

## THE VETERINARIAN.

## THE LIVER-FLUKE.

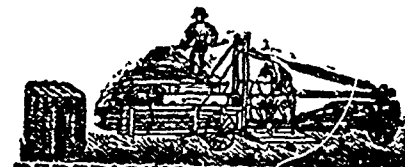
As it would seem that there are still some unacquainted with the teaching of science upon one pastoral enemy—i. e., the rot fluke, coathie, or bane—perhaps you will allow me to state in a few lines what Mr. A. P. Thomas (Balliol College, Oxford) has, after a series of experiments lasting through more than two years, ascertained, and has published in the *Quarterly Journal of Microscopical Science* for January, 1883, and in the *Royal Agricultural Society of England's Journal*, June, 1880, and June, 1883. It is impossible to exaggerate the importance, to every one connected with sheep and sheep farms, of studying this brief story. It is as interesting as a fairy tale, and has more startling transformations than any Christmas pantomime.

Flukes have been known to be found in cattle, horses, pigs, rabbits, hares, kangaroos, camels, and even in man himself. In every case in which flukes find an entrance at all, they enter in one way. That animal (in man's case, probably by eating watercresses without washing in salt and water) has swallowed with its food certain small bags, which in certain seasons are found attached to the herbage, which are called cysts. These cysts are in some seasons frightfully common, and found over a wide tract, but in ordinary seasons they occur only in low, marshy spots. These cysts are somewhat similar to the pupæ or chrysalides in which some insects lie for a while dormant. But the fluke-cysts cannot emerge of their own action; they must perish in a few weeks unless some warm-blooded animal swallows them. If this occurs, a wonderful series of development begins. The tiny germ expands in the cyst as soon as it is swallowed, and becomes the loathsome fluke above an inch long, whose ugly features have become known to so many farmers of late years. It is not unlike a small sole, and is even more prolific of eggs. (It is estimated that one fluke may give rise to 500,000 eggs.) These eggs, produced in myriads, pass from the diseased animal with the dung. If this falls on dry ground and drought follows, the eggs perish. If it falls in a moist spot, and water is near, and the thermometer stands over 60°, the egg hatches into an embryo in a few days, which, invisible to the naked eye, may be seen under the microscope, darting to and fro in water with incredible rapidity. Its activity is not purposeless, for its whole object is to come into contact with a special kind of snail which seems to be predestined to become its nurse and victim. As soon as the embryo touches this snail it commences to bore through its shell, and, succeeding in this, penetrates the snail,

and the second change takes place. The active embryo becomes a motionless sporocyst—a long word, which means bag of germs. This bag may either subdivide into two or more bags, each complete, and capable of reproduction; or it may at once, within the helpless snail, send forth rediæ. These rediæ (named after an Italian anatomist, Redi) are organisations capable of moving, which the sporocyst is not. Moving about within the snail, and supported by its juices, the rediæ give vent to tailed creatures called cercariæ, which resemble minute tadpoles. These wriggle out of the wretched snail's flesh either after it succumbs to their attacks, or whilst it still lives, and by help of the tail, move among the herbage, until they find a suitable stem to which the cercariæ attach themselves. Then the tail drops off, and each cercaria, forming a cover for itself, becomes a cyst and is ready for the next victim to swallow, and so to begin the round anew.

It will be seen, in this wonderful narrative, that the fluke egg gives birth to something quite unlike its parent, which never does become like it, nor lives where it lived. There has to be the intermediate host (the snail known as *Limæus truncatulus*), and the final host (the warm-blooded animal) before this kind of flat-worm (known as *Fasciola hepatica*) can run its career. A snail cannot take the infection directly from another snail, nor a sheep from another sheep; nor can snail and sheep suffice to spread the vermin without wet and warmth. Only in a small part of each year can the mischief be extended.

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ST. JOHN, NEW BRUNSWICK.

Opening 2nd October, 1883.

**ARRANGEMENTS** having been made by the Provincial Government of Nova Scotia to defray the expense of transit of all approved Live Stock and other Exhibits from Nova Scotia so far as the same is not met by the New Brunswick Government, Notice is hereby Given that persons desirous of exhibiting on such terms are required to send to Prof. Lawson, Halifax, **NOT LATER THAN 15th AUGUST**, a list of their proposed Exhibits, in order that the same may be examined by Members of the Central Board of Agriculture, with a view to approval and sanction. Intending Exhibitors will state whether any, and, if so, what portion of their Exhibits will be shown previously at the Provincial Exhibition at Truro.

Animals and other Exhibits not approved of and sanctioned by the Board will not be carried at the Government expense.

The decisions of the Board will be made known as early as possible, and in time to enable Exhibitors to make their entries with Mr. Inchee, the Secretary, in St. John, by 15th September, in accordance with Rule 5 of Dominion Exhibition Regulations. The Nova Scotia Government and Board assume no responsibility beyond assisting in defraying expense of carriage and facilitating the transit of Exhibits, Exhibitors being required to take the necessary charge of their own animals and other exhibits as usual.

By order of the Board of Agriculture of Nova Scotia.

GEORGE LAWSON, Secretary.

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Newport, May 21st, 1883. jly

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