The Industrial Substitution: What Was the Scientific Justification?

Feeding reduced to nutrient engineering; selective truths used to legitimate an untested system

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The charge

Mars helped industrialise the feeding of companion-animal carnivores, claimed scientific authority for the substitution, and helped create the professional environment in which manufactured products became the unquestioned norm.

No published lifetime comparison has been located in the sources reviewed for this paper showing that animals fed a representative Mars industrial diet fare as well as animals receiving an appropriately selected foundational raw meaty bones diet.

Mars made the substitution. Mars claimed the authority. Mars owes the evidence.

Executive assessment

This paper asks one foundational question: what evidence justified replacing the natural feeding system of mammalian carnivores with manufactured products intended for lifelong consumption?

The question is deliberately broader than conventional “pet nutrition”. Feeding is not the delivery of a chemical recipe into a passive container. It includes food structure, oral work, teeth and gums, microbes, salivation, swallowing, behaviour, immunity, systemic feedback, environmental sourcing and waste. Industrial pet-food science narrowed that living system into a formulation problem, then treated success within the formulation exercise as evidence that the substitution itself was justified.

Mars describes itself as a leading provider of “high quality, science-backed nutrition and therapeutic health products”. It links food, Waltham research, veterinary care, diagnostics and data across a Petcare business whose 100,000 associates serve pets in more than 130 countries. [1-2]

That reach does not prove wrongdoing. It does make Mars the clearest first subject for investigation. The public evidence reviewed here does not establish that every Mars product harms every animal. It establishes a prior and more important failure: the biologically relevant comparison has not been produced in the published record reviewed here.

Nutrient tables, limited feeding procedures, laboratory measurements and comparisons between competing processed products cannot demonstrate equivalence to the natural feeding system that was displaced. If Mars did not recognise the problem, the adequacy of its scientific system is in question. If it recognised the problem only in fragments, investigators must ask why those fragments were not connected. If contrary evidence exists, it must be identified and disclosed.

1. Feeding was reduced to “nutrition”

Words can conceal before they inform. In the industrial pet-food system, “nutrition” became the controlling word. Once accepted, it shifted attention from what carnivores do with food to what manufacturers put into a recipe.

Dogs and cats evolved consuming prey, carcasses, tissues and bones. Feeding involved gripping, ripping, tearing, chewing, gnawing and crunching. Those actions provided mechanical cleaning and gum stimulation, exercised the jaws and body, influenced salivation and swallowing, occupied behaviour, and continually altered the microbial and immune environments of the mouth and gut.

Industrial manufacture separated recognised nutrients from those functions. The animal was treated as though health could be engineered by calculating protein, fat, energy, vitamins and minerals, then delivering them in a pellet, loaf, sachet or therapeutic formula.

Nutrient science is useful. Deficiency and excess can cause disease. But the presence of listed nutrients cannot establish that the food performs the work of feeding. A recipe may be chemically adequate while biologically impoverished.

> **The foundational category error**
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> The industry did not establish that manufactured nutrition was equivalent to natural feeding. It redefined feeding as nutrition, defined nutrition as nutrient provision, and then declared success when its products met the resulting formulation rules.

2. Selective truth can serve a larger falsehood

A corporation as sophisticated as Mars need not depend upon crude, easily disproved claims. A more durable system can be built from statements that are narrowly or literally true:

- the product contains recognised nutrients;
- the formulation meets an industry profile;
- a prescribed feeding procedure was completed;
- a selected dental, urinary or metabolic measurement changed;
- scientists participated;
- veterinarians recommend the product.

Those fragments may create a much larger impression: that industrial feeding is biologically appropriate, independently validated, health-promoting and superior to natural alternatives. The larger impression does not follow merely because each fragment can be defended in isolation.

This investigation therefore asks not only whether an individual sentence is technically defensible. It asks what overall representation was created; which comparator was omitted; which outcomes were not measured; which qualifications were buried; and which institutions supplied apparent independence.

Mars should not be permitted to choose a narrow playing field, define the rules, fund the referees and then invoke rule-compliance as proof that the underlying enterprise is sound.

3. What “complete and balanced” establishes - and what it does not

The United States Food and Drug Administration explains that a pet food may carry a “complete and balanced” nutritional adequacy statement by meeting an AAFCO nutrient profile or passing a feeding trial conducted under AAFCO procedures. Under the nutrient-profile route, the listed nutrients must be present at the recommended levels.[3]

FEDIAF describes its European nutritional guidelines as a practical guide for manufacturers, intended to confirm basic nutrient levels and help manufacturers assess the nutritional value of practical pet foods.[4]

Those systems may reduce identifiable formulation errors. Neither requires a lifetime comparison with whole prey, carcasses or foundational raw meaty bones feeding. “Complete and balanced” is therefore a defined nutritional adequacy claim. It should not be inflated into a claim that a product is complete in every biological function, balanced across a lifetime, or demonstrably equivalent or superior to natural feeding.

A limited but useful claim

A nutrient profile may show that specified nutrients are present. It cannot show that teeth are cleaned, gums are exercised, oral ecology is regulated, natural behaviour is expressed, or lifetime disease and treatment burdens are reduced.

4. The industrial substitution vanished from scientific view

Once processed food became normal, research increasingly compared one manufactured product with another. The industrial premise moved outside the frame. Studies refined recipes, adjusted nutrient levels, measured selected endpoints and developed disease-specific products. The original question receded: should the natural feeding system have been replaced at all?

Raw Meaty Bones: Promote Health records how advertising, company-sponsored meetings, “scientific” articles and veterinary teaching helped establish processed products as orthodoxy. It records a 1991 Australian series of symposia sponsored by Uncle Ben’s, then a Mars division, with speakers from the Royal Veterinary College and Mars’s Waltham research centre, promoted as a world authority on pet care and nutrition.[5]

This is not merely a history of product promotion. It is a history of category control. The manufacturer’s definition of the problem became the profession’s definition. The profession then supplied legitimacy to the manufacturer’s solution.

Mars did not simply sell pet food. It helped manufacture the intellectual, professional and regulatory environment in which industrial feeding could be treated as normal, natural feeding could be treated as suspect, and the decisive comparison could remain unperformed.

5. Waltham had reason to investigate - and did

Source correction

The complete 13-page Borthwick report and the original Brown and Park paper have now been recovered. Earlier statements that only the opening pages were available are superseded by this edition.

Sir Frank Colyer reported in 1947 that periodontal disease was uncommon under natural conditions but common in captive and domestic animals. He described domestic dogs and cats living more freely and eating food nearer their natural food as practically free from the disease, and attributed the contrast to changes in the physical or chemical character of the diet.[6]

In 1968, Brown and Park studied 26 adult beagles maintained on a moist diet. Regular raw oxtail feeding rapidly removed much of the established calculus and controlled its reaccumulation. The authors reported the feasibility of preventing calculus accumulation through regular weekly oxtail feeding.[7]

R. Borthwick then prepared The Distribution, Prevalence and Some Factors Associated with Periodontal Disease in Dogs and Cats for the Animal Studies Centre at Waltham-on-the-Wolds. The report reviewed Colyer and Brown and Park, and examined dogs and cats presented to the Royal (Dick) School of Veterinary Studies.[8]

What the Borthwick report establishes

Broad meat categories did not distinguish oral outcomes well. Regular access to demanding chewing materials - bones, rawhide or very hard biscuits - was, however, associated with highly significantly lower periodontal, plaque and calculus indices. In the analysis, bone was associated with the lower mean deposit indices.

Borthwick concluded that modern methods of feeding dogs and cats did not appear to have improved dental health; that increased masticatory function could be of great advantage in controlling periodontal problems; that routine toothbrushing was largely impractical; and that the prevailing veterinarian-patient approach was largely ineffective. He proposed modifying diets to increase mastication and redirecting veterinary dental care towards prevention rather than palliation at a terminal stage.

> **What the report does not establish**
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> The study was observational. Diet histories were mixed. Bones were considered alongside rawhide and very hard biscuits. Borthwick also recorded risks associated with uncontrolled or unsuitable bone provision, including dental attrition and obstruction.
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> The report was not a lifetime comparison between foundational raw meaty bones feeding and a representative industrial diet.

The decision trail now required

Those limitations called for a better experiment. They did not justify abandoning the question. Investigators must now establish who commissioned and received the report; how it was reviewed; what data and correspondence survive; which successor studies were proposed; and why its preventive conclusions did not lead to the foundational comparison.

The question did not remain inside Waltham. In 1994, an Australian Veterinary Association-commissioned review by A. D. J. Watson, later published in the Australian Veterinary Journal, concluded that periodontal disease remained a serious diet-related problem; that nutritionally complete soft food could remain physically inadequate; and that further research comparing diet types and oral health was required.[9-10]

The natural-feeding question was therefore visible within corporate science and throughout the wider profession.

6. The missing comparator

No published lifetime trial has been located in the sources reviewed for this paper comparing animals fed a representative Mars industrial diet with animals fed an appropriately constituted foundational raw meaty bones diet.

The relevant comparator is not an indiscriminate “raw diet”, a minced commercial mixture, a BARF recipe, a home-cooked ration or an isolated bone offered as an occasional chew. It must preserve the functional feeding principle: suitably selected raw meaty bones and carcass material forming the dietary foundation, with oral work and food structure treated as indispensable rather than optional.

An adequate comparison would need to examine, over meaningful periods:

- plaque, calculus, gingivitis, periodontal attachment and tooth retention;
- the two high-risk eruption periods in young animals;
- oral and gut microbial ecology;
- chewing, satiety, occupation and other behavioural outcomes;
- inflammatory, immune and systemic disease markers;
- veterinary procedures, medication, adverse events and owner costs;
- quality of life, longevity and environmental burdens.

The study should be independently governed, preregistered and published irrespective of result. Mars should not control the investigation of Mars.

7. Mars had the means

Mars states that Waltham has advanced pet-health science for more than 60 years. Mars Petcare now combines food and therapeutic products with veterinary care, diagnostics, genetics and data science. Its own current description places 100,000 Petcare associates in more than 130 countries.[1-2]

The continuing evidential gap cannot credibly be attributed to lack of resources, access to animals or scientific capacity. Mars possessed the means to ask the decisive question. It also had obvious commercial incentives to favour research that refined industrial feeding rather than research capable of displacing it.

That incentive does not prove concealment. It would make any claim of ignorance a matter for investigation, not an answer.

Three possibilities

- If Mars did not know, the adequacy of its science and surveillance must be examined.
- If Mars knew in fragments, investigators must determine why the warning signals were not connected and pursued.
- If Mars possessed evidence inconsistent with its public representations, the evidence, decisions and responsible individuals must be identified.

8. The burden belongs to the promoter of the substitution

Industrial food was the innovation. Mars manufactured it, promoted it for lifelong use and claimed scientific authority. The initial burden therefore belongs to Mars.

Mars should demonstrate that its products do more than sustain life and avoid obvious deficiency. It should show that processing, food form and method of consumption do not create important long-term losses; that oral and periodontal health are not compromised; that relevant adverse outcomes were sought and disclosed; and that the industrial system performs at least as well as the biologically relevant alternative.

The absence of a decisive comparison cannot fairly be used twice: first to excuse Mars from proving its system, and then to dismiss foundational raw meaty bones feeding as unproven. The same evidential standard must apply to both.

9. Why corporate claims cannot simply be taken on trust

In 2016, the United States Federal Trade Commission alleged that Mars Petcare falsely advertised that Eukanuba dog food could extend dogs' lives by 30 per cent or more and falsely represented that scientific research substantiated the claim. Mars resolved the matter through a final consent order restricting misleading or unsubstantiated health claims and misrepresentation of research.[11]

The settlement did not determine the wider case advanced here. It does establish a concrete reason why Mars's scientific and health claims must be examined rather than accepted on corporate authority. It also placed substantiation, accurate representation of research and retention of supporting evidence squarely on the company's compliance agenda.

10. Records requiring preservation and disclosure

A proper investigation should obtain and preserve:

1. all Mars and Waltham studies comparing industrial foods with whole prey, carcasses or foundational raw meaty bones feeding;
2. research protocols, unpublished results, adverse or null findings, and discontinued projects concerning food form, chewing, periodontal disease and systemic outcomes;

3. the Borthwick commission, complete report, raw data, scoring sheets, drafts, correspondence, internal review and every research or product decision that followed;
4. the evidential basis for representations such as “complete”, “balanced”, “science-backed”, dental-health promoting and suitable for lifelong feeding;
5. internal assessments distinguishing nutrient adequacy from feeding function;
6. relevant de-identified population data held across Mars veterinary and diagnostic businesses;
7. records showing when senior scientists, executives, directors and family representatives received warnings or contrary evidence, and what action followed;
8. the reasons the foundational lifetime comparison was not undertaken - or, if undertaken, why it was not published.

11. Action required

This paper does not request another industry-managed discussion. It calls for movement.

- Mars should publish any foundational comparative evidence it holds or state clearly that no such evidence has been identified within its records.
- Regulators should require preservation and disclosure of the records identified above.
- Consumer authorities should examine whether narrow substantiation has been used to create materially misleading overall impressions.
- Animal-welfare authorities should examine chronic diet-associated suffering, not merely acute contamination incidents.
- Veterinary and scientific institutions should explain why the industrial premise was accepted and why the biologically relevant comparison was not demanded.
- Parliamentarians, lawyers and journalists should treat the missing evidence as a starting point for independent investigation.

12. Conclusion

The industrial feeding of companion-animal carnivores became normal before its foundational assumptions were properly tested.

The recovered Waltham report now shows that the central preventive contradiction was examined within the corporate research environment and, on the published record reviewed here, remained unresolved. Mars has continued to claim scientific authority, professional standing and concern for animal welfare. Yet no published lifetime comparison has been located in the sources reviewed showing that animals fed representative Mars industrial products fare as well as animals receiving an appropriately selected foundational raw meaty bones diet.

That is not a minor omission at the edge of the science. It is the missing evidence at the centre of the enterprise.

Mars made the substitution. Mars helped define the language. Mars possessed the means to test the consequences. Animals, owners and the wider community may have borne the costs.

The purpose of placing this evidence on the record is not to await a distant reckoning. It is to make continued commercial activity, institutional silence and regulatory inaction progressively harder to justify.

Evidential status

This paper is a public-interest charge and starting point for investigation, not an adjudicated finding of fraud, cruelty or criminal guilt. It distinguishes documented facts, source-based allegations, reasonable inferences and records requiring disclosure. The absence of a located publication reflects the sources reviewed; it is not proof that no unpublished or undiscovered study exists.

References and source notes

References appear in order of first citation. Public links are embedded where available; historical scans are also retained in the project exhibit bundle.

1. Mars, “Petcare”, current corporate description of pet nutrition and therapeutic products, Waltham science, veterinary diagnostics and related services (accessed 26 July 2026). Public source
2. Mars, “Mars Petcare”, current corporate statement that 100,000 Petcare associates help pets in more than 130 countries (accessed 26 July 2026). Public source
3. US Food and Drug Administration, “Complete and Balanced Pet Food”, explaining the AAFCO nutrient-profile and feeding-trial routes. Public source
4. FEDIAF, Nutritional Guidelines for Complete and Complementary Pet Food for Cats and Dogs, 2025; objectives include confirming basic nutrient levels and helping manufacturers assess practical pet foods. Public source
5. Lonsdale, T., Raw Meaty Bones: Promote Health, 2023 text edition, Chapter 1, especially pp. 12-13, recording the August 1991 Uncle Ben’s/Waltham symposium. Public source
6. Colyer, F., “Dental Disease in Animals”, British Dental Journal 82 (1947), pp. 31-35. Archival copy in the recovered primary-document collection. Public source
7. Brown, M. G. and Park, J. F., “Control of Dental Calculus in Experimental Beagles”, Laboratory Animal Care 18(5) (1968), pp. 527-535. Archival copy indexed with the historical papers. Public source
8. Borthwick, R., The Distribution, Prevalence and Some Factors Associated with Periodontal Disease in Dogs and Cats, report to the Animal Studies Centre, Waltham-on-the-Wolds; undated in the recovered copy and commonly cited as 1986. Public source
9. Watson, A. D. J., Diet and Disease in Companion Animals, review prepared for the Australian Veterinary Association, January 1994 (full commissioned report). Public source
10. Watson, A. D. J., “Diet and periodontal disease in dogs and cats”, Australian Veterinary Journal 71 (1994), pp. 313-318 (published article). Public source
11. Federal Trade Commission, Mars Petcare US, Inc., File No. 152-3229, complaint, final decision and order concerning Eukanuba longevity claims, 2016. Public source
12. Lonsdale, T., Multi-Billion-Dollar Pet Food Fraud, especially the discussion of pet-food regulation, chronic harm and missing controlled comparisons. Public source
13. Lonsdale, T., “Preventative Dentistry”, historical proceedings and source index, including Colyer, Brown and Park, and related material. Public source
14. The Pet Food Con, “Mars and the Industrial Pet Food Experiment”, project page. Public source

Source correction note: this edition supersedes earlier references to an incomplete Borthwick report.