

A NEW PROLIFERATING LARVAL TAPEWORM FROM A PORCUPINE

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Under date of January 13, 1924, A. H. Twitchell, of Takotna, Alaska, a correspondent of the Bureau of Biological Survey, forwarded to that bureau from Ophir, Alaska, a portion of lung from a porcupine containing tapeworm cysts, with the following comments:

I am sending you by parcel post one box containing a piece of lung of a porcupine with what we believe to be cysts of a tapeworm. It is preserved in salt brine. Collected by C. A. Fowler; data with specimen. We have many of these porcupines on the range and I have suspected that they may be the source from which our deer get some of their parasites. I did not see this one, but only took the bottled specimen and shipped it. Tapeworms and other worms are often found in great numbers in porcupines. I have never seen a porcupine in this condition.

The question of the probable specific identity of the host was referred to Dr. Hartley H. Jackson, of the Biological Survey, who replied as follows:

The porcupine of that region is probably *Erethizon epixanthum myops* Merriam. At least you may be sure of the species *Erethizon epixanthum* Brandt.

Examination of the material forwarded by Mr. Twitchell showed two detached cysticerci and a number of cysticerci attached to the lung tissue, some being attached directly to the lung by means of a peduncle that penetrates into the lung tissue and others being attached indirectly, the peduncles of the individual cysticerci converging to a more or less common origin from which a stalk penetrates into the lung substance. Aside from the fact that the species has been heretofore undescribed it is of particular interest in view of the fact that it is a proliferating larval cestode, belonging to the genus *Taenia* in which group multiplication of larval forms by means of budding is comparatively rare.

TAENIA TWITCHELLI, new species, 1924

Strobilate tapeworm unknown. Cysticerci from 0.7 cm. long by 0.4 cm. wide to 2 cm. long by 0.6 cm. wide, occurring singly and in

colonies, the latter branching in typical dendritic fashion. The cysticeri enter into the lung tissue by basal stalks or peduncles, which in the case of single cysticeri penetrate directly into the lung substance, and in the case of colonial cysticeri, are connected to larger stalks which ultimately penetrate into the lung. Head invaginated, 0.9 mm. wide in press preparation, armed with a double row of hooks, consisting of 18 large hooks and 18 small hooks (fig. 1). The large hooks (fig. 2*a*) are from 189μ to 198μ long. They have a blade of marked curvature, a handle which is long and thick and which is only slightly sinuous in outline on its dorsal surface, the ventral surface being smooth. The dorsal surface of the handle forms a continuous line with that of the blade. The surfaces of the handle are almost parallel, the posterior end of that structure being bluntly rounded. The guard is strikingly long, bifid, and conical in shape, its maximum diameter being in the region of its union with the blade and handle. The small hooks (fig. 2*b*) are from 155μ to 163μ long. They have a strongly curved blade whose dorsal margin forms a continuous line with that of the handle. The latter has parallel margins and a rounded posterior end. The guard is bifid and has a bluntly rounded end. The suckers are elliptical in shape and have a maximum diameter of 165μ to 185μ .

Host.—*Erethizon epixanthum*.

Location.—Lung.

Locality.—Ophir, Alaska.

Type specimen.—United States National Museum Helminthological Collections, No. 26003.

The mode of branching is shown in figure 3. Two of the cysticeri are attached directly to the lung tissue (*b*), and so far as can be seen, have no connection with the remaining cysticeri which form a branching colony. The latter is connected by a stalk (*z*) that emerges from the lung substance and divides into two main branches, one branch (*x*) bearing a developed cysticerus and two small buds (*c*) growing out in the region of the base of the cysticerus. The second branch (*y*) bears several developed cysticeri and several small buds. The cysticeri converge to a more or less common origin, each cysticerus being connected to the main branch by means of a peduncle, with a single exception (*a*) in which two cysticeri are connected by a single peduncle the two bladders being joined about half way above their point of origin. The two isolated cysticeri (*b*) occur singly without buds or branches.

Multiplication of larval cestodes by means of budding is known to occur in *Sparganum*, in cysticeroids and in coenuri, is the rule in *Echinoccus*, and has been noted in cysticeri. A variety of *Cysticerus cellulosa* that exhibits the phenomenon of proliferation is fre-

quently referred to as *Cysticercus racemosus*, this form having been found in the human brain several times. Braun (1897) cites two additional cysticerci that exhibit the phenomenon of larval multiplication by budding, namely, *Cysticercus botryoides* and *Cysticercus longicollis*. With regard to the former which has been found only once by Boettcher in 1862 in the back muscles of a rabbit, there exists a divergence of opinion among helminthologists concerning its zoological status, certain writers taking the view that it is a coenurus. Braun (1897) is convinced, however, that it is a cysticercus allied to *Cysticercus longicollis*, the intermediate stage of *Taenia crassiceps* of the fox. Railliet (1895) regards *Cysticercus botryoides* as well as *Cysticercus racemosus* as a synonym of *Cysticercus cellulosae*. According to Braun (1897) the buds given off from the parent bladder of *Cysticercus longicollis* become detached, whereas in *Cysticercus botryoides* they remain in permanent union until they reach the definite host, which when its life history becomes known will probably be found to be true of the cestode discussed in this paper (*Taenia twitchelli*), so far as can be judged from appearances which indicate a permanent union of the cysticerci in the branching colony.

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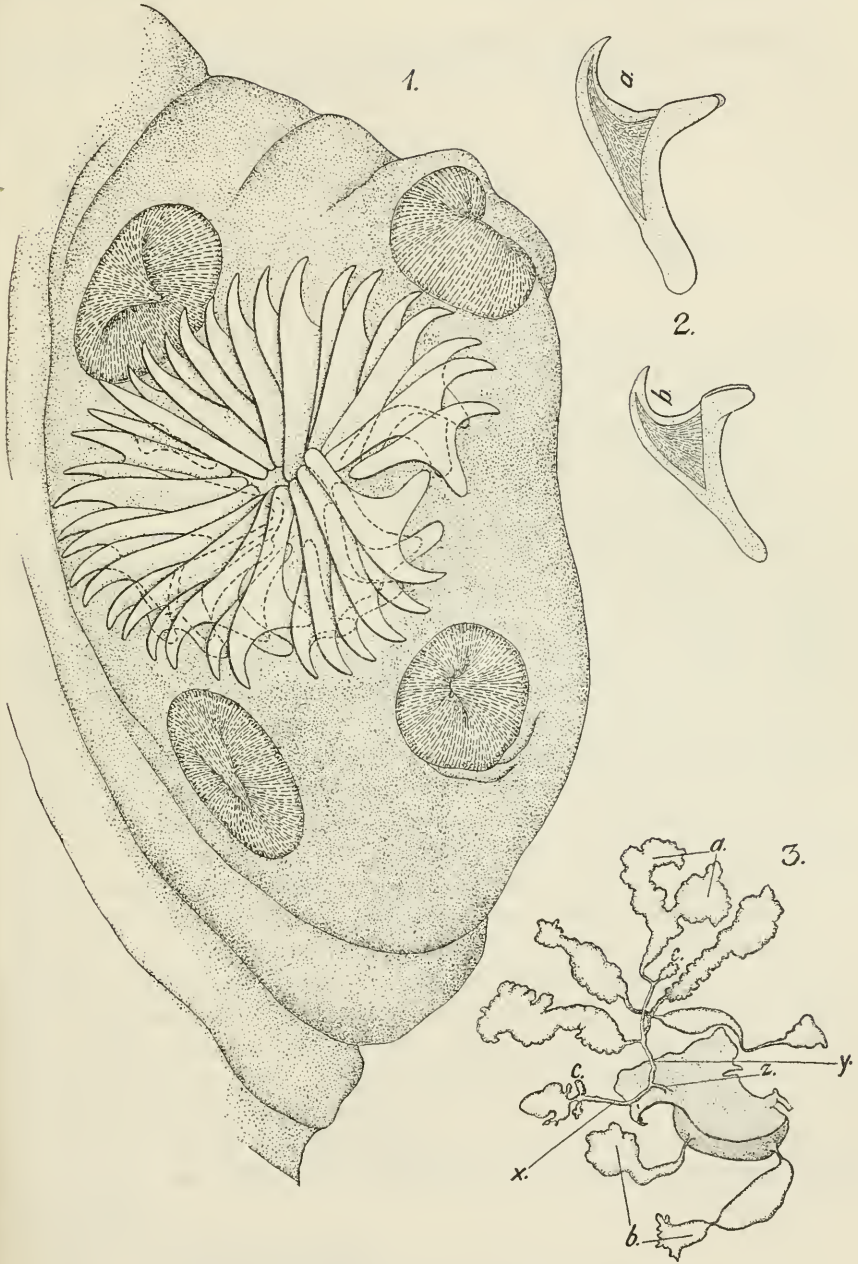
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EXPLANATION OF PLATE

- Fig. 1. Enlarged drawing of head of *Taenia twitchelli* showing suckers and hooks. (Press preparation.)
2. Large hooks (*a*) and small hooks (*b*) (enlarged).
 3. Showing the mode of branching of *Taenia twitchelli*. The stalk (*z*) embedded in the lung tissue bifurcates into two branches, one of which (*x*) bears a developed cysticercus and two buds (*c*), and the other (*y*) gives off a number of cysticerci. Two cysticerci (*a*) have a common peduncle by which they are attached to the main branch and an immature bud (*c*) at the base. Two cysticerci (*b*) each originate independently from the lung tissue and are not connected to each other or to the colony of cysticerci (enlarged).





TAENIA TWITCHELLI, NEW SPECIES.

FOR EXPLANATION OF PLATE SEE PAGE 4.