

des muscles. Ainsi p. ex. le rétracteur de la première poche du pénis (fig. 8a, r.) peut former un faisceau unique, comme le montrent les fig. 8d et 9d, mais son extrémité peut aussi se diviser en 2, 3, 4 filaments, cela sur une distance variable, ce qui peut conduire enfin à la division du rétracteur en deux muscles séparés (fig. 9, c.) Quelquefois un filament de ce muscle, au lieu de s'attacher à la première poche du pénis, se réunit au rétracteur de la seconde poche (fig. 8, c.).

On observe la même variabilité dans les protracteurs. Les figures ci-jointes (fig. 8 et 9) illustrent beaucoup mieux la diversité de ces muscles que la description la plus détaillée. La fig. 8 représente les poches du pénis de *L. auricularia*. — Fig. 9 celles de *L. ovata*.

Le lecteur qui s'intéresse à cette variabilité trouvera un nombre plus grand de dessins dans ma note: «Przyczynek do znajomości anatomji narządów płciowych u błotniarek podrodzaju *Gulnaria* Leach» qui fut présentée à la «Société Scientifique de Varsovie» et sera publiée dans son «Bulletin». On y trouvera aussi des photographies des coquilles des deux espèces étudiées, ainsi qu'une table des dimensions de la coquille, du réceptacle séminal avec son canal et des deux poches du pénis.

Ruda Maleniecka, le 20 janvier 1914.

### 5. *Dermocystidium pusula* Pérez, parasitic on *Trutta fario*.

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(With 5 figures.)

eingeg. 26. Januar 1914.

The material on which the following notes are based was obtained from a trout, *Trutta fario*, caught in the Owenwee River, near Westport, Co. Mayo, Ireland when I was engaged on the Clare Ireland Survey in that district. Noticing small cysts on the gills of one of the trout examined I carefully preserved, sectioned and mounted the material, expecting to find them due to a Myxosporidian. To my disappointment I found that the large majority of the cysts were due to glochidia larvae of a *Unio* or *Anodonta*, which had embedded themselves in the soft tissues. Two of the cysts however were quite different in character from those due to the glochidia larvae. The position of such a cyst (a) is seen in fig. 1, which shows that the cyst, which is about 300  $\mu$  in diameter, has displaced to one side, and now lies in the position of the delicate villi of the gill lamella, a large amount of proliferation of the gill epithelium has taken place (fig. 1, b) and the neighbouring gill lamella has been distorted owing to the presence of the cyst. A thick cyst wall, evidently contracted by the process of preparation, surrounds a mass of protoplasm only indistinctly divided into separate cells 6—7  $\mu$  in dia-

meter. In each of these small cell areas is a very clear vesicular nucleus. In most sections of the cyst the contents appear to consist of nothing but these small crowded cells, and there is no peripheral zone of proliferating tissue such as is seen in *Rhinosporidium*. The only signs of nuclear division were such doubtful stages as that figured in figs. 2 and 4 and these were excessively rare. There is little or no resemblance to any of the Haplosporidia described by Caullery and Mesnil and others. On examining certain of the sections it was found that there were patches (fig. 3) containing cells which differed from those above described. Such a cell is figured in fig. 5 and exhibits a nucleus resembling that of the cells first described, but this nucleus and the cytoplasm are seen to

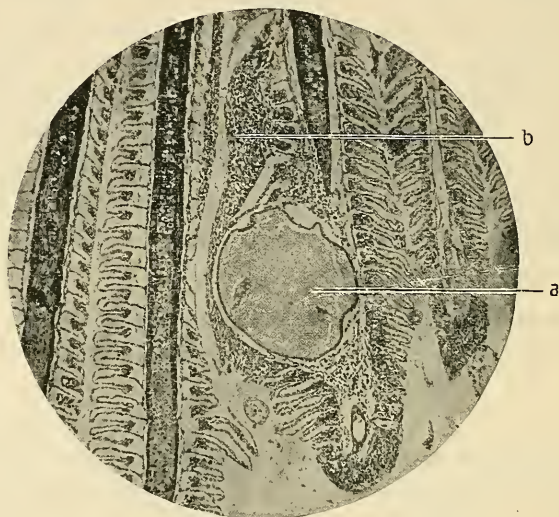


Fig. 1. Section of gill of *Trutta fario* showing position of cyst (a) and proliferation of epithelium at (b).  $\times 62$ .

be pushed to one side of the cell in order to make room for a large body or large bodies of doubtful significance. These cell inclusions stain deeply with Iron Haematoxylin, the centre being more deeply stained than the periphery. Exactly similar cells have been described by Pérez (3 and 4) and Moral (2) from cysts found in the skin of Newts, *Triton cristatus* and *T. marmoratus*, while Pérez (4) mentions that Professor Léger has seen a similar parasite on the gills of *Trutta fario* in the Dauphiné. Pérez has described and figured the second kind of cell (fig. 5) alluded to above so well, that I can add nothing to his description, and I have nothing to add to his and Moral's (2) description of the peculiar cell inclusion. Neither Pérez nor Moral however, described any other type of cell than those containing the large in-

clusions, and they recognised that they were dealing with a part only of the parasite's life-history. It would seem also from Pérez's researches, since he apparently had a considerable amount of material at his disposal, that any other stage must be rare.

In the younger parts of the cyst, the cell outlines, it will be noticed (figs. 2 and 3) are less definite, so that the appearance of a plasmodium is suggested, whereas in those parts where cell inclusions have appeared, the cell walls are quite distinct, as was noted by Pérez. Cases of nuclear division, however, are non-existent unless figs. 2 and 3 represent such, and the appearance of a centrodesmose in (fig. 2, *a*) is indistinct. Careful search was made in the surrounding tissues for loose spores described by Pérez as being found within phagocytes, but none were found,

Fig. 2.



Fig. 3.

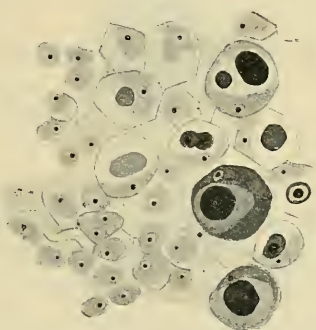


Fig. 4.



Fig. 5.

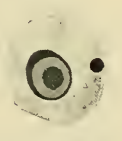


Fig. 2. Portion of section showing wall on the right and nuclear division (?) at (*a*).  $\times 2700$ .

Fig. 3. Portion of section showing young cells often without definite cellwalls, and also older cells with definite cellwalls and inclusions.  $\times 1300$ .

Fig. 4. Late stage in nuclear division (?). Cystwall on right.  $\times 2700$ .

Fig. 5. Older cell with cell inclusion.  $\times 2500$ .

and this also tends to show that the cysts dealt with in this paper were less advanced in development than those seen by Pérez, in some of which the cyst wall had ruptured. It will be seen from figs. 1, 2 and 4 that the cyst wall is thicker than figured by Pérez but that may be due to the difference in the host. In any case I agree with him that the wall bears the appearance of having been secreted by the parasite and not by the host, the outer border being more definite than the inner.

To sum up, there are at present known two stages of *Dermocystidium*. The one, described in this paper, consists of a plasmodium or a mass of ill-defined cells within a cyst wall, while the next stage shows a collection of distinct cells, each with a peculiar cell inclusion, and it is at this stage that the individual cells or spores (?) are set free by rupture of the cyst membrane. The fact that at one stage of its life-



history the cells of *Dermocystidium* are without the characteristic cell inclusion is another distinction, to be added to those enumerated by Pérez, between it and *Blastocystis* Alexeieff. As regards the specific name of the *Dermocystidium* found by me on the trout, I have no evidence that this is a species distinct from that found by Pérez on the Newt, and must therefore be content to record it as *Dermocystidium pusula* (?).

#### Literature.

- 1) Alexeieff, A., "Sur la nature des formations dites 'kystes de *Trichomonas intestinalis*'"; C. R. Soc. Biol. T. 71. 1911. (296—298, 1 fig.).
- 2) Moral, Hans, "Über das Auftreten von *Dermocystidium pusula* Pérez. . . ." Arch. f. mikr. Anat. Bd. 81. 1913 (381—393. pl. 29).
- 3) Pérez, Charles, "*Dermocystis pusula*, . . ." C. R. Soc. Biol. T. 63. 1907 (445—447).
- 4) —, "*Dermocystidium pusula*, parasite de la peau des Tritons." Arch. de Zool. expér. T. 52. 1913 (343—357. pl. 14).

### 6. Über die Myxosporidien der Karausche.

Von Frl. S. Klokáčewa, St. Petersburg.

(Mit 2 Figuren.)

eingeg. 5. Februar 1914.

Beim Sammeln von Material über die Entwicklung verschiedener Myxosporidien fand ich unter andern recht interessante Myxosporidien bei der gewöhnlichen Karausche (*Carassius vulgaris*). Da eine Art derselben nicht genügend genau beschrieben war, die andre sogar als vollkommen unbekannt sich erwies, gebe ich hier eine möglichst vollständige Beschreibung der von mir erhobenen Befunde.

#### I.

Bei der Eröffnung der ersten Karausche wurde meine Aufmerksamkeit bereits auf ein weißes, frei in der Leibeshöhle des Fisches gelegenes Gebilde gelenkt. Auf dem Objektträger, durch leichtes Aufdrücken des Deckglases zerdrückt, entleerte es eine milchweiße Masse, die unter dem Mikroskop sich als eine Anhäufung einer zahllosen Menge relativ großer Sporen erwies. Bei zwei von drei weiteren seziierten Karauschen fand ich in der Leibeshöhle ebensolche weiße mit Sporen angefüllte Cysten. Bei einem dieser zwei Exemplare waren zwei ähnliche, kugelförmige, gelbliche Geschwülste in der Leber und eine am Hinterdarm. Dieses Material gab mir die Möglichkeit, die Struktur der Sporen der von mir gefundenen Myxosporidie ausführlich zu studieren, ohne mir jedoch irgendwelchen Hinweis auf ihre Entwicklungsgeschichte zu geben.

Die Sporen haben im Längsdurchschnitt (Fig. 1), d. h. in einer der Sporennah parallel en Ebene, Eiform. Von außen sind sie gleichsam von einer doppeltkonturierten Hülle umgeben, die die Naht darstellt,

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