



Severe liver damage in a cockatoo which died of reovirus infection.



Diarrhea in an African grey parrot which has died of reovirus infection.

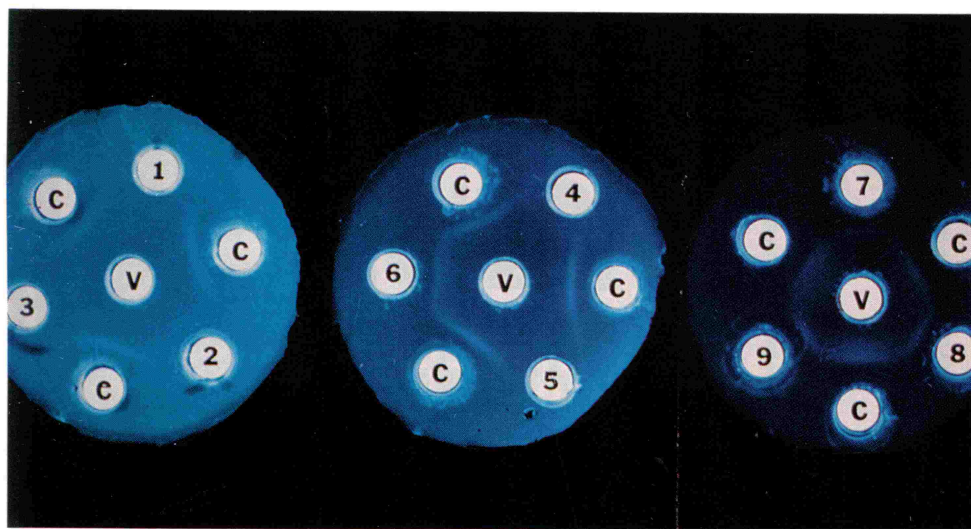
AVIAN REOVIRUSES: Are They For Real?

by Jack M. Gaskin, DVM, PhD

It's an unhappy situation, but sometimes cherished birds get sick and sometimes they die. The loss of an individual pet can be a tragedy, but the loss of a group of birds is not only tragic, but may also represent lost income and a sullied reputation. Potential buyers may get "cold feet" if they learn of disease losses in birds which they've been interested in owning.

On Christmas day in 1984 at a large aviary in Florida, all was quiet. On December 15, 450 Congo African grey parrots, recently released from quarantine, had been brought to the aviary and housed in isolation from a large collection of other psittacines, including Jardine's parrots, citron cockatoos, lesser sulphur-crested cockatoos, Moluccan cockatoos, timneh African grey parrots, white-capped pionis, red-lored Amazons, orange-winged Amazons, yellow-naped Amazons, king parrots and various lorikeets, including Goldie's, red, and Duiyvenbode's. There had been scattered deaths by the end of December, but losses were not unusual for that particular time of year. One Jardine's, one citron cockatoo, four kings, and one Moluccan had died.

On January 5, 1985, 20 days after their arrival, two Congo greys were found dead; by two days later, eight more had died. By January 20, 105 Congo greys had died and losses were occurring in



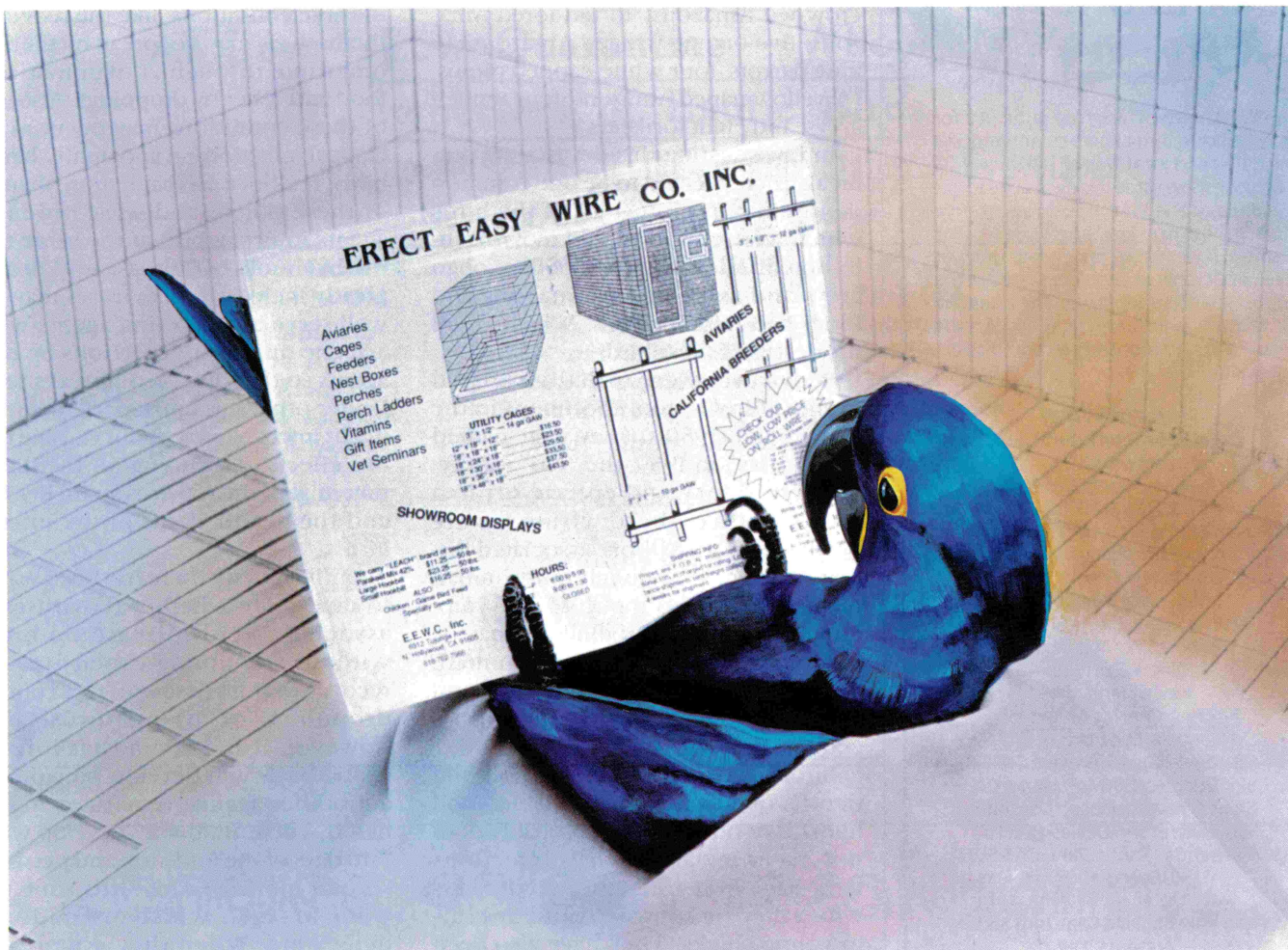
Agar gel immunodiffusion testing for avian reovirus infection.

Wherever reoviral proteins contact precipitating antibodies in bird serums, a visible precipitin line is produced in the agar matrix, indicating recent reovirus infection in the bird from which the serum was derived.

V = reovirus proteins in the center well

C = positive serum from birds known to have had reovirus infection

The serums of birds 1, 2, 3, 4 and 5 lack precipitating antibodies and do not produce visible precipitin lines indicative of recent reovirus infection. The serums of birds 6, 7, 8 and 9 have produced precipitin lines which merge with the lines produced by the positive control serums (C). These birds have recently had reovirus infections. They are recovering from the virus infection, but may still be debilitated by concurrent infections with other disease-causing agents.



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**Santa Clara Valley
Canary and Exotic Bird Club**
presents its

26th Annual Open Bird Show
Nov. 27, 28 & 29, 1987

at Peterson Jr. High School (Poplar Ave.)
Judges:

Lip. & Hartz Mt., Frank Crane, CA
Mel.; Tony Bucci, CA

Type: Borders, Fife & Glosters,
Robert Thompson, CA

Type: All others
Kevin Clegg, CA

Finches: Charles Anker, MI

Hookbills: Lee Horton, CA

Budgies: Glen C. Snyder, CA

Color Budgies: Bill McFarland, CA

Show Director: Joseph Gordon

Show Secretary: Delilah Quieto

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Western New England Cage Bird Society
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November 28, 1987

Ludlow Elks Club
Ludlow, MA

For information contact:
Show Committee Chairman
Lynn Oparowski
Tel: (413) 594-2371

Boston Cockatiel Society, Inc.
2nd Annual Exotic Bird Show
will be held

December 5, 1987

at Cedars Lebanon Church
61 Rockwood Rd.,
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Judges:

Cockatiels & Lovebirds:

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Finches & Softbills:

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other species. Near the end of February when the deaths had finally stopped, 203 (45%) of the Congos had died and also dead were 13 Jardines, one lesser sulphur-crested cockatoo, nine blue-crowned Amazons, 16 red-lored Amazons, five orange-winged Amazons, 16 king parrots, four white-capped pionis, six yellow-naped Amazons, four timneh greys, and eight lorikeets.

In investigating this devastating outbreak, there seemed to be one common denominator; almost all of the birds which were examined had reovirus infection. In addition, many of the Congo greys and some of the Amazons and lories had salmonellosis. What caused the deaths of these birds?

Reoviruses were initially isolated from children's stool specimens in the early to mid-1950's. They were named "reoviruses" in 1959, the "reo" signifying respiratory and enteric orphan viruses since these viruses were "orphans" i.e., without associated disease. Currently, although most human reovirus infections appear to be asymptomatic, two types of illnesses may be related to reovirus infection in man: upper respiratory disease (colds) and enteritis (diarrhea with abdominal cramps).

Birds have their own reoviruses and transfer of infections between birds and humans or other animals probably does *not* occur. Avian reovirus infections have been best studied in poultry for which they are known to cause arthritis in young chicks. They have also been associated with a variety of other disease entities including respiratory and digestive disturbances, abnormal feathering, and heart disease. As with human infections, poultry reovirus infections are so common that it is difficult to determine whether they are merely just present or whether they are actually contributing to the disease state.


In exotic birds, especially parrots, reoviruses are one of the most commonly recovered viruses in groups of imported birds. Again, because these reoviruses are so widespread, there has been controversy about whether they cause disease or whether they are merely incidental findings. Recent evidence derived from experimental infections in valuable psittacines indicates that certain reovirus strains cause enteritis and associated death in highly susceptible species like African grey parrots and cockatoos. These birds died with severe damage to the liver (hepatitis) and diarrhea. (See figures 1 and 2.)

As Dr. Susan Clubb of Pet Farm, Inc.

has recognized and in our experience as well, reoviruses are often found in birds which have died with salmonellosis, colibacillosis (*Escherichia coli* infection), or chlamydiosis (psittacosis). Each of these conditions, like the reoviruses themselves, may be spread by the fecal-oral route through contamination of food and water by droppings. Also, each of these conditions may occur as sub-clinical infections in apparently healthy birds. It is obvious that if more than one of these potential disease-producing agents infects a bird at the same time, the likelihood of disease and death is greatly increased. Reoviruses may very well serve as triggering agents which activate quiescent infections by other agents so that disease outbreaks result. Under other circumstances reoviruses might infect birds without causing obvious effects, depending on the disease potential of the reovirus strain involved and the health status of the infected bird.

Until recently there has been no way to determine whether reoviruses are associated with disease outbreaks without attempting expensive virus recoveries from tissues of dead birds or droppings of living birds. Now, however, it is known that infected exotic birds will develop precipitating antibodies against reoviruses in their blood. These antibodies develop within 7-10 days of the infection and persist for several months. After this time they wane to levels which are no longer detectable. When they are present, however, they give definite evidence that birds which have them have been recently infected with a reovirus. A serum sample must be collected from the bird in question and set up in an agar gel immunodiffusion test. The results of the test are positive or negative and can be interpreted within 48 hours of initiating the examination. Test results are illustrated in Figure 3.

Application of this simple serological test can be very helpful in determining the association of reoviruses with various disease states in caged birds. Not only are reoviruses very real — they may be a serious threat to the health of exotic avian species and the livelihoods of aviculturists.

Dr. Gaskin is an Associate Professor in the Department of Infectious Diseases, College of Veterinary Medicine, University of Florida, Gainesville, FL. The research from which this information was derived was supported by a research grant by the American Federation of Aviculture and from donations by Pet Farm, Inc., Miami, FL. 

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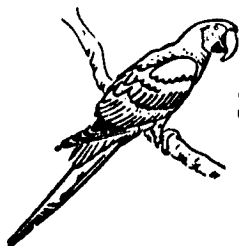
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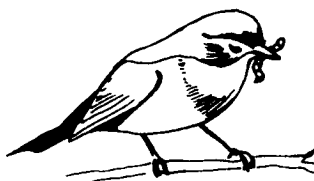
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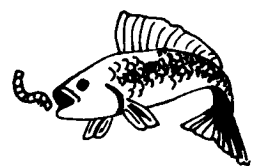
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