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Dear Colin,

Thank you for your update of 14 September, 1993. At one point you remarked that I was somewhat Pythonesque. Providing you don't think me pedantic then all will be well. Lewis Carroll was making similar observations a long time ago.

"What did they live on?" said Alice, who always took a great interest in questions of eating and drinking.

"They lived on treacle," said the Dormouse, after thinking a minute or two.

"They couldn't have done that, you know," Alice gently remarked. "They'd have been ill."

"So they were," said the Dormouse; "very ill."

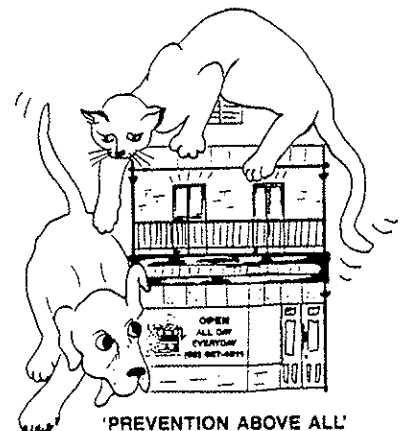
Alice's Adventures in Wonderland

by Lewis Carroll

One day we may be able to lock horns again as to the 'cause' of our disagreement on the role of 'cause and effect'. Of more immediate concern is the vast number of variable involved in any form of nutritional research. By limiting the variables then the research results tend to relate to the experiment and the experiment alone. By admitting of increased numbers of variable necessitates intelligent interpretation with huge scope for error. And, of course, there is plenty of scope for getting it wrong in both respects.

Naturally I am keen that the approximation to a 'natural diet' should perform well. So that the results do not relate to the experiment alone, I would be keen for the animals to have grass, soil and faecal material just as in any household environment. If this is out of the question, then I believe Pottenger's paper gives me grounds for optimism that a meat and bone diet, however wide of the natural, will still suffice. Grant Guilford at Massey tells me that the nutrient profiles of chicken wings pretty closely complies with published minimum requirements for known nutrients. (He is going to prepare a more detailed report on this issue).

Reverting to periodontal concerns. We are increasingly aware that it is only the killing activity or the offering of whole carcasses which serves to clean the canine teeth of the average mesocephalic dog. When our patients are maintained on relatively small piece meaty bone diet we are now encouraging brushing of the canines, incisors and proximal gum.



The significance of a small amount of periodontal disease, I believe, should not be underestimated. The 'Cybernetic Hypothesis of Periodontal Disease' says that the carnivore which fails to kill and, therefore, fails to clean its canines will develop periodontal disease and thus commence the marginalisation of the particular individual. It is likely that minor periodontal disease whilst producing undetectable changes to us as clinicians, will bring about that small incremental disadvantage for the animal. (The butterfly effect of Chaos Theory)

It is for this reason that I have a poor regard for the British Medical Journal paper '*Dental disease and risk of coronary heart disease and mortality*'. The weak correlation between severe periodontal disease and cardiac infarcts disregards what might have been a strong correlation with minor periodontal disease. It is tantamount to a study on the correlation between flame-thrower generated fires finding only a weak correlation but had the researchers looked at the correlation between fires lit by a match they would have found a huge correlation.

The monitoring of the subject animals will depend on the monitoring of disease and/or the assessment of health. Increasingly I lack confidence in our blunt instruments for the assessment of chronic ill-health. On blood profile basis, I believe that the compensatory mechanisms are so well developed that changes either occur too late or not at all. Finding new, pre-inflammatory indicators might help.

The subjective assessment of health is not commonly undertaken in experimental work, however I believe this offers the best insight into animal well-being. Too often nutritional trials have depended on merely keeping animals alive and maintaining body condition. It might be possible for you to assess activity profiles eg play behaviour, determine coat lustre and measure fecundity.

Your reference 13 is much appreciated. With your approval to use your information in context, I am keeping Grant Guilford at Massey informed that he might make any contribution as he sees fit. 1993 will likely prove quite a watershed. Hoping that this finds you well and that the enclosures are of interest.

With best wishes.
Yours sincerely,

Tom Lonsdale

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