

Report of the Agricultural Sub-Committee upon the tuberculin experiments carried out at the Lancaster County Council Farm, from September 1895 to March 1899 / the County Council for the County Palatine of Lancaster, Technical Instruction Committee.

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THE COUNTY COUNCIL FOR THE COUNTY PALATINE
OF LANCASTER.

Technical Instruction Committee.

REPORT

OF THE

AGRICULTURAL SUB-COMMITTEE

UPON THE

TUBERCULIN EXPERIMENTS

CARRIED OUT AT THE

Lancashire County Council Farm,

From SEPTEMBER, 1895, to MARCH, 1899.

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THE COUNTY COUNCIL FOR THE COUNTY PALATINE
OF LANCASTER.

TECHNICAL INSTRUCTION COMMITTEE.

REPORT of the AGRICULTURAL SUB-COMMITTEE upon
the TUBERCULIN EXPERIMENTS carried out at the
Lancashire County Council Farm, from September,
1895, to March, 1899.

In August, 1895, Mr. H. S. Daine, the Lecturer on Agriculture to the Lancashire County Council, called the attention of the Farm Sub-Committee to the great prevalence of Tuberculosis amongst the Dairy Cattle of Lancashire, and, after the question as to the best means to be adopted for dealing with the disease had been fully discussed, it was decided, as a first step, to ascertain the number of cattle affected amongst the Dairy Herd at the County Council Farm, by the application of the Tuberculin Test as recommended by Professor Koch, of Berlin.

As the reliability of the test was then regarded as an open question, a small Sub-Committee was appointed in August, 1895, to conduct a Preliminary Experiment for the purpose of testing the value of "Tuberculin." The carrying out of the test was placed in the hands of Mr. T. F. Hutchinson, M.R.C.V.S., of Leyland, who then held and is still holding the post of Veterinary Surgeon to the Committee, the Farm Bailiff acting under his instructions.

Thirteen Cows, including some of the best milkers, and the pure Shorthorn Bull, were selected as fair types of the herd, and it may be as well to say here that the herd was made up of well-bred

Dairy Cattle, mostly Milking Shorthorns, together with some Jerseys. Most of the cows had calved their second or third calves, and nearly all, except the Jerseys, had been originally purchased as heifers north of Preston. To all outward appearance, the animals selected were in good health and condition at the time of the first operation.

The "Tuberculin" used was supplied by Messrs. Francis Willows & Butler, of London, and 60 minims were injected into the loose tissues about the dewlap, the parts having been first thoroughly disinfected with a 10 per cent. solution of pure carbolic acid.

Before operating, the animals were carefully examined, and the thermometer was used night and morning for three days in order to establish the mean temperature of each animal.

The operation took place on the 13th September, 1895, and resulted in no fewer than 9 out of the 14 animals giving a decided re-action (or $64.3^{\circ}/_{\circ}$). This was so unexpected that the Committee resolved to re-test the same animals, and about five weeks later, on the 17th of October of the same year, the test was applied under the same conditions, and, with the exception of one animal, the same result was arrived at. This cow, one of the heaviest milkers of the herd, which did not re-act at the second test, and which had visibly deteriorated in the interval, died during the following month from tubercle of the membranes covering the brain and spinal cord (tubercular meningitis), thus confirming the opinion of most experts that in *very* advanced cases of tuberculosis no re-action will be produced by the injection of tuberculin.

In order to further prove the reliability of the test, four of the animals which had been twice tested, two of which had re-acted and were therefore presumably unsound, and two that had not re-acted and were presumably sound, were slaughtered in Preston, and a careful post-mortem examination was made in the presence of several Medical men, Veterinary Surgeons, and some Members of the Committee. The result was such as to verify the reliability

of this test, as the two animals that had re-acted were found decidedly tuberculous, whilst the two non-reacting animals showed no trace of the disease.

It was noticed that the tubercular deposit in each of these cases was on the outer surface of the organ affected; in one case the liver, and in the other the lung.

The Sub-Committee, having satisfied itself that the tuberculin test was substantially reliable, now authorised Mr. Hutchinson to apply the test to all the remainder of the Dairy herd over nine months of age. This was done during February and April, 1896, and, of 33 cows tested, no fewer than 25 re-acted (or 75·75%); but of the young stock tested, 27 in number, between 9 months and 2 years old, which had been bred on the farm, only one re-acted.

Having arrived at this stage of the experiment, the Committee next considered the best means of preventing the spread of Tuberculosis in the Dairy Herd, and also of dealing with the animals proved to be tainted with the disease.

After careful consideration, and after taking the advice of Mr. Hutchinson and also of Mr. H. S. Daine, the following regulations were laid down :—

That all the healthy Cattle be isolated from those tainted, both in the Cowhouse and in the pastures.

That separate vessels be provided for food and drink.

That the Cowhouses be cleansed; that is, the walls scraped, the woodwork scalded and scoured, and the whole thoroughly disinfected.

That all the Fat Cattle sold to the Butcher be followed to the block, and inspected after slaughter.

That all the Calves be reared on milk produced by non-reacting Cows only.

That only Young Bulls that have been tested and did not re-act be sold for breeding purposes.

That no fresh animal be brought on to the Farm that had not been previously tested.

That the stock be tested periodically.

It may be stated here, that all these regulations have been strictly adhered to up to the present time.

In December, 1896, and in January, 1897, 35 cows were tested, of which 11 re-acted (or 31·43%); and 12 young bulls, bred on the Farm, were tested, none of which re-acted.

In January and February of 1898, the test was carried out on 37 cows, and of these only 4 re-acted (or 10·9%); and, during that year, of 51 young animals tested, only two re-acted—rather less than 4 per cent.

There are upon the Farm at the date of this Report, 72 animals above six months old non-reacting, of which 4 have been tested three times. There are also 6 animals which have re-acted, but are to all appearances in good health; these are, of course, isolated from the rest in a specially-built shippon.

Mr. Hutchinson has, in almost every case, followed the career and disposal of each animal sold from the Farm for slaughter—whether they re-acted or not—with the result that in 94·4% of the cases examined tubercular deposits, to a greater or less extent, were easily found in those animals which had re-acted, but in no case where the animal did not re-act was there any trace of the disease. It may be noted that only in two cases on the Farm had the disease affected the udder.

This result goes far to prove the reliability of the test as indicative of the presence or otherwise of the disease, which undoubtedly may, and does, exist to a considerable extent entirely

unsuspected, particularly when the deposit is on the external surface of the organ affected.

The Committee draws the following conclusions from the experiment as far as it has gone :—

(a) That by means of the test the sound cows can be distinguished from the unsound, and by separation the Farmer can check to a very great extent the spread of the disease, and can deal with the unsound animals in such a manner as to minimise the consequent loss. The fact of animals remaining upon the Farm, as they have done at Hutton, for 18 months or more after re-action, shows that the disease when present may be retarded in its progress by favourable sanitary conditions as to food, light, and air.

(b) The experiments seem to prove that it is very advisable not to breed from unsound animals, for though it is now generally accepted that the disease itself is not hereditary it is admitted that the predisposition to disease may be inherited, and that the offspring of sound parents is much more likely to keep healthy than that of unsound parents. As a matter of fact, it may be noted that two cases did occur at the Farm, where calves from unsound dams died tuberculous at seven or weeks old, although they had been excluded as far as possible from other sources of infection.

(c) The Committee is also convinced that periodical applications of the test are necessary, as instances occurred where cows which did not re-act at one test re-acted when re-tested some six months or so later, although apparently every source of direct infection had in the meantime been eliminated. It may be that in these cases some factors, such as infection through rabbits or game, have been overlooked, or that the infection was already present in the animal at the first test, but the disease was at too early a stage to cause re-action.

The following is a summary of the results of the application of the Tuberculin Test at the County Council Farm from September, 1895, to the end of 1898 :—

Preliminary test in September and October, 1895	Of 14 animals selected as types of the herd 9 re-acted—equal to 64·3%.
Rest of herd tested in February and April, 1896	Of 33 cows tested, 25 re-acted, or 75·75%, and of 27 young stock, bred on the Farm, 2 re-acted

This completed the first test of the whole herd, and the total adult animals tested were 47, of which 34 re-acted, equal to 72·34%.

Second test of whole herd in December, 1896, and in January, 1897	Of 35 cows tested, 11 re-acted, or 31·43%; and of 12 young bulls, bred on the Farm, none re-acted.
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Third test of the whole herd during 1898	Of 37 cows tested, 4 only re-acted, or 10·9%, and of 51 young stock, only two re-acted, or 3·9%.
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Post-mortem examinations of animals that had reacted gave 94·4 tuberculous.

Post-mortem examinations of animals non-reacting gave 100 per cent. free from tuberculosis.

Post-mortem examinations of 47 cows which died or were sold for slaughter showed only two case of tuberculosis in the udder.

The results of the test on the different breeds (adults only) kept at the farm are as follow :—

BREEDS.	No. of Animals Tested.	Number Reacting.	Number Non- reacting.	Percentage Reacting.
Shorthorns	83	39	44	47 %
Jerseys	15	7	8	40 %
Ayrshires	9	1	8	11.1 %

LEO. CHAS. WOOD,
Chairman of the Agricultural Sub-Committee.

County Offices, Preston,
6th March, 1899.

