduction.

In Part I of this series of "Studies in Australian Athecate Hydroids," I described and figured the external characters of a new species of *Myriothela*, *M. harrisoni*, from the South Coast of New South Wales. The specimens, which were collected on the undersides of rocks below low-water mark at Bulli, were fixed in sublimate-acetic-alcohol and transferred to 70% alcohol. Serial sections of the hydranths with their attached blastostyles and gonophores were cut in a transverse direction, and afterwards stained with Ehrlich's hæmatoxylin followed by eosin. Grubler's picro-carmine proved a very useful stain for the differentiation of the fibrillar structure of the supporting lamella in the capitulum of the tentacles. For the study of the nematocysts, some of the sections were stained in methylene blue and orange G. The sections were cut in thicknesses varying from 6 to 8 μ.

In the present paper the histology of *Myriothela harrisoni* is described and figured, and particular attention paid to the form, structure, and distribution of the nematocysts since these bodies possess a special taxonomic significance in Kuhn's group of the Capitata.

Among the Athecate Hydroids, Broch[1] (1916) finds two characteristic principal forms of stinging capsules. In the Capitata there are large oviform or almost wholly spherical nematocysts, while the Filifera are characterized by the possession of very small, all but rod-shaped nematocysts.

Two distinct kinds of stinging capsules occur in the ectodermal tissues of *Myriothela*. Besides the typical oviform ones of the Capitata, there are also present narrowly oval or nearly cylindrical, rather large nematocysts. These dimorphically developed nematocysts of the Myriothelidæ bear a strong resemblance to the stinging capsules of the Milleporidæ which Broch includes in the Sectio Capitata of the Athecate Hydroids.

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* For Numbers I and II see Records of the Australian Museum, Vol. xvi, No. 7, 1928, p. 305, and Vol. xvii, No. 5, 1929, p. 244.

[1] Broch.—"Hydroida." Danish Ingolf-Expedition, v, 6, 1916.

Hydranth.

The hydranth of *Myriothela harrisoni* consists of an isolated attached polyp, divisible into three distinct regions: (1) a slender cylindrical distal portion bearing the tentacles; (2) a swollen, conical middle region bearing the blastostyles, and (3) a proximal hydrorhiza invested by a clear chestnut brown perisarc.

Body-Wall.

Ectoderm.—In the body-wall of the hydranth (Plate III, fig. 1) the ectoderm is stratified, and varies in appearance and thickness in the different regions of the polyp. Towards the anterior end of the tentacle-bearing zone, the stratified ectoderm (Plate I, figs. 1, 2) consists of an outer part with cells rich in contents and nuclei and an inner lightly-staining hyaline portion. In this region the ectoderm attains a thickness of 15 μ, and carries a number of large oviform nematocysts in its outer part, and a few rather large, nearly cylindrical nematocysts near the bases of the tentacles.

In the middle and posterior regions of the tentacle-bearing zone, the ectoderm (Plate II, Plate III, fig. 1) still retains its division into an outer deeply-staining part and an inner hyaline portion, but the nematocysts are much more numerous than in the anterior region of the hydranth. The two distinct kinds of stinging capsules, typical oviform nematocysts and nearly cylindrical ones, are present in about equal numbers in the ectoderm which now measures 33 μ in thickness.

The ectoderm reaches its greatest thickness of 36 μ in the blastostyle-bearing zone of the hydranth, and presents a distinctly changed appearance since the cells of the inner portion are no longer hyaline, but contain deeply-staining cytoplasm and nuclei. The large oviform stinging capsules are considerably reduced in number, but the nearly cylindrical, rather large nematocysts are widely distributed through the ectoderm of this region.

Supporting lamella.—Throughout the whole extent of the tentacle-bearing zone of the hydranth, the supporting lamella (Pl. III, fig. 1, S.L.) forms a thin but well-defined layer having a uniform thickness of 2 μ. From its outer surface arises a series of very closely placed thin, either simple or branched, secondary lamellæ which stretch out through the whole of the hyaline portion of the ectoderm (Pl. III, fig. 1, Sec. L.). On each side of these secondary lamellæ is attached a layer of well-developed longitudinal muscle fibres (Pl. III, fig. 1, M.F.).

In the blastostyle-bearing region of the hydranth, the supporting lamella increases in thickness, varying from 3 to 4 μ, and gives off rather stout, well-spaced secondary lamellæ at irregular intervals. Attached to the outer surface of the supporting lamella and to each side of these secondary lamellæ are the longitudinal muscle fibres, but they are not so well developed as those in the tentacle-bearing zone. The secondary lamellæ usually remain simple, but occasionally branched ones may be observed giving attachment to a few weakly-developed muscle fibres.

Endoderm.—The endoderm of the body-wall in the tentacular region of the hydranth exhibits a very remarkable differentiation into a distal goblet cell zone and a middle and proximal zone which is characterized by the presence of numerous gland cells and large vacuolate cells. It is impossible, however, to define the exact limitations of these zones owing to the extreme extensibility of this portion of the polyp. The endoderm consists of large-celled tissue and on its inner side is produced into a series of folds which lie close together and elongated in the direction of the long axis of the body. These folds, forming the villi, project into the body-cavity and vary very much in length in the different divisions of the tentacle-bearing zone of the hydranth. They are longest in the lower portion of this region, where they form filiform structures, and measure 130 to 180 μ from base to apex.

Towards the distal extremity of the hydranth, the villi are considerably reduced, and the endoderm is thrown up into a series of low conical folds which are composed of goblet cells lying wedged between the apices of the palisade-like cells where they abut on the body-cavity (Pl. I, figs. 1, 2). This division of the endoderm constitutes the goblet cell zone which, in the fixed specimen, embraces the anterior one-third of the tentacle-bearing region of the hydranth. Each goblet cell is vase-shaped and consists of a lightly-staining expanded part whose contents are turbid from the presence of ill-defined granular masses. The expanded portion of the vase is continued downwards into a tail which contains a small nucleus embedded in deeply-staining granular cytoplasm. The large coarse granules of the basal portion stain very deeply with Ehrlich's hæmatoxylin.

An examination of a villus from the goblet cell zone (Pl. I, figs. 1, 2) shows that this low conical structure consists of strikingly characteristic palisade-like cells which are remarkably high and of uniform diameter throughout their length. Each has a very scanty and lightly-staining cytoplasm which surrounds a large irregular vacuole occupying the bulk of the cell. Two nuclei are sometimes present, and may be either close together about the middle of the cell, or one at either end. The goblet cells are wedged between the apices of these palisade-like cells along each side of the villus. The apical cells which Hardy[2] found so characteristic of the villi in the goblet cell zone do not become differentiated in *M. harrisoni* in the distal region of the hydranth, but develop at the apices of the villi in the gland cell zone.

In the middle and proximal divisions of the tentacular region, the endoderm assumes a different character (Pl. II). The goblet cells disappear and the palisade cells gradually pass into a shorter and broader type with only one nucleus. The endodermal folds form thin, remarkably high villi which reach out into the body-cavity. As a general rule they are quite separate from one another, but occasionally two villi may become closely adpressed near their apices. Each villus, with the exception of the broader basal portion, consists throughout its length of two layers of cells which are separated from each other by a thin secondary lamella given off from the inner surface of the supporting lamella. At the apex of each villus is a group of apical cells. In these the cytoplasm is abundant and stains deeply, thus offering a marked contrast to the other cells of the villus which Hardy calls the vacuolate cells. These possess a large vacuole surrounded by scanty cytoplasm with only a single nucleus and a few scattered pigmented spheres. Wedged between the outer margins of these vacuolate cells are other and smaller darkly-staining cells which constitute the gland cells and occupy a similar position to the goblet cells in the villi of the goblet cell zone. The gland cells are very widely distributed through the endoderm, but they occur in greatest numbers on the sides of the villi especially in the proximal division of the tentacle-bearing zone. Occasionally one or two of these gland cells may occur at the apex of a villus.

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[2] Hardy.—*Quart. Journ. Micro. Sci.* (n.s.), xxxii, 1891.

In the blastostyle-bearing zone of the hydranth the endoderm is to a certain extent different from that already described. The villi here reach their greatest development and almost completely obliterate the body-cavity. The apical cells of the villi change their characters and become more and more akin to the vacuolate cells. These are densely loaded with stored nutritive spheres, so that they present a very different appearance to the vacuolate cells in the villi of the tentacular region. Wedged between the outer margins of these vacuolate cells are the smaller darkly-staining gland cells. These also occur among the endodermal cells at the bases of the villi. The endoderm of the body-wall from which the villi arise, and which in the tentacle-bearing region is composed of cells in no wise distinguishable from those lining the villi, changes its character in the blastostyle-bearing region. There it is composed of long columnar cells, each with a single large nucleus and lightly-staining cytoplasm free from vacuoles.

In *M. harrisoni*, the epithelium lining the gastric cavity is thus clearly divisible into different regions capable of performing different functions according to their constitution and position in the body-wall of the hydranth. These regions are (1) a distal region characterized by the presence of numerous goblet cells, (2) a middle region characterized by the presence of numerous gland cells and large vacuolate cells, and (3) a proximal region characterized by the presence of vacuolate cells usually loaded to the full with stored nutritive material in the form of nutritive spheres.

TENTACLES.

The distal portion of the hydranth bears upwards of six hundred capitate tentacles, densely crowded and imbricating distally, but becoming sparser proximally, the proximal millimetre carrying only about a dozen small tentacles. The head of the tentacle is spheroidal, the long axis continuous with that of the peduncle. A few of the tentacles have confluent patches of pinkish-purple spots upon the distal portion of the capitulum. Each tentacle is a hollow structure with a narrow lumen extending through the stalk. This cavity, however, is limited basally by a partition of unbroken supporting lamella and consequently is completely cut off from the gastric cavity of the polyp. The tentacles are remarkable for the extraordinary development of the supporting lamella in the capitulum where it is produced into a fibrillar structure of radially arranged fibres which stretch out to the ectoderm and form the main mass of the apex of the tentacle.

The stalk of the tentacle (Pl. III, fig. 2) consists of a single layer of ectoderm and a large-celled endoderm which contains a narrow lumen. The supporting lamella is thin; on its outer side is attached a layer of fine longitudinal muscle fibres. In the capitulum of the tentacle (Pl. III, fig. 3) the ectoderm remains simple, thus offering a marked contrast to the stratified condition of the ectoderm in the swollen head of a tentacle from the hydranth of *M. australis*. The supporting lamella increases in thickness and gives rise to a series of radially arranged, coarse threads which stretch out to the ectoderm and form a fibrillar structure of unique appearance in the apex of the tentacle. These threads or fibres are very distinctly marked off from the ectoderm and constitute one of the most distinctive features of the Myriothelidæ. They show no trace of cellular structure and seem to function as a strong supporting cushion in the distal portion of the tentacle which is thus kept in an expanded state even when the rest of the tentacle is contracted. These peculiar fibrillar structures have no counterpart among the rest of the Hydrozoa and indicate the highly specialized nature of the tentacles in the Myriothelidæ in which the hollow condition of these bodies cannot be regarded as a primitive one but must be considered as a secondary phenomenon.

The endoderm in the apex of the tentacle consists of a single layer of cells which line the upper part of a circular cavity situated in the lower portion of the swollen capitulum. These cells assume a rather different character to the endoderm cells in the stalk of the tentacle since they are very much smaller and more cytoplasmic with deeply-staining nuclei. The floor of this cavity communicates by a narrow aperture with the lumen in the axial part of the tentacle-stalk. The large-celled endoderm of the stalk, however, is completely cut off from the endodermal cells in the body-wall of the hydranth by a partition of unbroken supporting lamella.

The capitulum of the tentacle is richly supplied with nematocysts which are of two kinds: (1) large oviform nematocysts, and (2) nearly cylindrical, rather large nematocysts. A few scattered stinging capsules, similar to those in the capitulum, also occur in the ectoderm of the stem and at the bases of the tentacles.

BLASTOSTYLES.

In *Myriothela harrisoni*, the blastostyle-bearing region of the hydranth is conical in shape with the base and apex practically free from blastostyles. These are borne on the middle zone in such numbers as to hide the surface. The fully-developed blastostyle consists of an irregularly lobed base with a narrow, cylindrical, distal portion continued into a single terminal tentacle generally resembling those of the tentacle-bearing region of the hydranth, but flatter distally and of larger size. The lobes at the base of the blastostyle represent developing gonophores. The mature gonophores are borne distally, and appear terminal in position, having grown so large as to push the single tentacle to one side. The blastostyle has no mouth, but contains an extensive cavity communicating with the general body-cavity of the hydranth.

BODY–WALL.

Ectoderm.—The body-wall of the blastostyle, like that of the hydranth, consists of a stratified ectoderm abundantly provided with large oviform nematocysts, and rather large, nearly cylindrical ones in about equal numbers. In the distal part of the blastostyle the ectoderm is composed of long columnar cells, tapering at their lower end, and filled with a granular and turbid cytoplasm which stains very lightly with hæmatoxylin. The ectoderm of the proximal part differs somewhat from that just described since the columnar cells are replaced by shorter and broader ones and the cell boundaries are frequently very indistinct. The same type of nucleus is found throughout the whole ectoderm. It is characterized by the presence of a distinct nucleolus linked by scattered threads with irregular patches of chromatin on their course to the deeply-staining nuclear membrane.

Supporting lamella.—The supporting lamella varies from 3 to 4 μ in thickness, and gives off rather stout, well-spaced secondary lamellæ at irregular intervals. Attached to the outer surface of the supporting lamella and to each side of these secondary lamellæ are the longitudinal muscle fibres which are not so strongly developed as those in the body-wall of the hydranth.

Endoderm.—The endoderm in the proximal region of the blastostyle is composed of long columnar cells, each with a single nucleus and lightly-staining cytoplasm free from vacuoles. Gland cells lie scattered in the endoderm of this region and sometimes occur in limited numbers where the endoderm of the blastostyle merges with that of the body-wall of the hydranth. Towards the distal extremity of the blastostyle, the endoderm changes its character and forms a series of very high villi which reach out into the body-cavity. Each villus, with the exception of the broader basal portion, consists throughout its length of two layers of cells which are separated from each other by a thin secondary lamella given off from the inner surface of the supporting lamella. These cells possess a large vacuole surrounded by scanty cytoplasm with only a single nucleus. They are densely loaded with stored nutritive spheres, and consequently present a very different appearance to the rest of the endoderm in the blastostyle. The endodermal cells of the body-wall, from which the villi arise, retain their columnar character and remain free from vacuoles and nutritive spheres.

TENTACLE.

The single terminal tentacle at the distal extremity of the blastostyle differs in several important points from the tentacles of the hydranth, being of larger size and provided with a trumpet-shaped capitulum instead of the typical spheroidal head. In the apex of this tentacle, the supporting lamella remains comparatively thin, and is not produced into the extraordinary fibrillar structure which forms such a characteristic feature in the capitulum of the tentacles from the tentacle-bearing region of the hydranth. The tentacle is a hollow structure with a narrow lumen extending through the stalk. This cavity, however, is limited basally by a partition of unbroken mesoglœa and consequently is completely cut off from the body-cavity of the blastostyle. I have previously directed attention to the existence of a similar condition in the blastostylic tentacles of *M. australis*. A comparison of my drawing (Pl. XXXIV, fig. 2)[3] with the description of the tentacle from the blastostyle of *M. harrisoni* immediately reveals the remarkable similarity in form displayed by these structures in both species.

The stalk of the tentacle consists of a single layer of ectoderm and a large-celled endoderm which contains a very narrow lumen. The supporting lamella is thin. In the capitulum, which is trumpet-shaped, the ectoderm is composed of remarkably high columnar cells with granular cytoplasm and very indefinite cell-walls. The supporting lamella increases in thickness but still remains comparatively thin. From its outer surface arises a series of very short, fine threads or fibres which stretch out to the ectoderm. The endoderm in the apex of the tentacle consists of a single layer of cubical cells which line the upper part of the circular cavity situated in the lower portion of the trumpet-shaped capitulum. These cubical cells may be readily distinguished from the rest of the endoderm not only by their characteristic shape but also by their granular cytoplasm and slightly larger nuclei. The floor of the cavity communicates by a narrow aperture with the lumen in the axial part of the tentacle-stalk. The large-celled endoderm at the base of the stalk is completely cut off from the endodermal cells in the body-wall of the blastostyle by an unbroken partition of supporting lamella.

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[3] See Part I, REC. AUSTR. MUS., xvi, 7, 1928.

The capitulum of the tentacle is richly supplied with nematocysts. These are almost entirely represented by the rather large, nearly cylindrical type of stinging capsule, and are arranged in a very characteristic manner in the outer hyaline portion of the ectoderm with their long axes set at right angles to the surface. A few scattered ones of the same type lie in various directions in the deeper parts of the ectoderm close to the supporting lamella. Near the base of the tentacle, the ectoderm may contain several oviform, as well as cylindrical, nematocysts but this region is usually free from stinging capsules, although they occur in large numbers in the adjacent ectoderm of the blastostyle.

Gonophores.

Like *Myriothela australis*, *M. harrisoni* is a diœcious species, all the gonophores on a blastostyle being of the same sex, and throughout any one individual the sex of the gonophore is uniform. The mature gonophores are sub-spherical in shape, somewhat flattened distally, and are either sessile or very shortly pedunculate. They exhibit no definite arrangement on the blastostyle, except that the mature ones are borne distally and appear terminal in position, having grown so large as to push the single tentacle to one side.

In the male, the blastostyle bears two or three ripe gonophores, up to 450 μ in diameter, and three or four in process of development. The only female individual was cut into sections before the diœcious habit was discovered and entire blastostyles are not available for comparison. The ripe female gonophores have a diameter almost twice that of the male.

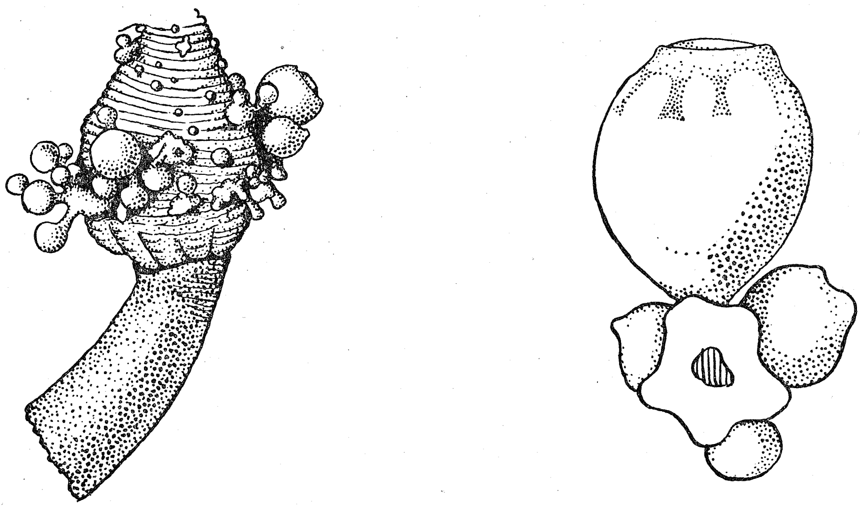

FIGURE 1.
Myriothela harrisoni, Briggs. Blastostyles and gonophores.

Both the male and the female gonophores have an apical opening representing the velar aperture. This feature is unique among the species of *Myriothela*, except *M. australis* where a similar condition exists in the gonophores of both sexes. The remarkable structures to which Allman[4] gave the name of "claspers" in his description of *M. cocksi* do not occur in *M. harrisoni.*

In the mature gonophores of both sexes, the ectoderm at the flattened distal extremity is armed with scattered nematocysts of the cylindrical variety with here and there an occasional large oviform stinging capsule. On the whole the gonophores of *M. harrisoni* are singularly devoid of nematocysts, and in this character alone they exhibit a considerable variance from the northern species, since Broch in his diagnosis of the Family Myriothelidæ specially stresses the frequent occurrence of stinging capsules in the ectoderm of the gonophores.

NEMATOCYSTS.

Kuhn's classification[5] of the Athecate Hydroids into two principal groups of Filifera and Capitata, based on the presence of filiform or claviform tentacles, cannot be strictly maintained since the distinction is by no means a constant one. This is clearly shown in the case of the Pennaridæ where filiform tentacles occur together with claviform ones. Broch, however, has recognized that Kuhn's grouping may be retained if we accept the form of the nematocysts as a criterion of classification, and regard the Athecate Hydroids as falling into the two principal groups, corresponding to the Capitata and Filifera, according to the structure of the stinging capsules. In all the Capitata there are large oviform or almost wholly spherical nematocysts. These are always accumulated on the tips of the claviform tentacles, while in those species possessing filiform tentacles they are more equably distributed through the ectoderm of the tentacles. Moreover, these large nematocysts are also widely distributed throughout the ectoderm of the polyp especially in such forms as *Monocoryne* and *Myriothela.*

The Filifera are distinguished by a quite different type of nematocyst. The predominant form is a very small, all but rod-shaped stinging capsule which occurs in large numbers in the ectoderm of the tentacles. Here they are generally arranged in definite belts which impart to the tentacles a transversely striped appearance.

In *Myriothela* the nematocysts have developed dimorphically; besides the typical large oviform ones (Pl. III, fig. 4) there are also present narrowly oval or nearly cylindrical stinging capsules which are of frequent occurrence in the ectoderm of the polyp but more especially in the capitulum of the tentacles at the distal extremity of the blastostyle (Pl. III, fig. 5).

The large oviform nematocysts of *M. harrisoni* measure 10 to 12 μ in length and 8 to 9 μ in breadth. Each contains a comparatively stout thread which appears to be spirally coiled (Pl. III, fig. 4). This type of nematocyst is widely distributed through the ectoderm of the hydranth and blastostyle, and also occurs in fairly large numbers among the ectoderm cells in the capitulum of the tentacles borne on the hydranth. The nearly cylindrical stinging cells measure 15 to 21 μ in length and 6 to 9 μ in breadth. They occur throughout the ectoderm of the polyp, but are found in largest numbers in the capitulum of the tentacle at the distal extremity of the blastostyle (Pl. III, fig. 5). In this position they are arranged in a closely packed layer which lies in the outer, hyaline portion of the ectoderm. The long axes of the nematocysts are set at right angles to the

[4] Allman.—*Phil. Trans.*, clxv, 1875.
[5] Kuhn.—*Ergebn. und Fortschr. der Zool.*, iv, 1913.

surface of the capitulum, and as a result of this arrangement the stinging capsules are disposed in a definite radial manner.

The oviform nematocysts of *M. australis* are slightly smaller than those of *M. harrisoni*, since they measure 9 to 10 μ in length and 5 to 6 μ in breadth. The nearly cylindrical stinging capsules are considerably smaller, measuring 9 to 10 μ in length and 3 μ in breadth. These two types of nematocyst, oviform and cylindrical, although their dimensions are not so large, are identical with the forms which I have described in the tentacles and the nematocyst ring of the crawling medusa *Cnidonema haswelli*[6] from Port Jackson, New South Wales.

Billard's work[7] on the biology and regeneration of *Myriothela cocksi* from L'île Ti-sao-son at Roscoff enabled him to observe the function of the nematocysts in living specimens during feeding experiments. His examination revealed the presence of "deux catégories de nématocystes, ou cnidocytes: les uns sont adhésifs, les autres sont urticants." The former exist in two sizes; there are small ones which reach a length of 12 μ, and larger ones which are double this measurement. Billard claims that these two types of adhesive nematocysts are identical with those he observed in *Clava squamata* and *Hydractinia echinata*, as well as in the medusa of *Cladonema radiatum*. Their function is to capture and hold the prey. The urticating nematocysts, according to Billard's account, are provided with a filament which penetrates the tissues of the prey and by the injection of a poison causes paralysis followed by death.

The distinction of the oviform or adhesive nematocysts into small and large types such as Billard describes, is not so well marked in the Australian species of *Myriothela*; in fact the adhesive stinging capsules are fairly uniform in size, the smallest measuring 10 μ and the largest 12 μ in length for *M. harrisoni*, while in *M. australis* the difference in size is even less apparent since the measurement of the long axis varies only from 9 to 10 μ in length.

Summary.

1. The salient features in the histology of *Myriothela harrisoni*, Briggs, are described and figured.
2. The ectoderm of the hydranth is stratified; the supporting lamella is thin and from its outer surface arises a series of either simple or branched secondary lamellæ; the endoderm consists of (*a*) a distal region rich in goblet cells, (*b*) a middle region characterized by the presence of gland cells and vacuolate cells, and (*c*) a proximal region of vacuolate cells loaded with stored nutritive material.
3. The tentacles of the hydranth are remarkable for the extraordinary development of the supporting lamella in the capitulum where it is produced into a fibrillar structure of radially arranged fibres which form the main mass in the apex of the tentacle.
4. The blastostyles are borne on the middle zone of the hydranth in such numbers as to completely hide the surface. Each consists of an irregularly lobed base with a narrow, cylindrical, distal portion continued into a single terminal tentacle.

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[6] Briggs.—Rec. Austr. Mus., xiii, 3, 1920.

[7] Billard.—*Bull. Soc. Zool. de France*, xlvi, 1921.

5. The species is diœcious; the mature gonophores are sub-spherical in shape, somewhat flattened distally, and are either sessile or shortly pedunculate.
6. Both the male and female gonophores have an apical opening representing the velar aperture.
7. The nematocysts are of two kinds: (1) large oviform nematocysts, their length being 10 to 12 μ and their breadth 8 to 9 μ; and (2) nearly cylindrical nematocysts which measure 15 to 21 μ in length and 6 to 9 μ in breadth.

EXPLANATIONS OF PLATES.

Plate I.

Myriothela harrisoni, Briggs.

Fig. 1.—Transverse section through the distal end of the tentacular region of the hydranth. The endoderm is produced into a series of low, conical villi. This division of the endoderm constitutes the goblet cell zone.

Fig. 2.—Transverse section through the body-wall towards the distal extremity of the tentacular region of the hydranth. The villi are composed of goblet cells lying wedged between the apices of the palisade cells where they abut on the body-cavity.

Plate II.

Myriothela harrisoni, Briggs.

Transverse section through the body-wall in the middle division of the tentacular region of the hydranth. The endodermal folds form thin, remarkably high villi which reach out into the body-cavity.

Plate III.

Myriothela harrisoni, Briggs.

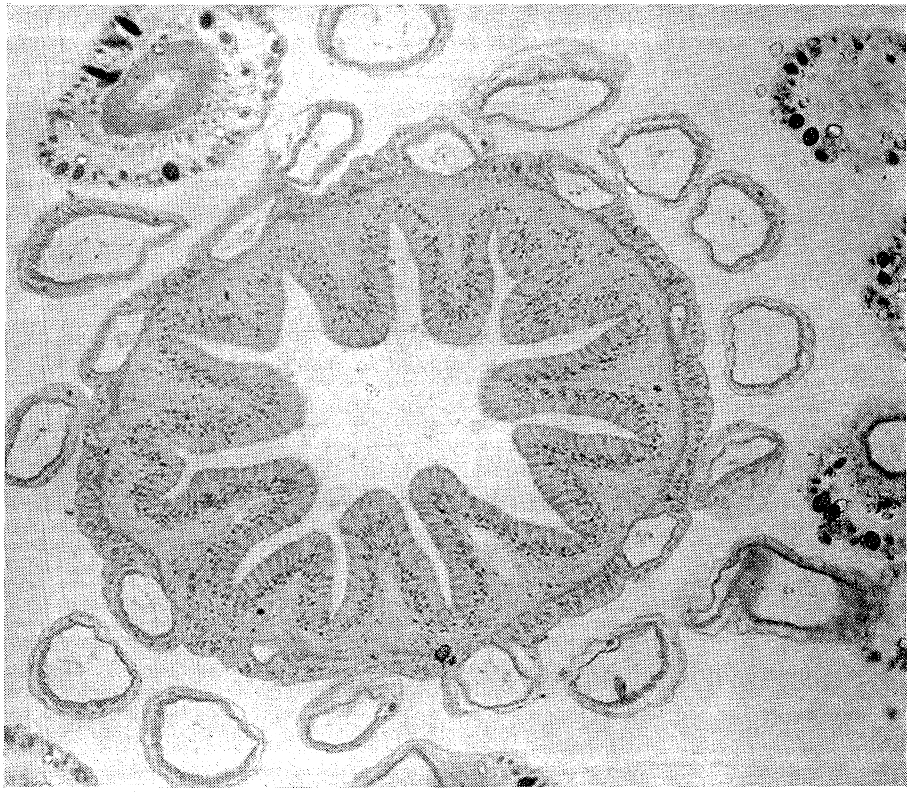
Fig. 1.—Transverse section through the ectoderm and supporting lamella of the body-wall in the tentacular region of the hydranth. From the outer surface of the supporting lamella arises a series of very closely placed thin, either simple or branched, secondary lamellæ. On each side of these secondary lamellæ is attached a layer of well-developed longitudinal muscle fibres. *Ect.*, ectoderm; *M.F.*, muscle fibres; *Sec. L.*, secondary lamella; *S.L.*, supporting lamella.

Fig. 2.—Transverse section through the stalk of a tentacle from the tentacle-bearing zone of the hydranth. The longitudinal muscle fibres are seen on the outer side of the supporting lamella.

Fig. 3.—Transverse section through the capitulum of a tentacle from the tentacle-bearing zone of the hydranth, showing the great thickness attained by the supporting lamella.

Fig. 4.—A large oviform nematocyst from the ectoderm of the hydranth.

Fig. 5.—One of the cylindrical nematocysts from the capitulum of the tentacle at the distal extremity of the blastostyle.



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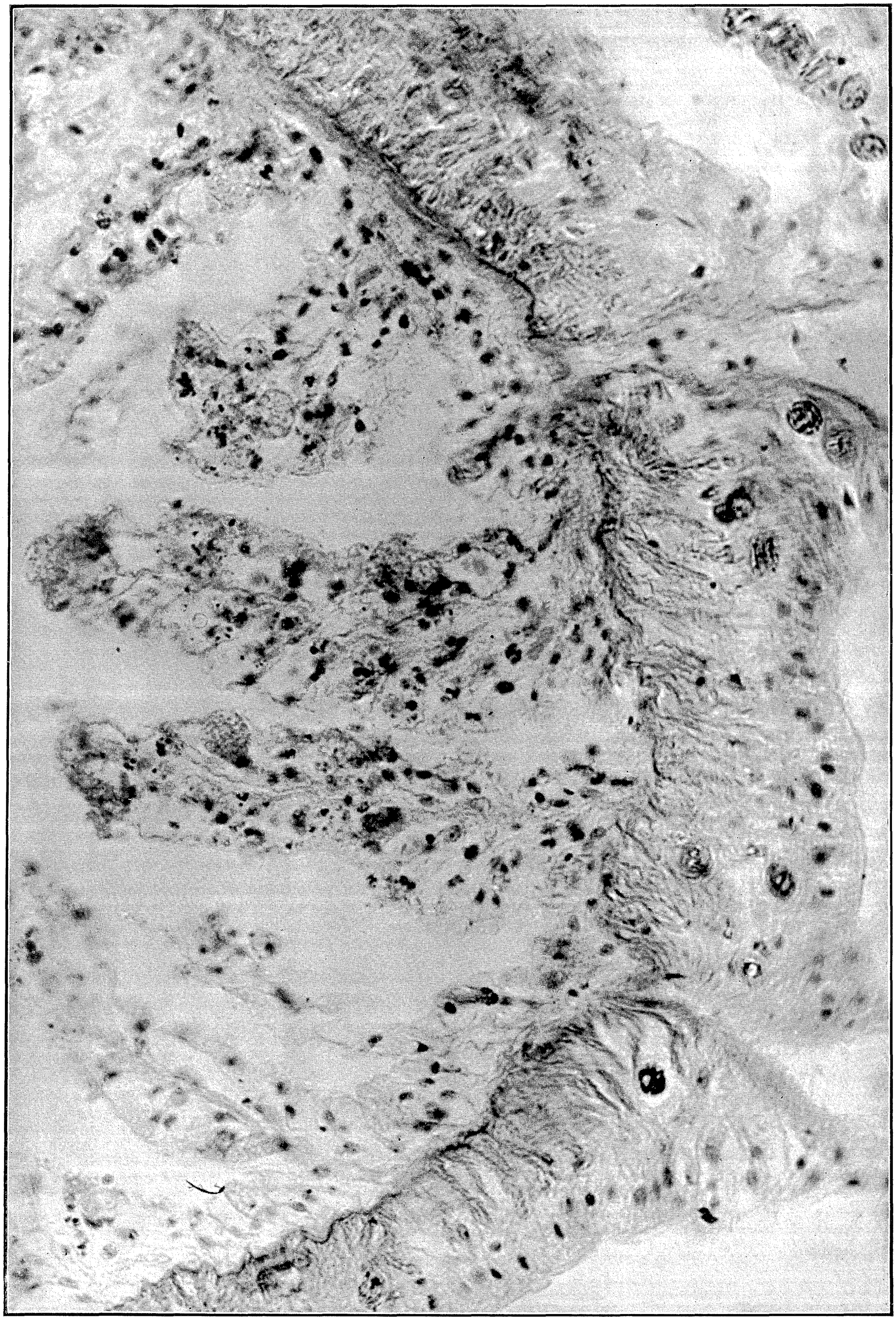

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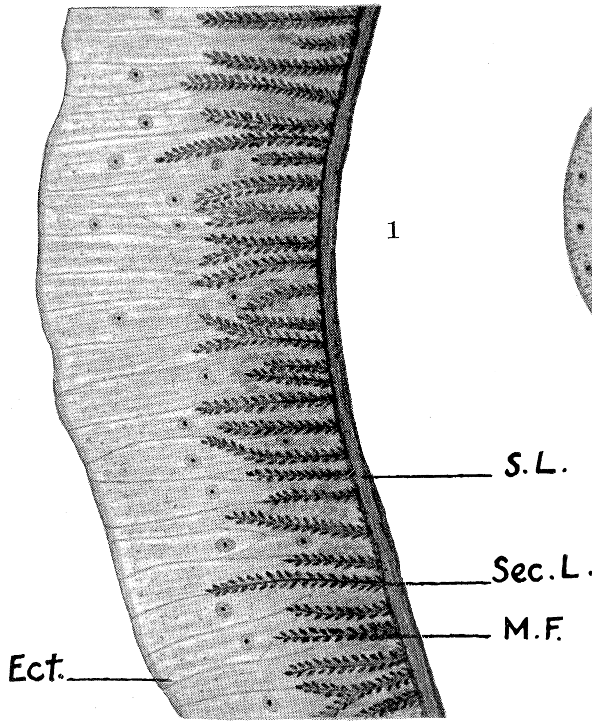

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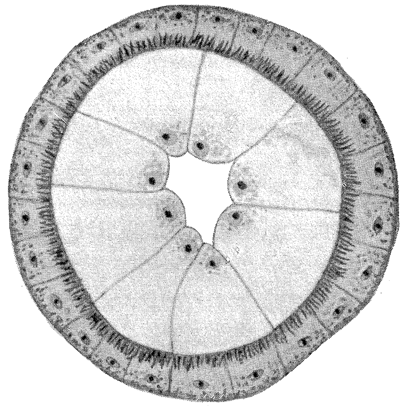

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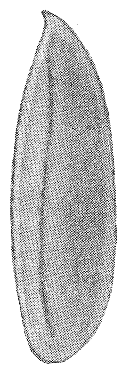

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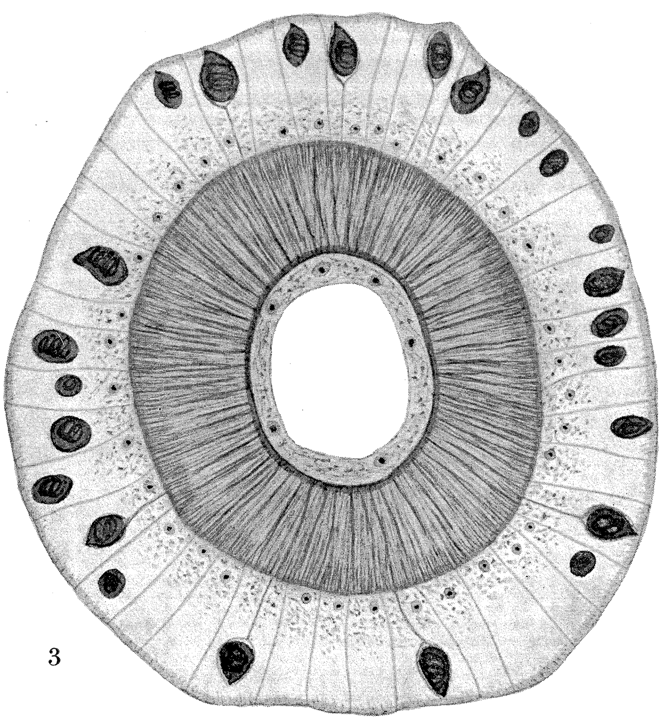

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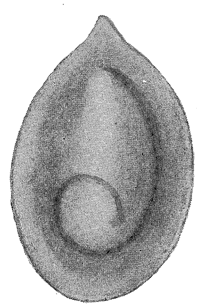

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