

Indeed we are sanguine that steps will speedily be taken to set up the necessary administration for a reform long overdue, which should cut at the root of the fundamental cause of a terrible social evil in our midst.

We would urge, however, that the fathers also come under the Scheme of Tuition that they too be taught their paternal responsibility.

A. S. B.

And he who gives the child a treat
Makes joy bells ring in Heaven's street ;
And he who gives a child a home
Builds Palaces in Kingdom come.

JOHN MASEFIELD.

A Memorandum on *Taenia Saginata*.

By JAS. PARKINSON, M.S.I.A., C.R.S.I.

POST-WAR NURSING TEXT BOOKS state that tape worms in man are fortunately now rare in this country. This, however, can hardly be true since the causative agent *Cysticercus bovis* has been found in this country in beasts intended for food not only in hundreds but in thousands, and so far as medical science knows *Cysticercus bovis* can only arise from *Taenia saginata* and vice versa.

It would appear therefore that *Taenia saginata* in the human subject is increasing and that its presence is not, as has been suggested, entirely due to displaced persons, but these together with the presence of peoples from the American continent during the war years have caused the spread of the worm via beef to English Subjects.

The incidence of *Taenia saginata* is practically world wide, being found in all countries where the ox is used for human food. Its presence generally has been increasing in frequency during the last century. Statistics have not usually been kept but it has been stated that the number of cases in French maritime hospitals were seventy-five times as many during the years 1886 to 1890 as they were in the years 1861 to 1865. It has also been stated that the parasite was prevalent in Canada and the United States of America during the years immediately preceding the recent war.

Some 10 per cent of the cases of *Cysticercus bovis* recently notified were found in beasts that had not been out of the district in which they were born, some of them having lived on a farm from which previous cases had been reported.

Taenia saginata is the largest tapeworm or cestode and it also has the largest intermediate host. It is sometimes called *Taenia mediocanellata* on account of the median canal discernible in the segments, and sometimes *Taenia inermis*, because it is not furnished with hooklets on the head as a means of attachment to the alimentary canal of the human, as some other tapeworms are.

This tapeworm was probably known in ancient times and it has been suggested that it was the cause of prohibitions on the eating of certain kinds of flesh under certain conditions, which were made by Moses in the old law. Certainly the Ancient Greeks and Egyptians described tapeworms. Hippocrates writes of the evacuation from the bowel of "pumpkin-seed-like fragments" as diagnostic of tapeworm and Aristotle demonstrated that, in contrast with round worms, which are free, the tapeworm is attached to the wall of the alimentary canal by means of its head.

Two hosts are required to complete the life cycle of *Taenia saginata*. The adult or tapeworm stage is spent in the human intestine and the intermediate or cystic stage is spent in the musculature of the ox and is known as *Cysticercus bovis*.

Segments of the tapeworms, when evacuated, appear as sacs covering the many branched uterus which is crowded with eggs. When these are received into the intestines of the ox the covering membranes are ruptured and the spherical six-hooked larvae, escape. These bore through the wall of the alimentary canal and ultimately find their way into the connective tissue of the musculature. Here they become fixed and develop by their own growth and by the accumulation of fluid, which is encased in a membrane or capsule, thus forming a cyst or bladder-worm.

Eventually the thickening of the capsule wall produces an ingrowth in which is formed, in reverse, the head of the future tapeworm. Growth is slow and after approximately six months the worms measure no more than six millimetres in diameter and in many cases are less than this. When the mature and viable cyst is consumed by the human, in beef in which it has not been killed by the temperature of cooking or some other means, the capsule is ruptured and the scolex or head is evaginated and attaches itself by means of four suckers to the wall of the small intestine, and from this is formed the tapeworm.

The scolex is rounded and has four cup-shaped suckers, which are, as already stated, used for attachment to the intestine. Following the head is a slender neck which is undivided. After the neck the worm changes gradually into a jointed or segmented body, the segments becoming larger, heavier and more well-marked towards the end.

The segments, or proglottides, there reach maturity and are periodically liberated from the rest of the worm and evacuated from the bowel, sometimes spontaneously and sometimes with faeces. The normal habitat of the worm is the human small intestine. Worms have occasionally been found in the bile duct. *They have not been found in any other host.*

From the time of entry of the scolex into the human intestine approximately nine or ten weeks elapse before the production of proglottides.

Microscopical examination of the proglottides shows the median channel from which branch the reproductive organs, which can be seen as faint strands of tissue in mature proglottides.

The segments are hermaphroditic and the numerous small, round bodies discernible are testes, which communicate with a communal sexual pore at the side. These pores generally alternate in successive segments.

Evacuated segments thus contain an abundance of fertile eggs which may be picked up by the beast from pasture, thus continuing the life cycle of the parasite.

Apart from the successful nursing of cases suffering from the tapeworm attempts should be made to eradicate the parasite from the country by the vigorous prosecution of the principles of hygiene. The stools of all patients known to be infested should be burnt. Disinfection is not sufficient. Improved hygiene on farms and in country dwelling places would help as also would the provision of proper closet facilities at long distance coach stations.

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