# HISTORICAL COLUMN/COLONNE HISTORIQUE

Canada's veterinary journals have a tradition of including historical reports and references to past developments in veterinary medicine in Canada and around the world. Dr. C.A. Mitchell's reports in the early years of the Canadian Journal of Comparative Medicine is one example and Dr. C.A.V. Barkers' more recent papers in the Canadian Veterinary Journal is another. The D.L.T. Smith special issue of the Canadian Veterinary Journal emphasized history.

Discussion at a recent meeting of the journal directorates led to the adoption of a "Historical Column" in the Canadian Veterinary Journal for which I will be responsible. It is a pleasure to take on this responsibility.

The intention of the column is to have articles on various subjects related to veterinary medicine and animal disease and animals. The length of the items will vary, will not necessarily be of a standard format and may not appear in each issue of the journal. Readers are invited to send me items, papers, suggestions, pictures, comments, etc. for consideration in the column.

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Les revues vétérinaires du Canada ont développé une tradition qui consiste à publier des rapports historiques et des références aux développements du passé en médecine vétérinaire, tant au Canada qu'ailleurs dans le monde. Les rapports que publia le Dr C.A. Mitchell, dans les premières années de la revue canadienne de médecine comparée, en constituent un exemple, tout comme les communications plus récentes du Dr C.A.V. Barker, dans la revue vétérinaire canadienne. Le numéro de cette revue, dédié au Dr D.L.T. Smith, mettait aussi l'emphase sur l'Histoire.

Une discussion, tenue lors d'une réunion récente des bureaux de rédaction des revues vétérinaires du Canada, s'est soldée par l'adoption d'une "Colonne historique", dans la revue vétérinaire canadienne, et j'en ai accepté la responsabilité, avec plaisir.

Nous voulons publier dans cette colonne des articles sur divers sujets relatifs à la médecine vétérinaire, aux maladies animales ou aux animaux. La longueur de ces articles variera, leur format ne sera pas nécessairement le même et ils n'apparaîtront pas obligatoirement dans chacun des numéros de la revue vétérinaire canadienne. J'invite par conséquent les lecteurs à me faire parvenir des sujets d'articles, des suggestions, des articles, des photos et des commentaires que je prendrai en considération, en vue de leur publication dans cette colonne historique.

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# Special Report on Pictou Cattle Disease: Part 1

J.G. RUTHERFORD

I have the honour to report that the results of the investigation into the nature and causes of Pictou Cattle Disease, which was begun at Antigonish in October, 1903, have been sufficiently definite to warrant me in recommending the removal of this malady from the list of those coming under the operation of the Animal Contagious Diseases Act. For upwards of twenty years it has been the policy of the department to order the slaughter of affected animals and to pay compensation for them, as also to insist on the disinfection of the buildings in which they have been kept. During the whole of this time, and in fact for many years previous, the more intelligent residents of the district in which the disease prevails have been of the opinion that it is not only non-contagious, but that its prevalence is due to or connected in some way with the weed known as Senecio Jacobea or Ragwort, locally known as Stinking Willie. Evidence existed to show that the disease was unknown until the weed in question was accidentally introduced with ballast brought from Scotland to the town of Pictou some fifty years ago. Once established the plant spread gradually through the surrounding country, extending, however, owing to the prevailing winds, the seed being light and easily carried by their agency, to a much further distance eastward than westward of its original starting point. Shortly afterwards the disease made its appearance, and although some years elapsed before any suspicion as to the weed being its cause was aroused, it was at last noted as a peculiar coincidence that only the cattle kept in the weedy area were affected. As time passed it was further observed that the mere presence of the plant in a district was not apparently sufficient to produce the affection, but that it was only after it had obtained a firm foothold in the pastures and meadows that the disease began to make its appearance.

About the year 1882, an attempt at investigation was made and some experiments were undertaken with a view to ascertaining whether or not there was any foundation for the popu-

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lar belief as to the connection between the weed and the disease, which, by this time, had been recognized as a peculiar and almost specific cirrhosis of the liver. Unfortunately, however, these experiments were unsuccessful in throwing any new light on the subject, with the result that Pictou Cattle Disease was declared to be contagious, and the policy of slaughter and compensation above referred to brought into force. From time to time in after years, the subject was investigated by Dr. William Osler, Dr. Adami, the late Dr. Wyatt Johnston and other skilled pathologists, but invariably with negative results, so far at least as concerned the establishment of any definite and intelligent theory as to its true nature and causes.

During the whole of this time close observers in the affected district were becoming each year more strongly convinced that Ragwort, and that alone, was responsible. Many of these men, although receiving little encouragement to do so, took steps to eradicate the plant from their farms and to induce their neighbours to do likewise, with the result that their animals remained unaffected, while those kept on weedy farms sickened and died. These conditions were especially noticeable when, in addition to keeping the weed down in the pastures, care was taken to remove it from the hay fed during the winter. It was also observed that in years when scarcity of hay necessitated wintering cattle on straw, animals so treated seemed to be immune. In the light of our recent experiments, it seems almost incredible that these and similar facts did not sooner force a full recognition of the true situation, which would have undoubtedly been the means of inaugurating a campaign of extermination against the weed at a time when such a task would have been much less difficult than now.

For some years Dr. Gilruth, Chief Veterinarian and Bacteriologist to the Government of New Zealand, devoted considerable attention to a peculiar hepatic cirrhosis known in that colony as Winton Disease, and from which, up to 1901, and these in one locality only, horses had appeared to suffer to a greater extent than either cattle or sheep. Dr. Gilruth initiated some experiments and finally reached the conclusion, without doubt well justified, that the trouble was entirely due to the ingestion of Ragwort. His experiments, while convincing, were not, owing to apparently unavoidable circumstances, conclusive, although strengthened by corroborative evidence from Cape Colony, where a like disease has been traced by Mr. W.H. Chase, Government Veterinarian, to the agency of another plant of the same species, Senecio Burchelli.

For the above and other apparent reasons, such as the different climatic, economic and dietetic conditions and the lack of absolute proof of the identity of Pictou Cattle Disease with the Hepatic Cirrhosis of the Antipodes, his decision could not, with propriety, have been accepted by this department as the basis for a complete change of policy even had it been made public before the inauguration of our experimental work at Antigonish in 1903.

The latter has been very interesting and its results are convincingly corroborative of the view of those who have consistently held to the ragwork theory.

My last report contained a full account of what had been done during the year preceding October 31, 1904, together with our findings up to that date, but in order to make the case perfectly clear, I think it best to recapitulate the main points before proceeding to deal with the intervening period.

In October, 1903, I with your approval, leased, for experimental purposes, a farm of 200 acres at Cloverhill, county of Antigonish, Nova Scotia. This farm is, of course, situated within the ragwort area, but is further well known as one on which the disease in former years frequently made its appearance. Thirty-four cattle were purchased, four of which had been raised on the premises, the remainder being secured from districts in which there is no ragwort. Sixteen head, including the four natives, were placed in an old stable on the premises, in which at different times thirty-six cattle had died from hepatic cirrhosis. They were fed entirely on food imported from Quebec. Four were given a liberal allowance of sound hay with a full grain ration, four a liberal allowance of hay with a smaller grain ration, four a liberal allowance of hay without grain, and four a limited allowance of hay only.

The other eighteen head were placed in an entirely new stable, erected at a considerable distance from the old buildings. Sixteen of these were divided into quartettes and fed in exactly the same way as above mentioned, except that the hay given to them, being secured in the neighbourhood, contained a considerable amount of ragwort.

The remaining two cattle were housed together in a separate compartment of the new stable, one being fed on chopped ragwort and the other on oat straw, a small ration of bran being given to each.

The progress of the experiments up till October 31, 1904, was described in my report of that date, but in view of the remarkable results obtained, and of all the circumstances in connection with the case, I have thought it best to make the present statement complete in itself, although it is, after all, but a resume of the exhaustive report furnished by Dr. Pethick, which is printed herewith.

Leaving out details to be dealt with by him, I may state that all the sixteen cattle kept in the old and supposedly infected stable, and fed on imported hay, which was, of course, free from ragwort, remained perfectly healthy for the entire period of twenty-three months during which the experiments were in progress, although in the summer of 1905, eight of these cattle were kept in a weed infested pasture, in which fourteen animals had died of hepatic cirrhosis, in the short space of five months. Several of these animals had also been placed from time to time in close and continued contact with diseased animals, with a view to ascertaining whether or not the disease was transmissible in this way.

During the summer of 1905, also, ten of these animals were inoculated in various ways, either with blood or abdominal ascitic fluid, taken from an animal affected with Pictou Cattle Disease, to such an extent that Dr. Higgins, our pathologist, reported the cirrhotic lesions of the liver to be more extensive than in any of the others which he had examined. In spite of these severe tests, the animals continued to thrive, and when I saw them in September, 1905, were in excellent condition, those which had been fed

grain presenting a remarkably fine appearance. Thirteen of these cattle were slaughtered between October 10 and November 1, under the careful inspection of Dr. Pethick, as well as several experienced butchers, all organs being found healthy and the flesh of superior quality. Specimens from the different organs were also forwarded to the laboratory here, and pronounced by our pathologist to be absolutely free from disease. The other three animals, being pregnant cows, were allowed to live, and according to latest reports, are in excellent condition, and in full flow of milk, after having given birth to healthy calves.

Of the sixteen animals which were kept in the new stable and fed upon local hay, which contained a considerable quantity of ragwort, fifteen died of Pictou Cattle Disease between July 19, 1904 and August 21, 1905. I may add that to prevent the possibility of doubt as the cause of death in these animals, specimens from the internal organs of each were forwarded to Dr. Higgins, who verified the diagnosis in every case. The sixteenth animal, No. 12 of Dr. Pethick's report, was slaughtered on October 13, 1905, and although to all external appearances healthy, the pathological examination of the organs showed a slight affection of the liver, and the presence of several characteristic ulcers on the lining of the true stomach.

Of the two other animals mentioned above, one of which was fed on chopped ragwort, and the other on oat straw, each receiving a small allowance of bran, the former died of acute hepatic cirrhosis on July 22, 1904, while the latter remained healthy during the entire test, and, when slaughtered on October 24, 1905, was found to be absolutely free from the slightest appearance of disease.

A calf six months old, born on the premises, was fed twice daily upon a mixture of one part of ragwort before flowering, and twenty parts of clean hay, reinforced by a daily ration of two pounds of fresh oats. This experiment which was undertaken for the purpose of ascertaining if the weed would produce the disease at this stage of its growth, began on December 1, 1904. The calf died on May 26, 1905, post mortem and pathological examinations revealing advanced stage of hepatic cirrhosis. The contact and innoculation experiments, which are described in full detail in Dr. Pethick's report, were absolutely without result, if being evidently practically impossible to transmit the disease from one animal to another.

In view of the results of these practical experiments, which have been carried on with the greatest possible care and exactitude, there need, I think, be no longer any doubt as to the cause of Pictou Cattle Disease, and I have, therefore, already recommended that it be removed at once from the list of affections dealt with under the Animal Contagious Diseases Act.

While subsidiary experiments conducted by Dr. Pethick show that some benefit undoubtedly results, especially in incipient cases, from the strychnine and iron treatment described by him in a previous report, measures of this kind are of little real value. The efforts of the local authorities and of the stock owners in the affected district should at once be directed towards the eradication of the plant, which is undoubtedly the cause of the whole trouble.

Owing to the topographical and other conditions existing in the district, it will be quite impossible to get rid of the weed by cultivation, although, on arable land, much can, of course, be achieved by this means. There is, however, much rough and partially wooded country, most of which is badly infested with ragwort, to eradicate which, by any ordinary methods, will be practically impossible.

It has been noted by intelligent residents that sheep seem to be able to eat the weed with impunity, although some hold that, after a considerable period, injurious effects are produced, which, if the diet is continued, eventually cause death. It is also held that, even where the plant does not prove fatal, the mutton is rendered unmarketeable by a yellow staining, which, after a time, becomes distinctly noticeable.

As to one fact there is, however, no doubt, viz., that the keeping of sheep on land infested with ragwort is one of the most certain means of bringing about its complete eradication in a short time. This being the case, and in view of all circumstances, I decided to inaugurate a series of experiments for the purpose of ascertaining whether or not sheep could profitably be utilized for this purpose. I, therefore, early in 1905, authorized Dr. Pethick to purchase four sheep, which were kept during the summer on four acres of very weedy pasture, with the result, as shown by the accompanying pictures, of completely destroying the ragwort which formerly grew in profusion. So far, these animals have shown no symptoms of disease. Several other sheep were purchased a little later for the purpose of ascertaining at what stage, if any, the tissues began to exhibit the yellow stain to which reference has already been made. These animals have been slaughtered at intervals, and the flesh carefully examined, but no abnormal appearance has been so far observed.

The lease of the premises being for three years, I determined with your permission, upon the conclusion of the experiments with cattle, to purchase a number of sheep with a view to securing definite information on the points mentioned above. If it can be shown that sheep eat Ragwort with impunity and that no deleterious effects are produced upon the mutton, it goes without saying that they will constitute by far the most practical and profitable agency which can be used by the residents of the affected district in ridding their farms of this dangerous pest. The country in which the weed is found is one exceedingly well adapted for sheep culture, and I am convinced that the introduction to the district of this branch of husbandry at the present time, when both wool and mutton are increasing and likely to increase in price, will prove highly profitable.

As stated above, there is much rough pasture while the arable land has, in many cases, been seriously impoverished by the crude methods of cultivation in vogue, and would be at once enriched and improved by the keeping thereon of a reasonable number of sheep.

I, therefore, authorized the purchase, in November last, of forty sheep, which were divided into two lots, one score being fed during the winter on weedy hay, while the others were fed upon hay grown in the district but from which all ragwort had been carefully removed.

Eight goats were also purchased, four being placed with each lot of

sheep. These animals have all wintered well, and it is my intention, as soon as pasture becomes available, to subdivide them again, keeping ten sheep and two goats of each lot on clean pasture, and a similar number on pasture badly infested with ragwort. By this means it ought to be possible to ascertain with a reasonable degree of certainty what are the actual effects of ragwort upon sheep, as well as to a certain extent also upon goats.

It might, perhaps, be advisable to continue this experiment even longer than is proposed, but I am in hope that by the close of the present season we will be in a position to give definite and reliable advice as to the utilization of these animals in stamping out ragwort, and with it the long dreaded Pictou Cattle Disease.

Concurrently with the above, an experiment is being carried on with the view of fixing even more certainly upon ragwort the responsibility of causing hepatic cirrhosis. Three healthy young cows have been, since November 1, 1905 fed on locally grown hay from which all weed has been removed, while three others are fed on similar fodder containing the ordinary quantity of ragwort usually produced in the meadows of the neighbourhood.

In January last, also, a disabled mare of little value was purchased and is being fed twice a day on hay containing a large quantity of ragwort, chopped fine and carefully mixed. This experiment is controlled by feeding a horse, kept at the station, on hay from which the weed has been entirely removed.

I have much pleasure in again referring you to the careful and elaborate report of Dr. Pethick, who deserves much credit for the systematic, exact and painstaking manner in which he has carried out these important experiments.

*J.G. Rutherford*
*Veterinary Director General*

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## BOOK REVIEWS

*Diseases of Wild Waterfowl.* G.A. Wobeser. Published by Plenum Publishing Corporation, New York. 1981. 300 pages. Price $39.50.

This volume stands half way between a text for laymen and a textbook of pathology of waterfowl. Wild ducks, geese and swans are one of the riches of Canada and are constantly being influenced by man and his activities. Population growth, environmental degradation and agricultural practices are constantly reducing the space available to these species. Also, diseases may be exchanged between domestic and wild populations. All these factors must be taken into consideration by biologists managing wild waterfowl. These persons often lack the facilities available to poultry farmers and must be concerned with population medicine, trying to prevent and control diseases rather than treating them.

Dr. Wobeser has applied his attention to the managerial side of medicine, and his book can almost be considered as a field guide of waterfowl medicine. He also gives a good account of special care required by captive waterfowl as well as their more or less specific diseases. These parts should be particularly helpful to private bird fanciers.

The main sections of the book deal with viral, bacterial, fungal and parasitic infections. A major chapter emphasizes intoxications, be they of natural (botulism for instance) or man-made origin (pesticides, PCBs, etc.)

A very interesting part of the book is devoted to investigation of disease outbreaks, as well as techniques to be used for necropsies, sampling, etc. This should help all investigators involved to obtain more meaningful and rewarding results from field work often conducted under difficult conditions or in remote locations.

*C. Gardell.*

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*Genetics for Dog Breeders.* Roy Robinson. Published by Pergamon Press Ltd., England. 1982. 264 pages. Price $19.95.

This book is oriented toward the dog breeder, as the title implies, but it is also a valuable addition to the library of both the practicing veterinarian and veterinary student.

The author introduces fresh genetic material which is essential knowledge for the practitioner and student alike. The book will help practitioners to guide a client's breeding program. It is well organized and touches on the basics of dog breeding from the selection of parents' stock and breeding policy to systems of making.

It has a large chapter on color and coat variation with explanations of the different types of coat and colors present within breeds such as the Shetland Sheepdog. Many terms, known to the dog breeder, are defined in this chapter. A working knowledge of these terms is essential for the practitioner to be able to communicate effectively with the increasingly knowledgeable client.

The final two chapters review the many abnormalities seen in the different dog breeds and some of the behavior aspects of the dog.

The only complaint about this book is that at times, it is difficult to comprehend. This is partly due to the complexity of the subject. Some knowledge of genetics is required at times.

My personal view is that it is an excellent book to consult on most matters of breed improvement. *K. Post.*