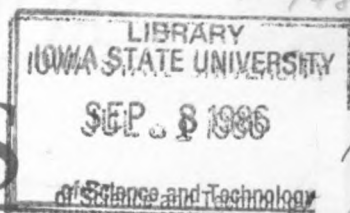


AVIAN ROUNDS



New York State College of Veterinary Medicine • Cornell University

Dear Readers:

We hope you enjoy our first issue of Avian Rounds. This newsletter was begun to fill your information needs on the many aspects of wild and pet bird care. Starting out on the right foot, Volume 1 includes an article questioning some of the taken-for-granted facts on pet bird nutrition. Despite your best intentions, you could be starving your canary!

Another article puts the pet-owner on the alert for those first signs of respiratory disease in caged birds. We'll tell you what to look for, and when to seek prompt veterinary care. The article was written for Avian Rounds by a veterinarian in a large avian practice who also tells us about the diagnostic tools and techniques your veterinarian will use.

An unusual, perhaps unique, eye operation is the focus of the remaining article in Avian Rounds. In an attempt to restore this bird's eyesight, ophthalmologists in the Small Animal Clinic removed twin cataracts from the eyes of an eighteen-year-old peregrine falcon. Although an individual case success story, the procedure holds out promise for the eventual rehabilitation of many young, similarly blinded birds.

Assisting in this delicate operation was Dr. Christopher Murphy (COR. '83) who, along with

his wife Dr. Joanne Paul-Murphy (COR.'82) will continue to be advisors on Avian Rounds even after their move to the West Coast. (At the University of California, Davis, Dr. Chris takes a position as a resident in ophthalmology while Dr. Joanne works with Dr. Murray Fowler as a resident in zoological medicine.) At the New York State College of Veterinary Medicine, the editorial advisors are Dr. David Graham, Professor of Avian and Aquatic Animal Medicine and Dr. Lloyd Dillingham, Director of Laboratory Operations and the Avian Clinic.



Every quarter, Avian Rounds will feature articles by staff, faculty, students and practicing veterinarians on a variety of topics. We'll tell you how to de-oil wild birds, what are the foods to feed backyard birds, how to get rid of pet bird ticks and mites, and why adopting that wild baby bird isn't always a kindness. Along the way, we'll also tell you about rehabilitation programs around the country, successful eagle release programs, and interesting case reports

from our own Avian Clinic.

If you'd like to enjoy your own free copy of Avian Rounds, just send your name and address to: Editor, Avian Rounds, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York 14850. Or ask your veterinarian to reserve a copy for you.



ARE YOUR BIRDS EATING WELL?

Pamela Livesay-Wilkins '86

with thanks to Dr. David Graham

The next time you make out your grocery list, stop and think for a moment before you add "bird food" to it. What are you actually feeding your pet bird? The precise nutritional requirements for pet birds have not been determined: most bird commercial diets have been aimed at palatability, with some consideration given to expense. While no one knows exactly what you should be putting in your seed cups, the emphasis should be on longevity and reproductive success. Most birds owned as pets are not receiving a diet that will allow them to live out their full life span or reach their full reproductive capacity. If you follow a few simple rules and pay close attention to the general condition of your bird, you can help it live a longer, healthier life.

The Basic Diet:

Birds eat small amounts of seed at frequent intervals, therefore seed should be available to them at all times. Even a period of deprivation as short as 48 hours can be fatal to a bird; they literally starve to death in this small amount of time. Don't allow yourself to be fooled by a seed cup full of seed hulls either! A non-breeding parakeet will consume 5 1/2 grams of seed in 24 hours, a canary or finch will eat about 3 to 4 1/2 grams, so make sure you check your seed cup at least once a day; starvation is probably the number one nutritional problem that veterinarians see in pet birds. Most owners are shocked and embarrassed by this diagnosis, you can easily prevent it from happening to you and your bird.

There are two basic classes of seed: starch seeds, low in protein and low in fat (millet, canary seed, oats, corn, milo, wheat) that also have a poor calcium to phosphorus ratio and are deficient in fat soluble vitamins; and the 'fat seeds' (rape, flax, sesame, thistle,

sunflower, peanut) that contain higher levels of protein and fat. A good diet formulated for a particular bird will have a mixture of these seeds, but never will it be formulated from only one seed class. Beware the millet/canary seed diet! The straight millet diet can be used for a short period of time, two weeks or less, to help an obese bird lose weight. Obesity is a life-threatening condition in birds, and should be corrected as soon as it is noticed.

Water:

Parakeets are not obligate water drinkers, except during the breeding season, so while water should be available to the bird don't expect to be able to medicate a parakeet by adding something to its water, it won't work. This approach will work with most canaries and finches, however, and these birds should constantly have a fresh water supply.

Vitamins:

The fat soluble vitamins, A, D, E and K can be lacking in a straight seed diet while most of the water soluble vitamins, primarily B and C, are present in adequate amounts (most birds don't even require Vitamin C in their diets!). Many owners supply Vitamin A as cod liver oil added to the seed diet, but cod liver oil can become rancid and supplementation in this way can deplete the bird of Vitamin E, another essential requirement valued for its anti-oxidant qualities. A lack of Vitamin E can lead to encephalomalacia or muscular dystrophy, while a lack of Vitamin A can result in changes in epithelial surfaces that predispose the bird to many problems. Vitamin D is needed for normal formation and maintenance of bone and it has been suggested that the source of Vitamin D in birds is the uropygial or preening gland at the base of the tail. Vitamin D is formed here by the action of sunlight on precursor molecules; caged birds that may not be receiving enough sunlight should have their diet supplemented, but too much of this particular vitamin can lead to calcification of soft tissues. This is a case where more is



definitely not better! Vitamin K is generally formed by micro-organisms in the intestine in sufficient quantities, so unless your bird is on oral antibiotics for a long period of time, you needn't worry too much about this one.

There are many commercial preparations of vitamins available in pet stores for supplementing birds and, unlike human vitamin preparations, they are stable for relatively long periods at room temperature and in water. A few drops added to the water or seed every 24 to 48 hours should keep your bird well-supplied with its needed vitamins, but be sure not to overdose your bird with too much of a good thing as this practice will lead to disease in your pet as surely as not giving the vitamins at all.

Grit and a Cuttlebone:

Grit is fed to seed eating birds to increase the efficiency of the grinding action of their gizzards. You should only provide a few grains of grit at a time to your bird as many birds will gorge on grit and become impacted with it, a condition that is fatal in most cases. Most bird diets are also sadly lacking in the calcium needed to build bones and maintain the body in general. This is the reason you should purchase a cuttlebone, which is the shell of a mollusk, and install it in the cage with the soft side facing the bird as this is the part he will gnaw at.

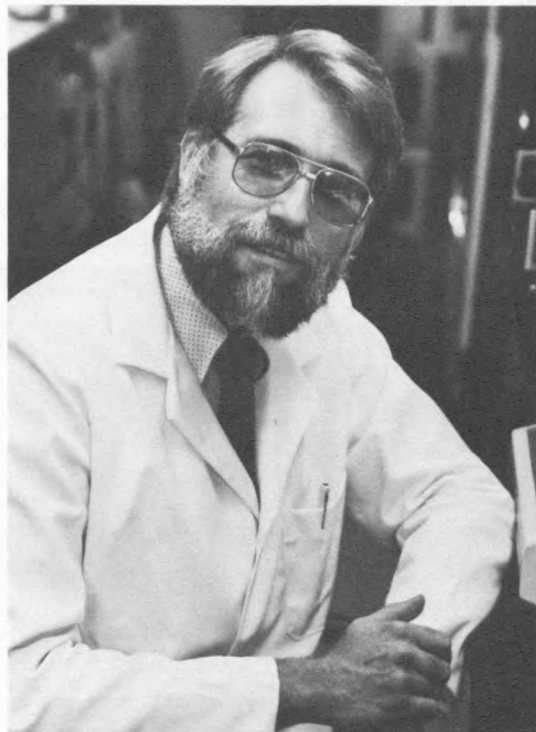
In some areas of the country iodine is another important mineral that the bird should have added to its diet, probably best done in the water. A lack of iodine can lead to hyperplastic goiter, a disease that was once a problem in humans until iodized salt came along. This can cause breathing problems along with various metabolic disorders in pet birds.

Greens:

These can be purchased at stores or grown at home and are a useful adjunct to any bird

diet. When you add them they may cause loose droppings initially, but this will clear up as the bird adjusts.

Your shopping list probably looks a bit longer to you now, but most of these dietary additions are relatively inexpensive and easy to provide to your bird. Remember that, just like their owners, birds' nutritional requirements change when they are breeding, moulting or just plain growing and they may require more food or additional supplements. There are many books becoming available that can give you further information, and don't be afraid to question your veterinarian or your pet store owner; your bird's life may depend on it!



David L. Graham, DVM, Ph.D., and Professor of Avian Medicine. Received his undergraduate degree from Pennsylvania State University, his DVM from Cornell in 1965 and a Ph.D. from Iowa State University in 1973. He is a member of numerous professional organizations and societies, including the AAZV, the AAV, the AVMA, and the American College and World Association of Veterinary Pathology. A recognized authority on pet bird disease and pathology, Dr. Graham is the author of many scientific publications on avian medicine.



IN THE EYE OF A FALCON

An extraordinary operation was recently performed in the Small Animal Clinic at the New York State College of Veterinary Medicine, a first in ophthalmic surgery for raptors. In an approximately one-hour procedure, Drs. Thomas Kern and Christopher Murphy removed bilateral cataracts from the eyes of a falcon using ultrasound waves to fragment the damaged lens cortex and nucleus.

The patient was an 18-year old male peregrine falcon from the Laboratory of Ornithology's Peregrine Fund. Both of his eyes were clouded with dense, mature cataracts and ocular examination suggested the bird was functionally blind. In this particular case, the cataracts may have occurred spontaneously in old age - falcon's have an average life span of 12-15 years in captivity. But other causes of cataracts may include blunt and perforating trauma.

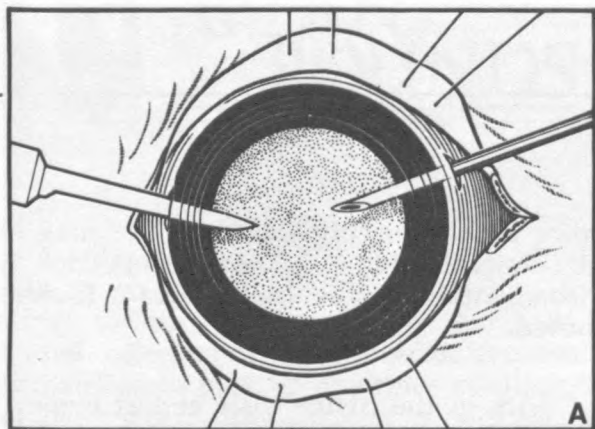


Captured as a wild fledgling in 1966, the peregrine falcon had adapted to captivity, mating and nurturing offspring until last season when failing vision interfered with courtship and feeding. Cataract surgery was suggested as a way to extend the falcon's breeding life, while increasing our own knowledge of a potentially valuable surgical technique.

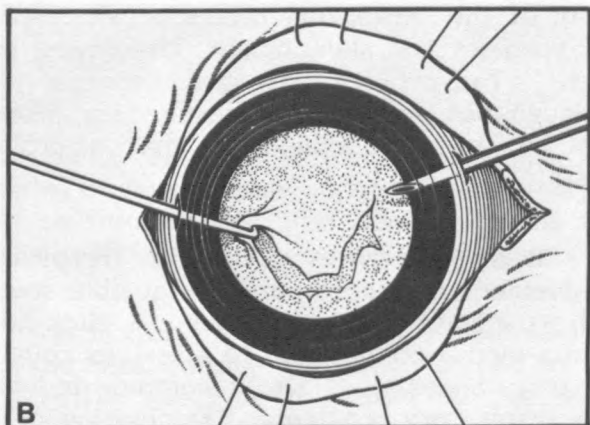
Preparation began several days prior to surgery, with premedication of the eyes with topical antibiotic-corticosteroid (neomycin-polymixin b-Dexamethasone^a) drops instilled three times daily. The day of the operation, anesthesia was induced by masking with isoflurane, and maintained by endotracheal intubation.

(Above) Dr. Christopher Murphy assists Dr. Tom Kern in the surgery. The operating microscope, positioned above the patient, was used in this delicate surgery, giving the veterinarians an enlarged image of the peregrine's eye.

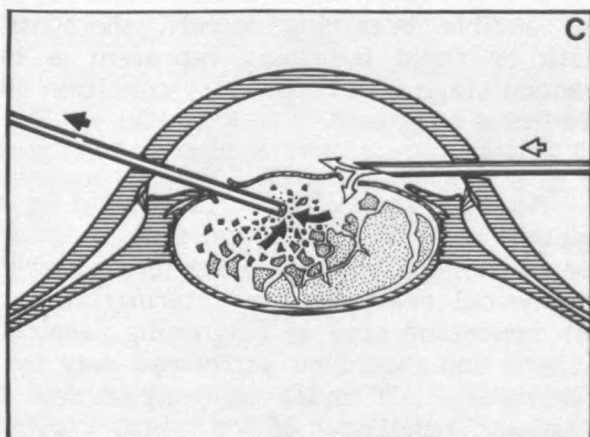
(Left) Dr. Nora Matthews attaches the EKG monitor electrodes.



After preparation of the site and dilation of the pupil, two incisions were made at the edges of the cornea. Immediately after the first incision was made, a needle was inserted, carrying lactated ringer's solution to the anterior chamber. Like a water-filled balloon, the eye's physical dimensions were maintained throughout the operation by the water pressure.

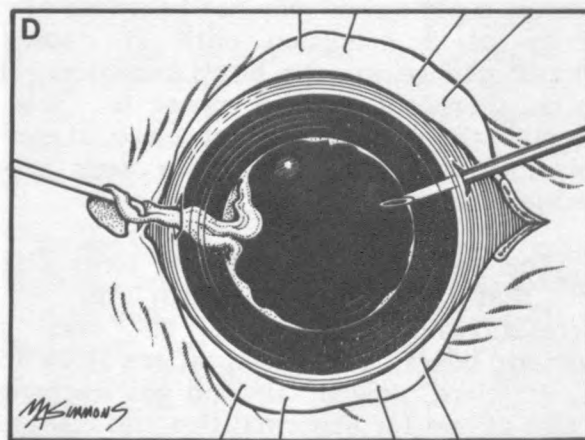


The second incision, again into the cornea, was followed by the introduction of a 27-gauge needle to cut through the capsule of the lens.



Then the ultrasonic tip was introduced. At the end of a hollow needle, the tip can be vibrated either at ultrasound frequency or used to aspirate the fluid, lens cortex, or other media surrounding it.

In this case, the lens cortex and nucleus were suctioned off by the needle almost entirely without ultrasonic fragmentation and the operation was repeated on the other eye. At the conclusion of surgery, both eyes appeared clear and clean of cataract remnants. Success was immediately apparent; recovering from anesthesia, the falcon evidenced a menace response as topical medication was applied.



Back home at the breeding facility, the peregrine continued to receive topical medication for a week. His eyesight is improved, but limited due to several posterior capsule opacities. It is, however, a considerable improvement over his previous blind state. Other, similar operations have been even more successful; one restored the sight of a juvenile male screech owl to such a degree the bird was able to escape during rehabilitation.

The information in this article was taken from a soon to be published paper, **Lens Extraction by Phacoemulsification in Raptors**, by Thomas J. Kern, DVM, C.J. Murphy, DVM and R.C. Riis, DVM, MS.

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RESPIRATORY DISEASE IN PET BIRDS

Condensed from "The Diagnosis of Respiratory Disease in Pet Birds" by William F. Olkowski, DVM, Cornell '82.

Respiratory diseases are among the most frequently encountered problems in pet birds. However, a pet owner may not be aware of the severity of a condition until it causes a dramatic change in the bird's behavior. It is helpful, therefore, if the owner is able to recognize the subtle signs of early stages of respiratory disease in order to seek proper veterinary care.

The respiratory system of birds differs from that of mammals with its unique interrelationship of lungs, air sacs and pneumatic bones. These adaptations allow for a fast, efficient flow of air and gas exchanges, but also allows for abnormalities and disease in other organ systems of the bird to directly or indirectly affect the respiratory system.

Inspired air normally passes through two external nares usually located at the base of the beak. The air continues past highly vascular turbinates in the nasal cavity to a slit-like opening located down the center of the oral pharynx, called the choana. Open mouth breathing in a resting bird is abnormal and should warrant investigation of the respiratory system by the veterinarian.

The delicate interplay of organs and pneumatic bones in the avian respiratory system is easily affected by environmental factors that can have a very dramatic effect on the bird's respiratory system and yet go totally unnoticed by the owner. For instance, the use of insecticides for plants, or a recent house extermination can release enough toxic fumes to severely damage the bird. Self-cleaning ovens, burning Teflon pans, or a recent house painting can have the same drastic results. For that reason, the veterinarian examining a bird with suspected respiratory disease will take a complete history from the owner, determining the duration of the illness, possible etiological

factors and noting clinical signs the may have gone unobserved. Diet, appetite and environmental changes are important factors to be noted.

Both in the office visit and at home, the bird should be observed in its cage for alertness, attitude, and degree of respiratory involvement. A resting bird with even the slightest irregularity in respiratory rhythm should warrant a closer examination. Signs to observe while the bird is resting in its cage include, huddling, or a puffed-up, ruffled feathered appearance, which indicates a chilled bird. The fluffing of feathers is a physiological response which increases the depth of the insulating layers of air between the feathers and skin, hence conserving body heat. Tail-bobbing, another common sign, although not specific for respiratory disease, may be the first indication that a problem exists.

More concrete signs of respiratory involvement are represented by audible sounds, such as a faint "clicking" noise. A click heard from a bird is comparable to a serious cough in humans. Sneezing is also a common indicator of a respiratory problem. Examination of the cage may reveal spot marks on the bird's mirror as a result of the sneezing. A nasal exudate or sinus swelling may also be noticed. The more obvious signs such as an increased respiratory rate, audible breathing sounds, shortness of breath or rapid breathing represent a more advanced stage of a respiratory condition and a more grave prognosis.

An observant veterinarian should be able to detect most of the clinical signs mentioned, prior to physically handling the bird. However, the physical exam by the veterinarian is the most important step in diagnosing respiratory problems and should be performed only by the veterinarian. It must be emphasized that excessive handling of a bird with a compromised respiratory system is not without risk, since the stress of the examination creates an increased oxygen demand, to which the bird may not be able to respond. Collapse or death may result.



All the details of a complete physical cannot be covered here, therefore only those relating to the respiratory system will be discussed. Beginning at the head, the easiest abnormalities to pick up are sinus swelling or a nasal discharge. Any amount of discharge is abnormal for the bird and is a definitive sign of respiratory involvement. There may not be an exudate at the time of examination, but evidence of a discharge is revealed by pasting of the feathers or discoloration of the feathers around the nares and cere. Of course any discharge must be cultured for a definitive diagnosis. A quick test which the practitioner may perform is to smear the exudate on slides, then add special diagnostic strains. Bacterial infections frequently include Pseudomonas aeruginosa, E. Coli, and Staph aureus, while fungal infections are most commonly caused by Aspergillus spp. or Candida spp. If fungus or Mycoplasma are suspected by the type of exudate, or by the assessment of the smear, it must be remembered that special media and culture techniques are required for diagnosis.

Respiratory problems due to blocked or distorted nasal passages might be traced to the proliferative overgrowth caused by the scaly face mite (Knemidocoptes pilae). A powdery brownish crust is the most common presenting sign, and it may deform the beak or distort the nasal openings if the condition is severe enough. Diagnosis can easily be confirmed by scrapings and microscopic exam.

The gapeworm, Syngamus trachea, although not a common problem for psittacines, does cause respiratory signs as it lodges in the trachea causing an obstruction to air flow. Diagnosis can be made by identifying the eggs on a fecal examination, but most often the diagnosis is made at necropsy.

Pet birds suffering from conjunctivitis often have a concurrent sinusitis, another sign of respiratory disease. Early signs may include ocular or nasal discharge. As the disease progresses, swelling around the eye or at the commissure of the mouth is common, and if allowed to continue, a bulging out of the eyes can develop due to the pressure.

Foreign bodies and abnormal masses in the beak and nasal sinuses can be visualized through transillumination. This procedure involves shining a penlight on one side of the beak and nasal area. In birds whose beaks are heavily pigmented, this technique is not as helpful. In such birds the sinuses may be transilluminated by shining a light through the roof of the mouth.

A collection of thickened pus may cause sinus swelling which can be detected by sampling the sinus with a fine gauge needle. Examination of the material may determine that the swelling is caused by an abscess, foreign body or tumor.

When physical examination, culture techniques, and observation do not reveal a conclusive diagnosis, radiology is a valuable aid. Since tumors and foreign bodies may cause a nasal discharge from an associated secondary bacterial infection, radiology helps to determine if the cause of the disease is other than bacterial. Not only can it help in the diagnosis, it also reveals the extent of involvement and hence aids in a prognosis. Often with a severe or chronic sinusitis, necrosis of the turbinates or nasal septum can occur and be picked up radiographically.

Diseases of the pharynx and the rest of the upper airway are often extensions of infections from the sinuses. Hypovitaminosis A, is of particular importance since it is a common condition seen in newly purchased psittacines, especially those on all seed diets. (Editor's note: See our related story "Are Your Birds Eating Well?" in this issue) The condition causes a squamous metaplasia of the mucosa of the respiratory tract. A nasal discharge or sneezing may also occur. Keratin-filled cysts may be visualized on the hard palate, around the choana, and at the base of the tongue.

Diseases of the lower respiratory tract for the most part involve the air sacs. The incidence of lung disease compared to air sacculitis is very low, though a severe pneumonia or lung abscess can be diagnosed radiographically. Presenting signs of air sacculitis can be similar to those of upper



airway problems, however upon listening with a stethoscope to the sounds made by the dorsal thorax, abnormalities in the flow of the air through the lungs and air sacs can be detected. A muted sound over an area may be helpful in localizing the affected air sac. An abdominal mass can cause signs of respiratory disease by encroaching on the air sacs or lungs. Common abdominal masses include tumors or cysts of the ovaries, kidney or liver, and excess deposition of fat.

Again, radiology can be helpful in diagnosing the problem. Although a mild air sacculitis may not be picked up radiographically, more severe involvement of the air sacs can be visualized as an increase density on the radiograph.

If radiology is inconclusive, the veterinarian may perform a laparoscopy and directly examine the air sacs, the caudal extent of the lungs and other abdominal viscera with an electrically lighted tubular instrument inserted through the abdominal wall.

Although radiology and laparoscopy may confirm a diagnosis of air sacculitis, the etiological agent, bacterial, fungal or viral, often is not determined. Therefore an aspiration of the air sac exudate or washing is performed. This is done at the same time as the laparoscopy. An important disease to identify, caused by a chlamydia organism, is Psittacosis, or Parrot Fever. This can be a devastating disease, often resulting in death. Early signs resemble those of other respiratory problems. A zoonotic disease, Psittacosis is of particular importance because of its public health significance.

To maintain a bird's best possible condition, the pet owner should be familiar with the early signs of respiratory disease and their significance. Early diagnosis and rational therapy by a veterinarian means good health with very little investment of extra time or money by the pet owner.

Suggested Reading:

Diseases of Cage and Aviary Birds, Lea and Febiger, Phila, 1969.

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