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### A coronavirus-like agent present in faeces of cows with diarrhoea

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## LETTER TO THE EDITOR

## A CORONAVIRUS-LIKE AGENT PRESENT IN FAECES OF COWS WITH DIARRHOEA

Sir, — We wish to record observations on an outbreak of diarrhoea in a Rodney County dairy herd. Fourteen of 100 mixed-aged cows developed profuse diarrhoea and the herd's milk production fell 12%. The affected cattle were listless, and lost weight. The only other clinical abnormality observed was a slight reduction in rumen motility. The feed situation on the farm at the time of the outbreak was reported to be excellent. Bacteriological examinations of faecal samples were mainly directed towards isolating *Salmonella* sp. and *Providencia* sp.; however, no significant isolates were made.

Two faecal samples were examined for viruses at Ruakura Animal Health Laboratory. A 20% suspension of each sample was made using a virus transport medium containing high levels of antibiotics. The diluted samples were centrifuged for 10 minutes at 2500 g and the supernatant fluids removed and recentrifuged at 2500 g for 30 minutes. The pellets were discarded and the fluids filtered through membrane filters (450 nm average pore diameter)\*. The filtrates were centrifuged for 2 hours at 35 000 g and the supernatant fluids discarded. The pellets obtained were resuspended in two drops of distilled water. These suspensions were prepared for electron microscopy using potassium phosphotungstate solution (pH 6.5) as a negative stain (Carter *et al.*, 1968). The grids were examined with a Philips EM 200 electron microscope.

Numerous coronavirus-like agents (Fig. 1) and bacteriophages were present in both samples. The

\*Millipore Corporation, Bedford, Mass.

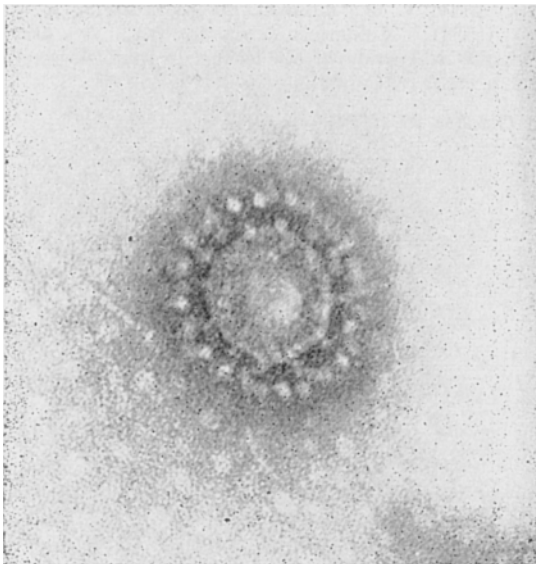


FIG. 1: Negatively stained electron micrograph of a coronavirus-like particle. The diameter of this particle is 90 nm.  $\times 420\,000$ .

coronavirus-like agents were 50 to 120 nm in diameter with most being 90 to 120 nm.

The aetiological role of these coronavirus-like agents in the outbreak of diarrhoea is unknown. In North America and Great Britain a bovine coronavirus-like agent has been implicated in neonatal calf diarrhoea either by itself (Mebus *et al.*, 1972; 1973a; 1973b; Stair *et al.*, 1972) or in combination with reo-like viruses (Morrin *et al.*, 1974; Woode *et al.*, 1974); however, no reports of the virus causing diarrhoea in older animals were found. Further studies will be necessary to determine whether the coronavirus-like agent is a principal cause of outbreaks of diarrhoea, whether it is an opportunist invader, or merely part of the normal alimentary tract flora in the adult cow. No information is yet available on the incidence of this agent in the faeces of normal cattle in New Zealand.

We wish to thank R. J. Mahony, Veterinary Surgeon, Warkworth, for bringing this outbreak to our attention, and G. Leet of the Meat Research Institute electron microscope unit for his technical assistance.

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March 3, 1975.

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