

It has been objected that a prohibition would deprive the working class of a large quantity of cheap meat; another objection is the hinderance to commerce. These reasons do not appear valid to us, if there be real danger for the public health, and if there be, as we have said, and as the experiments of M. Chatin show still, living trichinæ in American hams. The danger resides especially in the use of strings preserved in brine, which enter into the composition of pig's cheese and of sausages and hashes of all kinds, such as the pork-seller delivers them, that is to say, always imperfectly cocked.

It is possible that a person may partake of trichinated meat, before its contamination has been noticed, and if a case of trichinosis be not remarked, it is only because the diagnostic of the disease is but little known, and has no positive character. Waiting until the labors of German physicians, which are but little spread in France, enlighten us on the symptoms of this affection, we deem it useful to examine under the microscope the faeces of those suffering from typhoid fever, in order to find out whether, under the cover of this malady, there is not, as often happens, a case in point of trichinæ eliminating themselves in part by this way.—*La Nature*.

TRICHINOSIS.

DR. E. C. WENDT presented to the New York Pathological Society, April 13th, specimens illustrating Trichinosis. The slides under the microscope showed muscular trichinæ in a free state. They exhibited different degrees of parasitic development, although they were all taken from the same woman. The infested muscles were obtained from a recent fatal case of the disease

which had occurred in Hoboken. For the history of the case he was indebted to Dr. W. T. Kudlich of that city. The whole course of the malady, from the initial enteric symptoms through a typhoid stage with intense muscular pains to the lethal termination, was so typical that the detailed clinical account of this case might be omitted. It should be stated, however, that shortly after the young robust wife fell ill, the husband also took to his bed with well-marked symptoms of trichinosis. In view of the present agitation of the public mind over the wholesale prohibition of American pork by the Continental powers, it might be of interest to remember that in the present instance the disease was unmistakably traced to a home product. The living parasites were used for

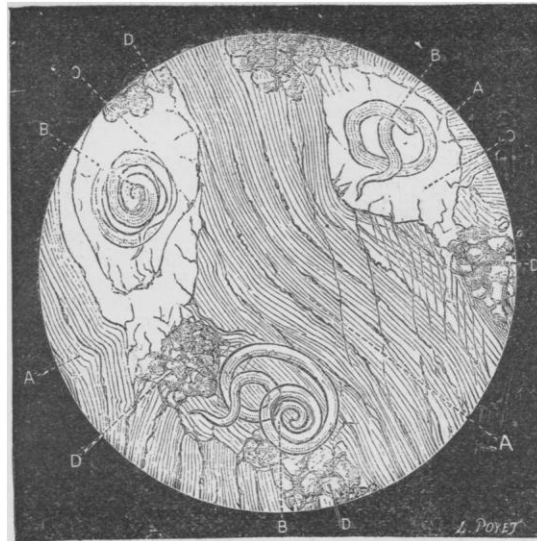


FIG. 3.—PORTION OF TRICHINOUS MEAT AS SEEN UNDER THE MICROSCOPE, MAGNIFIED 140 DIAMETERS. A. A. A. MUSCULAR FIBRES—B. B. ENCYSTED TRICHINÆ. C. C. CYSTE. D. D. D. FAT GLOBULES.

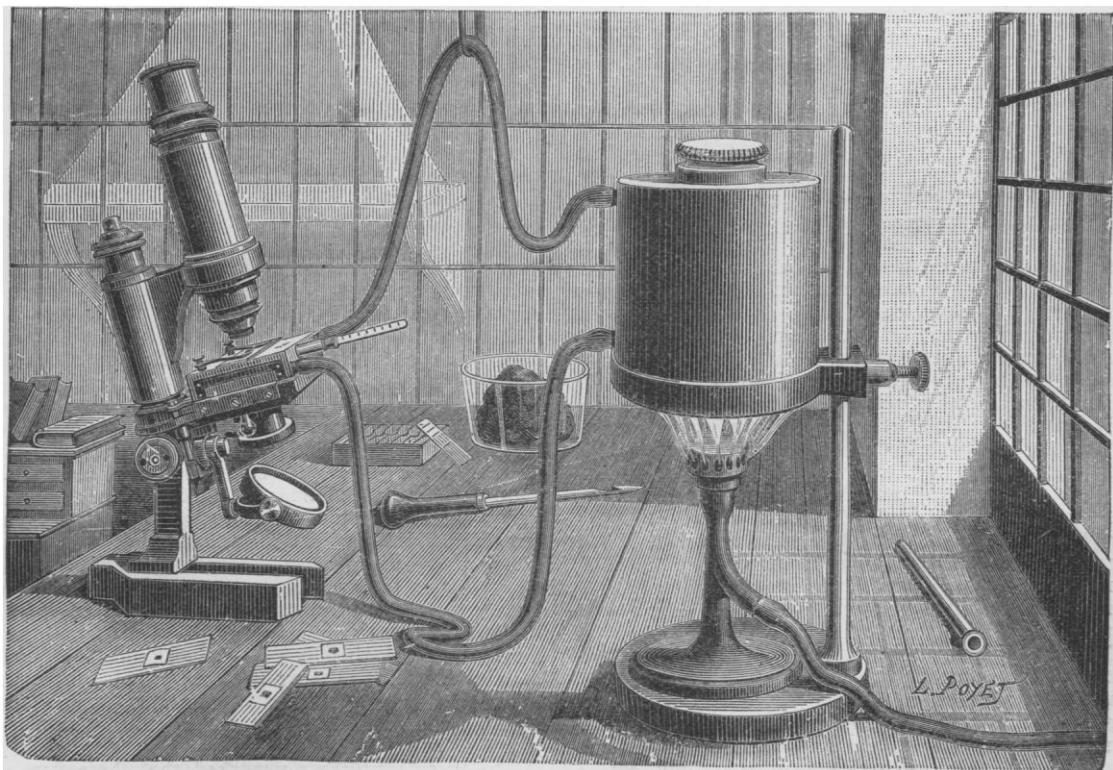


FIG. 4.—MICROSCOPE PLACED IN POSITION FOR THE EXAMINATION OF TRICHINOUS MEAT AT A TEMPERATURE OF 40° C. BY MEANS OF THE HEATING APPARATUS OF RANVIER, AS USED BY THE MUNICIPAL CHEMICAL LABORATORY AT PARIS.

purposes of experimentation; and, while entirely new facts were not elicited, a few words might be said as to the results of various trials.

Encapsulated trichinæ were notoriously tenacious of life; but here were the immature, only recently emigrated parasites, still wandering about in the muscles. A few of the animals had indeed already assumed the position of a spiral coil, which was the preparatory stage of encapsulation. But the majority were either stretched out or twisted at either extremity. Little pieces of the woman's muscles were exposed to the action of cold, being several times frozen. Examination, four days afterward, found them apparently quiescent. A gradual elevation of temperature up to about 100° F. soon proved that life was not extinct, in so far, at least, as active motions can be interpreted as an indication of vitality. Ten days later the parasites were still alive. Some of the flesh was then allowed to undergo partial putrefaction. Even then the animals were living. This was thirteen days after the death of the woman.

On the day following the autopsy, some fresh muscle was teased, and, there being an abundance of living trichinæ, many thus became isolated. The animals were never seen to actually creep along in a definite direction. Their movements resembled the unfurling and recoiling of a pennon. Nevertheless, a change of place was now and then fortuitously effected. Next, the parasites were subjected to the action of different reagents. Saliva produced no visible effect upon them. Dilute acids resulted in increased activity of motions. Alkalies made them sluggish. Concentrated solutions of both rapidly killed them. In carbolic acid they squirmed and writhed before dying. Glycerine, contrary to what was supposed, did not immediately kill them. Some lived for ten minutes after its addition. Finally, however, the worms became shrivelled up into almost shapeless filaments. If previously heated, however, they retained their form to a great extent.

A little of the fresh muscle was submitted to artificial digestion by being placed in a suitable fluid and exposed for twelve hours to about body heat. The muscle was in great part dissolved at the end of this time, and many free parasites were found in the liquid. But they were, if anything, less active than they had been, and, as soon as the liquid was allowed to cool, their movements ceased, to be renewed, however, on reheating the slide. A noteworthy fact, and one of great interest, was that the trichinæ had unquestionably grown. But, though their size was now increased, and although indications of sex could be barely perceived, a distinct evolution into mature males and females was not obtained. It must be remarked, however, that future experiments at such artificial breeding may be more successful. Through an inadvertence the continuation of the artificial digestion was interfered with, the animals being killed by over-heating.

Portions of partially putrified muscle were placed in vials containing water, with the addition of a small proportion of glycerine, carbolic acid, and alcohol. In this liquid the parasites were maintained in a comparatively good state of preservation, showing the details of their interesting organization with satisfactory clearness. Permanent specimens, no matter what technique of preparation may be employed, were never found as perfect as recent ones made from bits of muscle thus kept. Of course, fresh would answer still better than partially decayed muscle.

Concerning the pathological condition of the infested muscles, the changes there found were the frequently described conditions of acute myositis accompanied by vitreous metamorphosis, cloudy swelling, and fatty degeneration. In some places the interfascicular hyperæmia and small-celled infiltration were beautifully seen.

The subject of trichinosis had occupied his attention for a number of years; but this was not the place to discuss the many questions which presented themselves;

only one further remark as to the diagnostic value of examining small bits of muscle removed from accessible regions in patients suspected of trichinosis. If the animals were found, of course the evidence was incontrovertible. But, *vice versa*, a conclusion could not be arrived at. This he wished to emphasize, because a contrary opinion was prevalent in some quarters. In the present fatal case of trichinosis, small bits of the deceased woman's muscles were torn from the gastrocnemius and deltoid muscles; and while some specimens had contained numerous parasites, others had been found without them. In the diaphragm, intercostal muscles, and other well-known places of predilection, every examined specimen showed abundant parasites.

Dr. Carpenter's observation at the dead-house of Bellevue Hospital had been that encysted trichinæ were found more frequently in the pectoral muscles or the diaphragm than in the deltoids or the gastrocnemii.

The President (Dr. T. E. Satterthwaite), remarked that the subject of trichinosis was now of very great interest to the country at large, and we should be anxious to get all the light possible upon it. Though a vast amount of labor had been expended on the origin, clinical history, and treatment of trichinosis, we have good reason to suppose it was seldom recognized during life, and even after death would often escape notice, unless the examiner had his attention specially directed toward the possibility of its occurrence. Consequently our present statistics could not be relied upon in forming an opinion as to its prevalence. One of the points on which we needed more information was the period of incubation. This was variously placed at between ten and forty-two days; or, rather, according to our present ideas, it would take ten, but might take forty-two days for the young trichinæ to appear in the muscles after the infected meat had been eaten.

Now, it was just upon this variable period that the dealers relied chiefly when they were prosecuted for selling trichinous meat. As most infected persons are Germans, who are in the habit of eating uncooked meat, more or less continuously, it is generally easy for the accused to show that other hams or sausages were eaten during this period of forty-two days, and as statements are to be found that a limited number of living trichinæ have been eaten without harm, it is almost impossible to secure conviction. Dealers therefore do not ask for an examination of hogs or their products, nor are they afraid to be convicted, even should they sell trichinous meat.

Now it is particularly important to determine whether or not there is in this variable time between the ingestions of the animal and the subsequent migration of the larval form, and more experiments should be made on animals to determine it.

Then another point is important, which is, How frequently is trichinosis met with? In Europe it is said to occur in from one to two per cent. of all cadavers. In this country we have as yet no trustworthy data; at least this conclusion may be drawn from the recent report of late Assistant-Surgeon Glazier, to the U. S. Marine Service. Still we know that eight hogs out of a hundred were once found trichinous in Chicago, and though this percentage has been once exceeded in Germany, it is a large one, and invites consideration.

Especially important was, he thought, the determination whether living trichinæ can really be swallowed with impunity, if in small numbers, and, if so, what quantity is necessary for infection; whether such trichinæ be the larval or fecundated forms; and whether emetics or purgatives were not afterward employed to expel them, as in this latter case it is reasonable to suppose they might have been removed without harm to the individual.

The President further remarked that there were now no specially appointed officials who made it their duty to inspect meat, as was formerly done. A diminished appropriation led to the suspension of this work.