ON TÆNIA:

SOME MODES OF ITS PROPAGATION AND TREATMENT.

By W. HUGHES WILLSHIRE, M.D.,

ASSISTANT-PHYSICIAN TO THE CHARING-CROSS HOSPITAL, ETC.

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THE intention of the present paper is to continue some observations, previously commenced, connected with the propagation and treatment of certain of the human *entozoa*, the former of which observations were published in THE LANCET for April of 1856, in the shape of a clinical lecture, which was delivered at the hospital. Reference to them will show that I there sought to illustrate the doctrines of Von Siebold, Küchenmeister, Leuckart, and others, who affirm that the *cystoid*, *cestoid*, and *nematoid* (?) *entozoa* are not distinct and specific creatures, as it were, in themselves, but rather different stages of the progressive development of certain fundamental organisms; a *cestoid* entozoon, for instance, being but a higher grade in the morphosis of some *cystoid* one which is the parasite of a different body. I also remarked that the late investigations of some German inquirers led to the very probable idea that *Tænia solium* of man had its protoplast in the *Cysticercus cellulosæ* of some of the lower animals, particularly of the pig. As a corollary of these and correlated doctrines (unnecessary here again to refer to), I would now offer some illustration in support of the opinion that *one chief* means by which the human body becomes subject to the parasitic presence of the common tapeworm is through the employment of raw, or underdone, or imperfectly-cooked flesh as nutriment; and that though the flesh of the pig, in particular, thus employed, is perhaps more likely to produce the effect in question, yet, practically, raw or underdone beef and mutton operate more extensively, in consequence of their wider use. Such flesh, it is of course here assumed, contains the *cystoid* entozoon, the *cysticercus cellulosæ*, which undergoes its higher metamorphosis in the body of the person using such flesh as food. It is not meant to be maintained that such is the only way in which the propagation of *tænia* is carried on, or that where this has been even in operation it has not needed the combination of other factors in the causation as well. It is to my mind, however, one causative element of considerable influence and extent, and one concerning which I now proceed to offer a few illustrations, drawn from the experience and records of others, as well as from what has happened to myself. In the first place, however, I would recall to mind the following experiment of Küchenmeister as the clue to a right interpretation of the aim of the few illustrations I have been enabled to collect together. A criminal being condemned to death, Küchenmeister obtained permission to introduce ova into his food, at periods varying from 130 to 12 hours before execution. He managed to give this felon, at his meals, a number of *cysticerci* got from the intestines of pigs and rabbits. They were partly disguised by their resemblance to the grains of rice in warm rice soup, partly by their likeness to the small bits of paste in a kind of vermicelli gravy, and partly by their being substituted for the small lumps of fat in black-puddings. On examining the body of this criminal forty-eight hours after decapitation, ten young tapeworms were found attached to the small intestine by their hooks and suckers.

From the experience of others I glean the following illustrations: Theophrastus of Eresus has recorded the observation that scarcely any persons at Athens suffered from tapeworm, except the *athletæ*, and they were nourished in particular upon the flesh of the pig. Wawruch and, still later, Bamberger, have asserted, on the other hand, that the *Irasslites* are remarkably exempt from the parasite. In 206 cases of *tænia*, only three happened to Jews, and they confessed to Wawruch that

they had not rigidly abstained from the use of pork. The same investigator came to the conclusion that those most liable to be infested were butchers, sausage-makers, and cooks, an opinion with which the experience of Mason Good, I believe, coincided. But at any rate Küchenmeister has very lately maintained the same fact, and has entered into certain explanations why not only butchers but *their families* are thus liable to be infected. The constantly handling the raw meat, the practice of putting a knife between their lips and teeth, their taking their meals with unwashed hands, &c., are some of these reasons; such practices showing how easily fresh uncooked *cysticerci* may obtain entrance into the alimentary passage of man from the flesh of the inferior animals.

According to the published statements of the well-known travellers, Bruce, Rüppel, and Pruner, nowhere is the human body so frequently and extensively infested by the entozoon in question as in Abyssinia, where the use of raw meat, particularly amongst the poorer classes, is almost universal. People not infested are looked upon as exceptions almost to a rule, and strangers who comply with the usages of the country are sure to be sooner or later attacked. Godingus, who wrote a book in 1615, de Abyssinorum rebus, alludes to a tree (probably our present kosso) as being very efficacious against worms produced by the use of raw meat; whilst a recent writer makes mention of certain "*Patres Carthusiani Abyssinorum*," rigid and systematic fasters and abstainers, who escape the attacks of the parasite in question. A few years since, Beer, of Berlin, introduced the use of finely-chopped raw meat as a tonic diet in the cachexias of children. It gradually became rather extensively employed on the Continent, and I introduced it myself at the Royal Infirmary for Children. I was arrested, however in continuing to recommend it, (substituting prepared bullocks' blood, as advised by V. Mauthner,) on account of Dr. Weisse, of St. Petersburg, publishing, in the *Journal für Kinderkrankheiten*, an account of three children of between one and two years of age becoming attacked by tapeworm, after having been fed upon raw meat for periods of time varying from two months to a year,—the *tænia solium* being rare at St. Petersburg, and in neither instance had any of the children's relatives suffered from the entozoon. In a paper by Dr. Anderson (of the 43rd Regt. of Light Infantry), published in the *Indian Annals of Medical Science* for October, 1852, 95 cases of tapeworm are alluded to, and in connexion with which the following observations occur:

"Eighty-six were European soldiers, eight were Mussulman natives, and one a Hindu of the metiter or lower class. . . The food of Europeans in India is of course much the same as in Britain, consisting, amongst other articles, of 1lb. of animal food (beef or mutton) per diem. The eight Mussulmans belong to the class of natives whose religion does not interfere with their diet, and whose habits, less frugal than those of the Hindu, do not prevent them indulging freely in all varieties of animal food, except pork. The solitary Hindu patient is one of a class whose degraded position allows them to partake of any substance, animal or vegetable, not excepting animals that have died of disease. From these circumstances it seems that varieties in modes of life cause material differences in the liability to the *tænia*; that amongst those who indulge largely and daily in animal food tape-worm is common; that amongst those who, where their means admit of it, partake of flesh in small quantities, tapeworm occurs but in small proportion, and that as far as my experience yet goes, amongst several native regiments, Hindu sepoys and servants, whose food is only vegetable and farinaceous, the tapeworm is unknown."

Dr. Wood, of Philadelphia, has remarked upon the comparative rarity of tapeworm amongst the natives of the United States; whilst very lately I read that Dr. Fleming, of the Queen's University, Ireland, has been informed that in Cincinnati, the largest pork market in the States, the "*measle*" (or *cysticercus*) is unknown. Küchenmeister affirms Poland, Hungary, England, Pomerania, and Thuringia, to be the chief localities of *tænia solium*, as also that it is there where the use of pig's flesh is by far the most extensive. While the occurrence of *tænia* is said to be very common in Germany, where the practice of eating raw ham is very far from unusual, in Scotland, according to Dr. Gairdner, tapeworm is very rare compared with some European states, and rare as compared with some parts of England. This Dr. Gairdner attributes to the small proportion of animal food, and especially of ill-cooked animal food, used there by the labouring classes. Further, Dr. Crighton has drawn attention to the common practice amongst the Lancashire operatives of eating raw meat, and has recorded the following very pertinent illustration of its results:—

"In December, 1853, I was consulted by T. B., aged

forty, a calico-printer, on account of tapeworm, with which he had been troubled for six or seven years. On inquiring as to what means he had employed for his relief, I was much struck at the long list of medical practitioners under whose care he had been, but without obtaining respite for any length of time from his distressing complaint. He stated that the remedies employed had generally been successful in bringing away portions of the parasite, but that after a greater or less time, never exceeding a few weeks, his symptoms—itching, pain, &c.—had invariably returned. The observations of Dr. Nelson on the development of *tænia solium* immediately occurred to me, and led me to ask him whether he was in the habit of eating animal food uncooked? After some hesitation, he admitted that he had acquired the practice in his native county Lancashire, and that since his removal from it to Derbyshire, his complaint had increased much, owing, he thought, to his not having fish so frequently as before. . . . Although he used both beef and mutton, he preferred the latter, and used more of it in a raw state. When questioned as to the frequency of his taking it uncooked, he allowed that he did so at least once a week. . . . I enjoined him, if he wished to get rid of his tedious ailment, to avoid raw flesh in future. . . . On inquiry after him during the summer of 1854, I was glad to find him nearly free of his complaint, and during the present month (May, 1855,) he states that he has been completely well since the end of last summer not having seen any portions of the worm since the beginning of September, and that he has entirely abandoned the practice of eating uncooked animal food."

During the early part of last year, a girl entered the Royal Infirmary of Edinburgh, under the care of Dr. Gairdner, to be treated for tapeworm, nine yards of which were afterwards expelled under the influence of a particular remedy. On inquiry, the patient admitted that she had been in the habit of eating quantities of raw pork and butchers' meat generally. This was from a peculiar liking or inclination of her own, and was not a habit contracted in consequence of the example of others. In other respects her diet had been similar to that generally in use in her station of life in Scotland.

I shall now make reference to one or two cases coming within range of my own experience.

July, 1856.—C. F—, a young man, seventeen years of age, applied at the hospital to be relieved of tapeworm. He owns to eating raw meat, but says his friends try to prevent him eating it, so that sometimes he only got a piece the size of an inch or so about once a month, sometimes a little oftener. He had the "long round worm" (*acaris lumbricoides*) when younger, and in Devonshire, but did not then eat raw meat. His cooked meat, he states, is generally underdone. The remedy prescribed brought away several yards of *tænia*.

August, 1856.—M. C—, a female, aged twenty-six, applied as an out-patient at the hospital, to be treated for tapeworm. Has suffered from it for five years; almost every day bits come away. Once nearly twenty yards passed from her body. Sometimes the worm comes away as she sits, and will do so for half an hour together. Being ashamed of it, she has not liked to tell anyone what she suffers from. Is reduced, as she expresses it, "almost to a skeleton." Has dragging pains in the stomach, bad appetite, and is very pale. The bowels are at present relaxed, blood and "jelly-like stuff" passing from her. Catamenia irregular. Admits that she occasionally eats a bit of raw beef, raw steak meat, when she buys it; is rather fond of raw meat—indeed, likes to eat it; her cooked meat, too, is always underdone. Does not like, nor does she have, much pork. The remedy prescribed caused a long *tænia* to be evacuated.

November, 1856.—C. F—, the male patient, (above alluded to,) and M. C—, the female one, have, with a strange coincidence, returned to the hospital during the same month, to be again relieved from tapeworm. The male patient confesses to having eaten raw meat again, and says he "could not help it." The woman does not admit she has recurred to the like and her former practice. The same treatment adopted as before relieved both patients of their parasitic appendages.

December, 1856.—M. R—, a girl thirteen years of age, living in Lambeth, applied as an out-patient, to be relieved of tapeworm. Has suffered from it for four years, and it has come away one yard long together. Is troubled with sickness after meals. On being questioned, confesses that she eats a good deal of raw steak meat, being very fond of it. Her cooked meat is always underdone. She eats pork now and then, but not uncooked nor underdone. Her mother suffers from worms, but she does not know that her mother eats raw meat. The remedy prescribed brought away three yards of *tænia*.

January, 1857.—J. M'H—, a boy seven years of age, was brought by his mother to the hospital, to be relieved of tapeworm. He had a cough at the beginning of last summer, for which she gave him some "cough stuff," which brought away many joints of a tapeworm. Did nothing more, but finding some more joints on Sunday last, she thought she would bring him to the hospital. He is always picking his nose, sleeps restlessly, and has got very thin. He does not eat raw meat to her knowledge, but he has his meat always very underdone, as she thinks it is more nutritious with the gravy in it. Takes pork but very rarely, and he does not have much of vegetables. She had ascarides when young, but not tapeworm, nor have any of her family. The remedy prescribed brought away above two yards of tapeworm.

John G—, aged fifty-six, an attendant upon insane persons, was brought to me by one of the students of the Charing-cross Hospital, on the 19th of February last, to be treated for tapeworm. Stated that he first observed portions of a worm eight years ago, for a dose of medicine to remove the remainder of which he paid a sovereign to a "worm doctor," and which dose brought away the worm in large quantity. Two months after this, however, more portions of worm appeared, and he has been troubled with the disease ever since. He now complains of hunger, disturbed rest, the bowels being moved once a day. He confesses he is very fond of raw meat of any kind almost, except of pork and veal. Has always been fond of raw meat in preference to its being dressed, and has eaten as much as a quarter of a pound of raw beef-steak at a time. Has occasionally eaten raw ham, and this lately. His cooked meat is always underdone, but he does not consume much cooked pork. He would say that he had not observed any worm pass before the time he took to eating raw meat. He has been in Scotland and Wales, and does not know that his father or mother suffered from tapeworm. He was ordered the usual treatment, but the result has not as yet been communicated to me.

(To be continued.)

FIRST QUARTERLY METEOROLOGICAL REPORT AT ST. THOMAS'S HOSPITAL FOR 1857.

By ROBERT DUNDAS THOMSON, M.D., F.R.S.L. & E.,
PROFESSOR OF CHEMISTRY IN ST. THOMAS'S HOSPITAL COLLEGE,
EXAMINER IN CHEMISTRY AT THE UNIVERSITY OF LONDON, ETC.

THE month of January in the present year was characterized by nearly the same amount of rain-fall as in the corresponding period of the year 1856, but the temperature was nearly 3 degrees ($2^{\circ}9$) lower in the former than in the latter period. February of last year was considerably wetter ($\cdot 9$ in.) than in the present season ($\cdot 23$ in.); but it was warmer ($43^{\circ}1$) by $2\frac{1}{2}$ degrees ($40^{\circ}6$). In March of the two years, the amount of rain-fall was nearly the same ($\cdot 92$ in. and $\cdot 98$ in. respectively); while the temperature in 1857 was nearly $2\frac{1}{4}$ degrees higher than in the previous year. The temperatures of the first two months are somewhat higher than the mean temperatures for 65 years; while in March the heat is almost exactly that derived from a mean of 65 years. The total amount of heat of the quarter is best judged of by multiplying the mean temperatures of the quarter by the number of days in the same period, when we obtain the accumulated heat for the first quarter of 1856, $3776^{\circ}5$, and for the corresponding period of 1857, 3645° , giving a difference of 131° , equivalent to the temperature of about three days in favour of the preceding over the present year in the early months.

The condition of the weather has been unfavourable to the aged and to those having a tendency to chest affections, but in the zymotic class of maladies, the mortality returns seem to present rather a moderate aspect.

Snow fell on the 31st of January, 2nd of February, and 22nd of March; hail on the 8th, 9th, and 16th of March. Fogs prevailed on the 31st of January and the 1st and 25th of February. The lowest temperature of the quarter was 23° , on the 30th of January; and the highest point which the thermometer reached was $63^{\circ}3$, on the 19th of March.

April, 1857.