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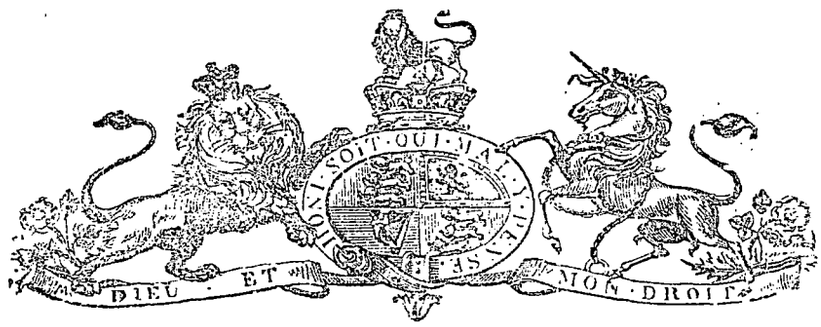
ALLEGED CANCER IN CATTLE:

REPORT BY ARCHIBALD PARK, M.R.C.V.S.

Presented to both Houses of Parliament by His Excellency's Command.



THE ALLEGED CANCER IN CATTLE.

Hobart, 4th April, 1884.

SIR,

HAVING been instructed by you to report upon the alleged "Cancer in Cattle" known to have existed in the Colony for upwards of 40 years, I have the honor to submit to your notice the following statement:—

This is a constitutional disease of a scrofulous diathesis, manifesting itself primarily in the bones of the head, or occasionally in the parotid or submaxillary glands, and has been termed by different authorities in veterinary literature "*osteo sarcoma*," "*spina ventosa*," and "*fibro plastic degeneration of bone.*"

The local manifestations of this disease are generally developed between the ages of two and six years, most frequently met with in steers, cows, and bulls, in the order named, and continuing from a few months to several years' duration. I have in my possession specimens from the first perceptible thickening of the bone to a case of four years' standing, the latter a bullock weighing 800 lbs. when killed. The disease most frequently appears as a small round nodule beneath the skin, perfectly separated from it, the latter moving over the nodule with freedom. It continues to grow slowly, until the part may be struck or otherwise injured; from that time the growth is more rapid. This gives rise to the popular idea that it is caused by a blow, but the disease is out of all proportion to such a cause. The skin soon ulcerates, from which an ichorous discharge continues to spread, with no tendency to heal, and in many cases multiple ulcers will be found in the enlarged mass; as the bone becomes further invaded the teeth drop out and the animal is now unable to masticate its food, and dies a mere skeleton unless humanely shot.

In the internal organs the scrofulous deposits do not differ materially from those of the external parts; in both situations the progress is the same, only modified by the nature of the part wherein the scrofulous matter is deposited. In herds predisposed to this disease some animals become lame from no assignable cause, and continue so until one or even more limbs may break, which not infrequently occurs. Such a beast would then of course be destroyed, and a *post mortem* examination reveals scrofulous inflammation of joint or joints. From 14 *post mortems* made out of 35 affected animals that have come under my notice during the past few months, you will observe a striking similarity throughout the individual cases, the primary seat of the affection, generally speaking, being situated in the bones of the head (upper or lower jaw), and occasionally met with in the glands, as already noticed.

This being a constitutional affection, is decidedly hereditary, and the following illustrations will clearly establish that fact:—

The late Mr. George Stokell about 50 years ago imported a pure bred Durham cow that developed the disease; her female progeny also were affected, the bulls escaping the disease, but their progeny again became affected, showing that one generation may be passed.

Mr. John Bisdee, Tedworth, bred from a pure Devon cow two pure Devon calves, at different seasons, and in due course both calves were affected similar to the dam. From the same breed of cattle, I learn, the late Mr. Synnot, Hermitage, Bothwell, purchased a bull, and this animal also developed the disease, and no less than twenty per cent. of his stock were reported to have been affected.

Cold, exposure, and scarcity of food are also exciting causes. In the history of all cases that have come under my notice, the disease invariably commences during winter, when food is scanty, and appears to more particularly prevail over high exposed land, such as Bothwell, Oatlands, Fingal, and the Lake Country. These places seem to produce a larger number of diseased animals than the lower and more sheltered portions of the Colony, though, indeed, it may be found in a greater or lesser degree all through the Island.

The following cases have been examined *post mortem* by me :—

No. 1. Bred by the Hon. John Lord. Red Devon cow, 4 years old. Large tumour on right under-jaw, presenting a raw ulcerated surface, the bones extensively invaded, the disease having existed in this animal, so far as I could gather, about one year; small tuberculous deposits in the liver and lungs; being otherwise in good condition and fat, used as human food.

No. 2. Property of G. W. Keach, Esq., Chiswick. Red and white steer, 6 years old, in fair condition, both superior maxillary bones extensively affected, the head presenting more the appearance of a hippopotamus than that of an ox, having multiple ulcers on the external surface. This animal was believed to be affected about three years. Tuberculous deposits were found in the intestinal and mesenteric glands, liver and lungs, old standing pleuritic adhesions; fluke also found in large numbers throughout the bile ducts of the liver.

No. 3. Bred by R. D. Lord, Esq. Red Devon steer, 4 years old, During the month of November I examined this bullock and found a small round nodule on the left under-jaw, in a favourable condition for removal. Early in January this had increased to nearly double the size, and the beast was only known to have been affected about four or five months, taking the beginning of the disease back to winter-time. With the exception of the rapidly increasing growth of external tumour, the skin not yet having ulcerated, and with the exception of a few flukes in the liver, the animal was very free from internal disease.

No. 4. The property of James Weeding, Esq., Oatlands. White and red cow, affected from 18 months to two years; on the left under-jaw a large scrofulous tumour, the skin extensively ulcerated, and discharging a thin ichorous exudation, the bones also being deeply invaded. In November last I found this cow suckling a calf, and in low condition; two samples of milk were procured from this animal and forwarded to the Government Analyst, with the following results :—

Government Laboratory, Hobart, 17th December, 1883.

I HEREBY certify that I received on the 19th November, from Mr. A. Park, Veterinary Surgeon, a small sample of milk taken from a diseased cow, the composition of which was found to be as follows :—

Specific gravity	1032
Total solids	14·17 per cent.
Cream	11·00 per cent.
Mineral matter	0·72 per cent.

A slight separation of butter had taken place when the sample was received. Milk of this quality is rather above the average, but not remarkably so. As however it appeared that the small quantity sent was obtained from the cow soon after the calf had been suckling freely, and was the total quantity yielded at the time, and as the last milk is always much the richest, a second sample of the whole yield after a night's separation from the calf was obtained, and analysed, with the following results :—

Total solids	10·38 per cent.
Cream, by creamometer	2·00 per cent.
Fat	0·58 per cent.
Mineral matter	0·56 per cent.
Specific gravity of milk	1037
Specific gravity of serum, after separation of caseine, &c.	1032

This composition agrees almost entirely with that of ordinary "skim-milk," the proportion of fat being less that one-fifth of the usual quantity; the total solids not fat (9·8 per cent.) being rather in excess of the average, but not more so than may occasionally be met with in the case of milk to which no suspicion attaches.

Microscopic examination revealed nothing abnormal, except the scarcity and small size of the fat globules in the second sample.

W. F. WARD, *Government Analyst.*

W. HARRISON, *Esq., Chief Inspector of Sheep.*

This animal continued suckling calf till January, both having improved in condition, but the local manifestations appearing stationary since my first examination, and showing no signs of improvement, the evident course was to destroy it. Mr. Weeding then, in the interests of this investigation, very kindly handed over the beast for that purpose. The *post mortem* showed tuberculous deposits on the liver, lungs, and mesenteric glands.

No. 5. The property of Mr. Exton, Oatlands. A red and white steer, 5 years old. This animal, after purchase, was lost for about two years, and when found presented the following

appearance :—Enormous tumour on the left under-jaw, similar to No. 4, but much larger. This animal improved in condition after being found and placed upon good feed. *Post mortem*—Tuberculous deposits in the liver, lungs, mesenteric glands, and intestines, accompanied by large numbers of fluke throughout the liver.

No. 6. The property of C. S. Agnew, Esq., Waverley. Red steer, 5 years old. Tumour on both under-jaws, bones extensively invaded; internally, tuberculous deposits in the liver and mesenteric glands similar to the cases already detailed.

No. 7. The property of G. W. Keach, Esq. A red steer, 6 years old, affected about three years. This, with No. 2, was purchased by Mr. Keach about three years ago in a mob that was sent to the Lakes. Eventually 10 of the number developed the disease in that part of the country; eight of them had been destroyed, these two being available for examination. During about three weeks this animal was under my observation the disease apparently made no progress, the animal in that period improving very much in condition. External manifestations—A large scrofulous tumour on the left upper-jaw, presenting several ulcerated spots. *Post mortem* showed tuberculous deposits in the liver, lungs, and mesenteric glands, also associated with fluke.

No. 8. The property of H. E. Headlam, Esq. A pure Durham bull, bred by Russell Young, Esq., from stock imported between six and seven years ago from Victoria. This animal, a little over three years old, had been suffering about 15 months from a large scrofulous tumour on right under-jaw, and was gradually wasting away. *Post mortem*—Tuberculous deposits in the liver, lungs, and intestines, and large numbers of parasites in the mesenteric glands; fluke also in the liver, and melonotic deposits under the skin, probably due to the animal being pure white.

No. 9. The property of Edward Dowling, Esq. An aged red steer. Large scrofulous tumour on both under-jaws, low condition, tuberculous deposits on the liver, lungs, and mesenteric glands, the lungs also containing numerous hydatids.

No. 10. The property of A. M. Johnson, Esq. An aged working bullock had been suffering for upwards of three years, having been purchased in this condition. According to the owner, the disease appeared no worse while in his possession. This animal was affected by external tumours on both under-jaws. The *post mortem* showed tuberculous deposits on the intestines and lungs, old pleuritic adhesions, valvular disease of the heart, and calculus in the kidneys; the liver was free from disease comparatively with the cases already cited. The beast was in very low condition, but now set aside from work for the purpose of being fattened, though the *post mortem* revealed a very poor prospect of such being effected.

No. 11. A bullock imported by the T.S.N. Co. from Twofold Bay. Large tumour on the right upper-jaw, tuberculous deposits in the viscera, similar to No. 7.

No. 12. The property of Charles Headlam, Esq. An aged red bullock, very large frame, and in fair condition; tumour on the left under-jaw, small tuberculous deposits throughout the liver, lungs, and in the intestines.

No. 13. The property of Mr. Propsting, Hobart. White and red small dwarfish cross-bred cow, 5 years old. Tumour on the right upper-jaw, and extensive deposits throughout the whole of the viscera, the intestines nearly perforated in some parts. This case I consider the worst affected internally that has come under my notice.

No. 14. The property of John Butler, Esq. Three-year old heifer. Local manifestations—Large scrofulous tumour on left under-jaw, containing numerous scrofulous abscesses. This specimen is now in the possession of Dr. Perkins, of Hobart, who was present during the *post mortem*. Internally the disease in this case was less marked than any of the foregoing cases enumerated.

Microscopic examinations of Nos. 1, 2, 4, 5, 12, and 14 revealed the characteristic conditions generally found in scrofula with tuberculosis, viz., granular material, calcareous deposits, and broken-down tubercles.

Mortality.—By the foregoing it will be seen that the disease invariably will become fatal sooner or later; but the most serious feature is the considerable time that may elapse before this result is reached, in the meanwhile the animal gradually becoming less valuable, still requiring an equal amount of care and sustenance with the perfectly healthy cattle; in every case the animal if not allowed to perish from the disease, must be slaughtered to avert utter loss no matter what the condition be,—so that economically the malady is a serious one. Though very prevalent in this Colony no estimate of its frequency can be formed, as there are no measures in force to ascertain to what extent it does prevail.

The flesh as human food.—Any organ or texture affected by this disease should be destroyed, but as the flesh is seldom attacked but very little danger can arise where thorough cooking is practised.

The milk.—That the milk of cows suffering from this affection is deteriorated in quality there cannot be a doubt (see analysis), and there is every reason to prohibit the use of it, and especially for

infants who rely upon this for sustenance; even if it do not possess infective properties, its deficiency in nitrogenous elements, and the increased proportion of earthy matter, would alone render it an objectionable article of diet.

In conclusion, I may state that the disease is not cancer, as has been alleged, but is *scrofula with tuberculosis;* and too much care cannot be exercised in selecting stock for breeding, and dairy purposes especially. As the disease is hereditary, and does not show itself until about the same period of life as when the sire or dam was affected, or even to the second generation, all affected animals should be destroyed at the earliest opportunity, before the system becomes impregnated with the disease; and every bull kept for stud purposes should be licensed.

I have now much pleasure in testifying to the very kind and able assistance afforded me while prosecuting my researches in this important subject, by the various gentlemen referred to throughout the report; Mr. Keach particularly putting himself to great inconvenience, and extending his well-known hospitality most cordially towards me.

I have the honor to be,
Sir,
Yours obediently,
ARCHIBALD PARK, *M.R.C.V.S.*

To the Chief Inspector of Stock.

WILLIAM THOMAS STRUTT,
GOVERNMENT PRINTER, TASMANIA.