

This species has a great resemblance to the figure of *Closterium Cyllindrus*, but in that plant the puncta are described as arranged in longitudinal lines, whereas in *Cosmarium Cucurbita* they are scattered.

I am indebted to the Rev. M. J. Berkeley for determining the name of this plant, and also for an opportunity of comparing it with an authentic specimen.

PLATE XI. fig. 10. *C. Cucurbita*: *a*, front view; *b*, new segments; *c*, empty frond; *d*, transverse view.

Analysis.

- | | | | |
|----|---|--|------------------------|
| 1. | { | End view circular; constriction in the front view not forming a linear notch at the side | 2 |
| | { | End view not circular; constriction in the front view forming a linear notch on each side. | |
| 2. | { | Frond minutely punctated, the outline entire | <i>Cucurbita</i> . |
| | { | Frond furnished with pearly granules which give a dentate appearance to the outline | 3 |
| 3. | { | Segments subcylindrical | <i>cylindricum</i> . |
| | { | Segments spherical | <i>orbiculatum</i> . |
| 4. | { | End view lobed | <i>ornatum</i> . |
| | { | End view elliptic or elliptico-lanceolate..... | 5 |
| 5. | { | Segments in the front view subquadrate | <i>quadratum</i> . |
| | { | Segments not quadrate | 6 |
| 6. | { | Fronds oval, slightly compressed | <i>ovale</i> . |
| | { | Fronds not oval, much compressed | 7 |
| 7. | { | Segments entire, without puncta or granules | <i>Cucumis</i> . |
| | { | Segments dentate or crenate, the surface punctated or granulated | 8 |
| 8. | { | Segments truncato-triangular | <i>Botrytis</i> . |
| | { | Segments not truncate | 9 |
| 9. | { | Fronds crenate; surface minutely punctate | <i>crenatum</i> . |
| | { | Fronds generally dentate; surface granulated | <i>margaritifera</i> . |

XLIX.—*Catalogue of Irish Entozoa, with observations.* By O'BRYEN BELLINGHAM, M.D., Fellow of and Professor of Botany to the Royal College of Surgeons in Ireland, Member of the Royal Zoological, Geological and Natural History Societies of Dublin, &c.

[Concluded from p. 323.]

Order 5. CYSTICA.

(Derived from *κύστις*, *vesica*.)

THE order *Cystica* includes the Entozoa whose organization is the most simple. The animals are included in a membranous sac containing also an aqueous fluid, and generally inclosed in an outer and thicker sac. The body is flattened or cylindrical, terminating posteriorly in a vesicle for each individual, or common to several, within which in some genera the body can be retracted.

The head is furnished with four discs or suckers, and a proboscis armed with a double or single circle of recurved hooks; or with two or four depressions, and four retractile armed processes. In the genus *Acephalocystis* (the lowest in the scale) both head and body are absent, the vesicle or sac alone remaining.

In none of the Cystic Entozoa have generative organs been discovered, the reproductive power appearing not to be limited to any part of the cyst. Neither has any trace of a nervous system been detected in these animals.

Genus 19. CYSTICERCUS.

(Derived from *κύστις*, *vesica*, and *κέρκος*, *cauda*.)

Gen. Char.—Body subcylindrical or flattened, terminating posteriorly in a caudal vesicle. Head provided with four discs and a very short proboscis, which is armed with a double circle of minute sharp recurved hooks. Contained solitary in a single cyst.

This genus was established by Bloch under the name *Hydatigera*, changed to *Vesicaria* by Schrank, and to *Cysticercus* by Zeder, which term has been adopted by Rudolphi and all zoologists. The body of many of the species is marked with transverse lines, resembling articulations. The digestive apparatus consists of the four circular orifices or discs already mentioned, by which they are supposed to absorb the fluid secreted into the adventitious cyst in which they are contained; from these orifices the absorbed fluids are carried by four slender canals towards the caudal vesicle.

The species of this genus are almost altogether confined to the mammalia; Rudolphi enumerates fourteen species, seven or one half of which are doubtful.

- | | | |
|--------------------------------------|---|--|
| 1. <i>Cysticercus fasciolaris</i> *. | { | Cysts in liver of rat (<i>Mus decumanus</i>). |
| | | Cysts in liver of mouse (<i>Mus Musculus</i>). |
| 2. ————— <i>tenuicollis</i> .. | { | Cysts in peritoneum covering liver of pig (<i>Sus Scrofa</i>). |
| | | Cysts in peritoneum covering liver of sheep (<i>Ovis Aries</i>). |

* I have only found the *Cysticercus fasciolaris* in cysts in the liver of the mouse and rat (*Mus decumanus*); much more frequently in the former than the latter. In certain localities they appear to be very rare, and in others very common; usually but one exists; the largest number I ever found in the liver of the same mouse was seven; they were contained in separate cysts, and were of small size. These might readily be taken for a different species from the full-grown specimens, the caudal vesicle being much longer than the body, and the rostellum appearing to be destitute of spines. The shape of the head is also different in some specimens of this species which I possess.

3. $\left\{ \begin{array}{l} \textit{Cysticercus cellulosa}^* \\ \textit{Tænia cellulosa} \text{ (Pen-} \\ \text{nant, Turton)} \dots \end{array} \right\}$ Cysts in cellular tissue of pig (*Sus Scrofa*).
4. *Cysticercus pisiformis*.. $\left\{ \begin{array}{l} \text{Cysts in peritoneum of rabbit (} \textit{Lepus} \\ \textit{Cuniculus} \text{).} \end{array} \right\}$

Species dubiæ.

5. *Cysticercus*†. Cysts in abdomen of loach (*Cobitis barbatula*).

Genus 20. ANTHOCEPHALUS.

(Derived from *ἄνθος*, *flos*, and *κεφαλή*, *caput*.)

Gen. Char.—Body soft and flattened, often nearly cylindrical, varying in length in different species; terminating posteriorly in a vesicle, within which the head and body can be retracted. Head provided with two or four ear-shaped depressions and four re-

* 'The *Cysticercus cellulosa* occurs both in the human subject and in the pig (*Sus Scrofa*), at least the species are considered to be identical. It is very rare in the human subject, and is also of very minute size, so that it may perhaps frequently have been overlooked. It is much more common in the pig, and when abundant gives to the flesh of the animal the appearance which has been termed *measles* or *measly*. Its development is favoured by bad feeding, cold, and too much confinement, the animal does not thrive, becomes weak and emaciated; eventually diarrhœa sets in, the hairs may fall off, or the posterior extremities become paralysed, the body exhales a disagreeable odour, and the flesh is unfit for food. When the disease is at all advanced it is perfectly incurable.

† Upon one occasion I found in the abdominal cavity of the common loach (*Cobitis barbatula*) several very minute globular cysts, not exceeding in size the head of a small pin, and of a white colour; they were attached to the intestines and liver by short and fine cords, and consisted of an outer transparent coat and an internal more opaque one; on incising carefully the external coat the internal cyst was protruded, and after this had remained for a short time in water the head was protruded and afterwards the proboscis, the internal cyst forming the caudal vesicle.

When the animal was fully protruded, its length was greater than that of the external cyst. There was no appearance of body between the head and caudal vesicle until the latter was detached; it is extremely short and transversely rugose. The caudal vesicle is diaphanous, and about its centre an opaque white body was seen, from which a narrow line extended to the head. The head and proboscis together measure about half the length of the caudal vesicle. The proboscis is subcylindrical, and unarmed apparently, about the same length as the head, and is capable of being retracted within a kind of sheath formed by the head. The latter is spherical; the four oscula were seen in some; but in others, owing to the minuteness of the animal, I was unable to see those parts.

tractile tentacula, armed with recurved hooks. Contained in a double cyst, to which they are not adherent.

This genus, under the name *Floriceps*, was established by Cuvier. Rudolphi changed the name to *Anthocephalus*, which has been adopted by zoologists since. The species are only found in fish, and are not numerous, Rudolphi enumerating but five species.

1. *Anthocephalus elongatus* * . { Cysts in peritoneum and liver of
sun-fish (*Orthogoriscus Mola*).
2. ————— *granulum* ? † { Cysts in peritoneum of whiting
(*Merlangus vulgaris*).
Cysts in abdomen of pouting (*Gadus luscus*).

* In the month of July 1839 I found several specimens of the *Anthocephalus elongatus* in cysts upon the surface of the liver and intestine of the sun-fish (*Orthogoriscus Mola*). This remarkable species has been well figured by Bremser, and is described in Rudolphi's work. I gave a short description of it and some other species from the same animal in the last volume of Charlesworth's 'Magazine of Natural History'; subsequently I was amused to see a description of (what appears to be) this species in one of the numbers of the 'Edinburgh Philosophical Journal,' in which it is considered a new species and named accordingly.

† In the month of April 1838 I found several pyriform and oblong cysts of a yellowish colour in the abdominal cavity of the whiting (*Merlangus vulgaris*); some were attached by a slender cord to the pyloric appendages or stomach, others were imbedded between the coats of this viscus or of the intestine. On making an incision a second cyst was protruded, which changed its shape on being placed in water, and evidently had some motion. The largest measured from two to three lines; they were white, pellucid, and dotted with minute opaque spots; on making an incision into these a little fluid escaped, and the head of an *Anthocephalus* was protruded, which was moved about freely; the four tentacula were visible through the parietes of the anterior portion of the body, rolled up in a spiral manner, and were gradually protruded one after the other.

The largest specimen measured half an inch, including the caudal vesicle; the smallest about one line; and the cysts in which they were immediately contained appeared to form the caudal vesicle. When the animal was alive the head appeared to have four depressions (bothrii), two upon each side, the shape of which was continually changed; when dead, there appeared to be only two, which had somewhat an ear-shape, the margin being tumid. The tentacula, when fully protruded, measured double the length of the head; each was curved inwards at its extremity, and each was armed with three rows of recurved hooks, the longest situated along the inner margin.

The body in the largest specimen measured three lines, was rather

3. *Anthocephalus paradoxus* { Cysts in peritoneum of turbot (*Pleuronectes maximus*).
(Dr. Drummond) }

Species dubiæ.

4. *Anthocephalus* . . { Cysts in abdomen of hake (*Merluccius vulgaris*).
Cysts in abdomen of gray gurnard (*Trigla gurnardus*).
Cysts in abdomen of red gurnard (*Trigla Pini*).
5. *Anthocephalus** . { Cysts in abdomen of holibut (*Hippoglossus vulgaris*).
Cysts in abdomen of haddock (*Gadus Æglefinus*).
6. *Anthocephalus* . . { Cysts in abdomen of whiting-pollack (*Merlangus Pollachius*).
Cysts in abdomen of coal-fish (*Merlangus Carbonarius*).
7. *Anthocephalus* . . { Cysts in abdomen of conger-eel (*Anguilla Conger*).

flattened than cylindrical, nearly of the same diameter throughout, and dotted towards the caudal vesicle with very minute opaque spots. In the posterior half of the body two opaque bodies could be seen through the parietes, which were cylindrical, rounded posteriorly, and lay parallel to each other; each appeared to terminate anteriorly in a whitish narrow cord which ran somewhat spirally towards the head. The caudal vesicle varied in shape, in some specimens being as long as the head and proboscis together, in others shorter and broader; its diameter was greatest where it joined the body, and it was also dotted all over with very minute opaque spots.

* In the month of November 1838 I found a number of cysts in the mesentery, peritoneum, and under the peritoneal coat of the liver of the holibut (*Hippoglossus vulgaris*), upwards of three-quarters of an inch in length; these contained other cysts, on making an incision into which, an *Anthocephalus* was protruded from each, which moved sluggishly in water for a short time. The longest measured nearly half an inch, the shortest three lines.

With some difficulty I was able to examine the head, which is not unlike that of the *Anthocephalus macrourus* in outline, but differed in having only two bothrii, which were deep and of an oval shape; from each two slender tentacula were protruded, which were armed as in the other species, and through the parietes they were seen to be continued backwards and spirally twisted. The head is tetragonal, the neck cylindrical, and within it the head can be retracted. The body cylindrical, apparently articulated in some, while in others no trace of articulation existed; its parietes translucent. The rest of the animal granular and opaque.

Genus 21. CÆNURUS.

(Derived from *κοινός*, *communis*, and *οὐρά*, *cauda*.)

Gen. Char.—A simple vesicle filled with fluid common to a number of individuals, to which they are adherent. Body soft, extremely short, somewhat cylindrical, rugose rather than articulated. Head distinct, provided with four discs and a short armed rostellum, similar in almost every respect to that of the *Cysticercus*.

The digestive apparatus consists of four suctorial mouths, from which canals have been traced backwards towards the common vesicle, but not continued into it. The genus was established by Rudolphi for a species which is occasionally developed in the brain of sheep and other Ruminantia.

<i>Cænurus cereбрalis</i> *		} Brain of sheep (<i>Ovis</i> <i>Aries</i>).
<i>Polycephalus cereбрalis</i> (T. Laennec) ...	...	
<i>Tania cereбрalis</i> (Pennant, Turton)		

* The *Cænurus cereбрalis* consists of a vesicle of a larger or smaller size common to many individuals; the latter being disposed in groups over its surface, and appearing to the naked eye merely as clusters of opake white spots. The heads resemble those of the *Cysticerci*, each being provided with an uncinated proboscis and four discs, from which canals have been traced towards the common vesicle, but not continued into it.

The development of the *Cænurus cereбрalis* in the brain of sheep gives rise to the disease known to shepherds under the name of *staggers*, or bladder in the brain; they are very seldom found in animals above two years old, and they may be seated in the ventricles of the brain, in its substance, or upon its surface; in the two former cases the disease is nearly incurable, in the latter the animal may be relieved by an operation. The symptoms of course are owing to pressure upon the brain, which will increase as the *Cænurus* increases in size, and will vary according to the situation in which the entozoon is developed, and to the amount of compression which it occasions.

In the early stage of the disease the animal appears to be stupid, does not keep with the flock, staggers in moving, and hangs its head; the pupil is dilated, and becomes circular instead of oval. In the advanced stage of the disease I have seen the animal with its head inclined to one side, and hanging so low that its nose almost touched the ground; at the same time it continued to turn round upon the same spot for many hours; it appeared to be blind, and would not feed.

When the *Cænurus cereбрalis* is developed upon the surface of the brain, or near to it, the pressure causes absorption of the bone at the part, the skull becomes thinned and soft at this place, and the operation of perforating the bone and evacuating the contents of the vesicle has been sometimes successfully performed. In general

Genus 22. *ACEPHALOCYSTIS*.(Derived from *a, non, κεφαλή, caput*, and *κύστις, vesica*.)

Gen. Char.—A simple sac filled with a transparent fluid, the coats of which vary in thickness and transparency. Without either head or body. The young developed between the laminæ of the parent cyst, and thrown off either internally or externally.

The genus *Acephalocystis* is not included by either Rudolphi or Bremser among the Entozoa; Prof. Owen however has shown that it is entitled to a place here. The animals which it embraces, usually termed *Hydatids* by pathologists, are amongst the lowest in the scale, consisting when young merely of a simple globular sac filled with a transparent fluid, which coagulates by heat; without either body or head. When this sac attains a certain size the young are developed between its laminæ, and the gemmules are detached sometimes from the internal surface, as in the *Acephalocystis endogena*; sometimes from the exterior, as in the *Acephalocystis exogena*. These increase in size and go through the same changes as the parent cyst.

But little attention has been paid to the specific distinctions between, or to the classification of, these animals. M. T. Laennec described seven species, but his names have not been generally adopted.

1. $\left\{ \begin{array}{l} \textit{Acephalocystis endogena}^* \\ \textit{ovoidea} \text{ (T. Laennec) } \dots\dots\dots \end{array} \right\}$ Cavity of abdomen, liver, kidney, and other parts of man (*Homo*).

the operation called *wiring* is preferred; this consists in passing a stiff wire or tube into the nostril upon the side on which the skull has become thinned, and pushing it through the brain up to this point, and thus emptying the cyst. This operation is sometimes, as may be supposed, immediately fatal; at others the injury to the brain excites acute inflammation, the animal moans piteously, and appears to suffer great pain before it dies.

* The *Acephalocystis endogena*, the pill-box hydatid of Hunter, is not very unfrequently met with in the liver and kidney of the human subject, as well as in the ovary, testis, and cavity of the abdomen, constituting a particular form of disease. They usually occur in considerable numbers, and may be developed in the substance of an organ or upon its exterior; in the former case they are always inclosed in an adventitious cyst, formed of condensed cellular tissue. They vary in size from a pin's head to that of an orange, and have been seen as large as the foetal head. The gemmules are spherical and very small; after being detached they remain for some time in the parent cyst; ultimately however they increase in size, they distend and rupture the parent cyst, and each becomes a parent cyst in its turn.

Species dubiæ.

2. *Acephalocystis* *. Choroid plexus of brain in man (*Homo*).

* The little transparent globular vesicles which are occasionally found attached to the choroid plexus in the brain of the human subject are denied to be hydatids by pathologists, and are considered to be merely accidental distensions of the coats of the veins in the part; I have however reason to believe that they are really *Acephalocysts*, as they develope gemmules, which are detached from the inner surface of the cysts. These are very small and globular, varying somewhat in size, the largest being visible to the naked eye like little opaque points; their coats are transparent; they were most abundant upon that surface of the vesicle which was attached to the plexus; they existed in considerable numbers, and were readily detached from the parent vesicle.

The larger cysts were in many instances attached to the vein, but did not communicate with its cavity. In some the external coat of the vein appeared to have been expanded to form them. The fluid which they contained was coagulated by alcohol.

L.—*Observations on the Organogeny of the Flower, and particularly of the Ovary, in Plants with a free central Placenta.* By M. GAUDICHAUD†.

AFTER some remarks on the state of organogeny at the present time, M. Gaudichaud gives the following brief summary of the principles of that department of botanical science:—

“1. All organization commences in the cell.

“2. Every so-called appendicular organ of vegetation and fructification results from a cell endued with vitality.

“3. The organized cell produces a bud of leaves, flowers or ovules.

“4. All pre-exists in every such bud; no fresh organization is added to it, any more than to the cell.

“5. The order of succession of the parts in the leaf- or flower-buds, as well as in the ovules, always takes place from the circumference to the centre.

“There are two great organic types in vascular vegetables, Monocotyledons and Dicotyledons. In Monocotyledons the cells always become endued with vitality one after another, one by another, to produce distinct univascular individuals, which obey an organogenic law yet unknown. This law, which regulates the deviations and arrangements, produces what we call verticils. The

† From a Report by M. Gaudichaud on a memoir of M. Duchartre bearing the above title, abstracted by A. Henfrey, F.L.S., from the ‘*Comptes Rendus*,’ Aug. 19, 1844.



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