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The Ultrastructure of Canine Distemper Virus*

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With 6 Figures

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A relationship between canine distemper, measles and rinderpest viruses has been suggested on the basis of similar histopathology both in vivo and in vitro and immunological cross reactions as summarized by Warren (1) and Imagawa et al. (2). More recently the ultrastructure of the two latter viruses has been revealed (3, 4) and turned out to be similar to that of the members of the group of large myxoviruses. In those analyses the extremely useful negative staining technique of Brenner and Horne (5) was used. This was also applied in the present studies of the ultrastructure of distemper virus. For purification and concentration of virus advantage was taken of experiences from studies of the measles hemagglutinin (6). The results to be described reveal, as might be anticipated and has already been suggested by Waterson (7), the morphology of distemper virus to resemble that of the large myxoviruses.

Materials and Methods

Virus and cell cultures. Throughout these studies the distemper virus strain isolated by Rockborn (8) was used and its serological specificity was controlled in neutralization tests. The virus was propagated in primary dog kidney cultures, which were set up and maintained as earlier described (6). Hanks' balanced salt solution containing 0.5% lactalbumin hydrolysate and 20% inactivated calf serum was used for outgrowth of cells and Earle's balanced salt solution containing 0.5% lactalbumin hydrolysate and 2% inactivated calf serum for maintenance of the cultures.

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Fig. 1. Three virus particles; one intact (top right), one probably with a minor defect of the envelope (lower left), in the center a completely disrupted particle. Framed area in higher magnification shows helical structures. Magnifications: $\times 100,000$ and $\times 250,000$, respectively.