

We do not intend to appraise the precise value of mallein from the results obtained in these experiments, but prefer to wait until we can base our estimate on a larger series of observations. The readers of this article will probably form their own conclusions on the matter, but in doing so two points should be kept in mind. The first is that the majority of the horses discovered to be glandered on *post-mortem* did not present during life any symptom from which the most experienced practitioner could have certainly diagnosed the disease. The second point is that the non-discovery of glanders lesions in certain of the cases is not absolute proof of their non-existence. In most of the cases the *post-mortem* examination had to be carried out at a knacker's, and it had sometimes to be of a rough-and-ready character.

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### A FREQUENT BUT UNSUSPECTED CAUSE OF INTESTINAL CALCULI.

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AS our literature on the above subject is by no means so complete as it might be, I am induced to record the following experience, in the hope that it may prove of some interest.

Between the years 1884 and 1889 I was somewhat puzzled to account for the formation of the calculi to which were due an extraordinary number of fatal cases in the stud under my care. During that period no less than sixteen deaths from this cause occurred in a stud of about a thousand horses. With a view to discovering the cause for these formations, I had the calculi, which were carefully preserved from each case, ground down so as to reveal the nuclei; and in the majority of instances I found them to consist of a small piece of metal, which, I conjectured, must have gained access to the alimentary canal mingled with the food. It was also deemed advisable to submit several of the concretions to an analytical chemist, with a view to ascertaining their composition and thus perhaps the origin of their formation. The opinion of the chemist was, from the preponderance of ammonia which was in them, that they were in some way due to the ammonia gas in the stable, but I did not feel justified in accepting this as feasible, especially as in every case there seemed a more palpable and probable cause.

I subsequently made inquiries of other practitioners who had large studs under their care, and was informed that their percentage of deaths from this malady was much less than mine. What to my mind seemed an important point was the fact that a similar proportion of cases were reported from our provincial depôts; and as all our stables were supplied with provender from one centre, this confirmed me in the conclusion which I had previously come to, viz., that I must confine my attention either to the corn supply or the fittings of the mangers for a solution of the problem. As regards the construction of the mangers, none of the nuclei were of such a character as to indicate definitely that they were derived from that source. I therefore concentrated my attention on the food, and being desirous of ascertaining what precaution was in existence for

the removal of foreign bodies, especially those of a metallic nature, from the provender that was supplied to us, I visited our corn stores, and found that no machinery was in use for the special purpose of abstracting these substances, the provender being simply mixed by manual labour.

Thinking there must be some better and more scientific method in existence, I obtained permission to view the system adopted by other large firms, and found that they had machinery in the form of magnets over which the corn was made to pass slowly; in one instance it consisted of horse-shoe shaped magnets placed at intervals in the spout down which the corn was shot. In another instance, which I greatly approved of, an automatic separator was used, which contained a flat plate of magnetised steel, about two inches wide and three feet in length, situated on a sloping plane over which the corn trickled slowly; immediately over this were little brushes attached to a circular strap, for the purpose of sweeping off the magnetic plate all metallic bodies which had been attracted by it into a box provided at the side for their reception.

Upon examination of the contents of this box I was quite astonished to find such a numerous and varied collection; it consisted of nails of different sizes, the majority of which were of a peculiar shape and make, having large round heads and a somewhat short shank. The fact that many of the heads were broken off (in all probability by other parts of the machinery) instantly recalled to my mind the similar appearance of the nuclei in several of the concretions that I had examined, and I felt more strongly convinced of the correctness of my original surmise.

After this discovery, suggestions were brought forward and adopted for laying down similar plant in our own granary, with the result that its success has already been made manifest.

Still wishing to clear up the difficulty as to the source of the peculiarly shaped nails mentioned above, I procured the opinions of several ironmongers, and they each informed me that they were of foreign manufacture, but my curiosity was not fully gratified until I had consulted an old captain of a merchant vessel. He at once pronounced them to be the usual kind of nail in use for tacking canvass around the sides and bottom of the hold of the ship, so as to prevent the oats working their way between the crevices of the vessel, and getting down into the machinery.

The occurrence of these nails amongst corn of foreign importation is thus accounted for by the inadvertence of the men who use them, and in the majority of cases the heads of these particular nails formed the nuclei of the concretions already mentioned. It must be worthy of the attention of all large owners of horses, who of necessity are obliged to make use of corn imported from foreign countries, to take the precaution of fitting up machinery such as I have attempted to describe.

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