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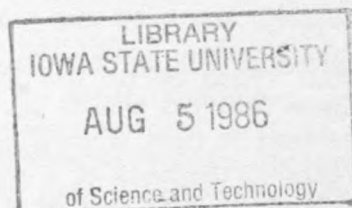
AVIAN ROUNDS

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New York State College of Veterinary Medicine • Cornell University

BEFORE YOU BUY YOUR BIRD

By Pamela Livesay-Wilkins '86



Owning a bird as a pet has been popular since before the Victorian era, when the parlor was not considered completely decorated unless it had a canary in a very small brass cage residing on a table in the corner. It has been only recently, however, that the health and management of pet birds has become a very real concern of the pet bird breeder, owner and veterinarian. Pet birds are no longer maintained in overly small, ornate cages that do not allow for social contact. Large bright airy cages, along with improved dietary management, have increased the life-span and reproductive efficiency of most of the pet bird species.

Why do you want to own a bird? There is no correct answer to this question, but it is one you should fully examine before you purchase a bird. Often a pet bird is the answer for apartment dwellers, people desiring animal companionship with minimal time or money investment, or individuals wanting an affectionate, intelligent pet. However, a bird should never be purchased on impulse. You should approach the task of purchasing a bird already aware of the characteristics of the species of bird you are interested in, the average price of that type of bird in your region and with some knowledge of how to evaluate the health and breed characteristics of the bird you are considering. This will require a bit of research and asking around before you are ready to buy, but the investment of your time will save you much grief at a later date. The beautiful macaws and cockatoos are not for the neophyte! Most first-time bird owners are happier with finches, canaries, budgerigars or cockatiels.

Birds can be purchased from a variety of sources, such as pet shops, breeders, private dealers, or individuals. If you are buying a bird for the first time it is almost essential that you purchase your bird from someone who is in the bird breeding and/or selling business. These individuals usually have a reputation to protect; ask around and find out who in your area is known to deal honestly and fairly with buyers. Many stores today, especially those specializing in birds, have been opened by bird fanciers who have turned their hobby into a business; they usually know and care about their birds. A good store will have clean cages, with fresh water and sufficient food in front of the birds. They will have in stock items required for basic care and maintenance of birds, such as play toys, cages, bird feed and general health supplies. Sales personnel will generally offer you more information than you ever thought necessary to get you started, so leave yourself plenty of time to shop!

Health should be a primary consideration when you are choosing a bird. Pay close attention to the health of all birds you examine -- a free bird, if it is sick, is not worth the long-term monetary and emotional costs. To keep it simple, a sick bird will look sick and a healthy bird will look healthy; bright, alert, active and in good feather. There are clues to a bird's health beyond general impressions. A sick bird may sit with its feathers puffed up; its eyes may be dull or even closed; the nostrils may be clogged or occluded to some degree. An additional clue, here, is to check the feathers above the nostrils; if they appear wet or matted, then the bird has a nasal discharge. The feathers around the bird's vent or



hindquarter area may be soiled or matted, indicating diarrhea; the bird may be listless or inactive; the seed cup may appear not to have been touched, indicating that the bird is off-feed. Also be on the lookout for bald spots where feathers should be, swellings or sores on the feet or toes, a protruding breastbone, white crusts on the beak or a beak that appears to be malaligned, or a bird that appears to be having difficulty breathing.

You must also consider the temperament of your bird when you are selecting. An intelligent bird with a good disposition is essential for everyone's benefit, but most birds in the temporary condition of "being for sale" are quite stressed and not at all themselves. Don't expect too much at first, but do become aware of how different birds approach you as you make your choice. Intuition and experience are the most reliable guides you can have in this area.

When you finally choose your bird, consider the following before money changes hands: Will you be able to locate the seller next week should there be a problem? Is there a health guarantee allowing for returns or exchanges within a reasonable period of time? Can the seller verify the bird's age and birthplace? (While this may not always be possible, most reputable sellers have this information available; if not, learn how to judge the age of the bird species you'd like to buy.) Will you receive a written bill-of-sale? The purchase of a bird should always be contingent upon the bird being examined by a veterinarian within a few days of purchase; you should be allowed to return the animal for a full refund should it be found not in good health within a few days of purchase. The bill of sale should include the purchase price, the guarantee and return policy, the bird's band number (if known) and a full description of the bird (eg. color, sex, genus and species). You may write to the Association of Avian Veterinarians, c/o Ronald R. Spink, D.V.M., Secretary-Treasurer A.A.V., 2659 Sprinkle Road, Kalamazoo, Michigan 49001 to obtain a list of veterinarians especially interested in pet birds in your area.



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THE ROLE OF A VETERINARIAN IN A BIRD KEEPING ESTABLISHMENT

By Kevin Kenny, M.V.B., M.R.C.V.S.

In view of the considerable number of birds now kept in captivity and the problems which fanciers encounter, one is prompted to ask if veterinary services should be utilized more frequently to lessen the incidence of deaths and sickness among stock and to help improve breeding performances and aviary management.

Causes of diseases may be grouped into a number of categories:

Biological: bacteria, viruses, fungi, parasites, mycoplasma, chlamydia.

Chemical: toxic agents, medication overdose.

Physical: excesses of heat or cold, radiation.

Miscellaneous: neoplasms, metabolic conditions, allergic reactions, auto immune conditions.

When an owner notices a sick bird among their stock, it may be the only ill bird in the aviary, or it may be one of a number of birds affected. Disease can therefore occur on an individual or a flock basis. The sooner a bird is observed to be ill and the earlier it is brought to a veterinarian, in general, the better are its chances of recovery. Early detection depends on the fancier's vigilance, and the number of birds being kept. Newcomers may be unaware of the signs of ill health and should look to their practitioner for information on how to recognize a sick bird.

Once presented with a sick bird the veterinarian attempts to reach a diagnosis by performing a careful examination of the patient and by questioning the owner on the details leading up to the time the bird was first noticed to be unwell. Information on the husbandry system practiced in the aviary and details on the birdroom itself may also be sought. The bird is usually weighed at this point. There are a number of laboratory procedures the veterinarian may utilize to confirm or aid diagnosis.

a. Bacteriology: Specimens include droppings, discharge from eyes or nares, abscesses. To discover if there are any harmful bacteria in the specimen, it is applied to culture medium, on which the bacteria may proliferate. Once growth occurs, the bacteria can be identified by its pattern of growth and by staining smears made from the culture. Growing bacteria on culture medium can reveal the antibiotic(s) to which the organism is sensitive. A smear may also be made directly from the sample and stained.

b. Culturing and staining is used in the diagnosis of fungal infections.

c. Haematology: Blood is composed of a fluid part (plasma), in which are suspended red and white cells, and a variety of chemical substances. Blood samples may be taken from a wing or leg vein and small amounts for smears can be acquired by clipping a toenail. Counts of red and white cells can be obtained. By making a blood smear on a slide and staining it, red cells can be examined for size and color and a value determined for the different types of white cells. Blood parasites may also be observed. Blood values help in diagnosis and can tell us how the patient is responding to treatment, when taken on successive occasions.

d. Radiographs (x-rays) are of considerable help in diagnosis and provide information on a wide range of conditions, including digestive function, fractures, the identifying of the organ responsible for abdominal enlargement, egg binding, foreign body ingestion, gunshot wounds.

e. Parasites can occur externally or internally. External parasites may often be visualized grossly e.g. lice, feather mites (red mite, northern mite). The mite responsible for scaly face and scaly leg may only be seen microscopically, but the lesion (altered tissue) is characteristic for infestation with this mite.



Evidence of internal parasites may be obtained through examination of droppings for parasite eggs.

f. Virus isolation is performed by laboratories or such institutions as veterinary colleges.

A VETERINARIAN'S ROLE: IN SICKNESS . . .

Having established a diagnosis, the practitioner decides on what course of treatment to follow. Surgical treatment may be indicated in cases such as fractures, egg binding, prolapsed oviduct, and some skin tumors. Medical treatment involves the administration of substances, which have a specific action, to the affected bird. The route of administration may be orally via feed, water, or tube, or parenterally by injection.

For the drug(s) chosen, the veterinarian is aware of the dose required, the dose frequency (e.g. twice daily), and the duration of treatment. The practitioner can advise the owner on how to administer the medication and in addition, may advise isolating the bird, using a hospital cage, and practicing good hygiene to avoid the spread of the disease to other stock.

Having established the cause of an illness and embarked on a course of treatment the combined efforts of the veterinarian and the fancier should be directed so as to prevent recurrence of the condition. In infectious disease one hopes to identify the source of the agent and prevent contact with it. Thus, we may cover outdoor flights with plastic to prevent the introduction of wild bird droppings or we may attempt to eliminate rodents from an aviary.

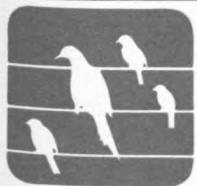
Some organisms are present in either the bird itself or its environment and do not cause problems if sustained good husbandry is practiced. However, if the bird is exposed to stresses, such as overcrowding, poor hygiene and poor nutrition, then the owner may find some of her/his charges ill. Disease control should be a subject for careful thought on a regular basis. It is clearly better to prevent a

disease occurring, rather than having to treat it once it occurs, which may not always be possible or successful.

Quarantine is a very much under-used procedure in aviculture. Many fanciers purchase a bird(s) and upon returning home, introduce it into a flight or cage containing some stock. This practice can be disastrous, not only for the purchased bird, for which a combination of stress and exposure to new pathogens can be fatal, but also for the other residents of the aviary, in case the newly acquired bird is incubating a highly infectious disease. Quarantine involves keeping newly purchased stock in an area separate from the fancier's birds (separate birdroom). A less desirable alternative would be to house new stock in a cage to themselves in the aviary, but to feed them last, washing hands and utensils carefully. The birds are observed carefully for signs of ill health over a period of thirty to sixty days. Cloacal swabs may be taken during this period and cultured for pathogens (disease causing organisms). Dropping can also be checked for evidence of internal parasites and the bird can be thoroughly examined to find out whether it has any external parasites. A scaled-down form of quarantine should be practiced in the case of show birds returning from exhibitions. In addition to controlling disease, quarantine has the benefit of allowing newly acquired stock to become familiar with the aviary and the owner's methods, before being introduced into a flight containing other stock.

The question of visitors to a birdroom and their contact with stock should also be a point for discussion between bird keeper and veterinarian, as a precaution against disease being introduced.

Disinfection has a major role to play in control of disease and should be used on a routine basis to keep the level of infectious agents down and in particular after a disease outbreak. Disinfection is not a hit and miss affair and there are special procedures to be followed when performing this task, e.g. removal of organic matter from the area to be



disinfected; dilution of disinfectant; length of time it is to be applied; temperature at which to use it. There are different types of disinfectants, each with its own range of activity. Thus some disinfectants would be effective after an outbreak of salmonellosis, but others would not be. A veterinary practitioner can advise you on which disinfectant to select and how to use it.

A veterinarian may also be presented with a dead bird, or a bird may die when being treated. It is foolish not to get a post mortem examination (necropsy) performed. The veterinarian attempts to find the cause of death by examining the carcass externally and internally, by using laboratory techniques such as histopathology (viewing stained sections of tissue through a microscope and observing changes in the tissue), and by bacteriologic, virologic and parasitologic examination of tissue. Necropsy provides information on disease processes the bird underwent during its life and the role they played in the death of the bird. Fanciers should consult with their practitioner to gain advice on the required method for submission of the carcass for necropsy and the history of the bird's illness which should accompany it.

... AND IN HEALTH.

The subject of genetics also provides an area for discussion between stockman and veterinarian. Some fanciers are not fully clear on the different types of breeding that can be practiced and on the value of each type, e.g. inbreeding, line breeding, outcrossing. The value of inbreeding and its effect on fertility, particularly when used consistently, should be considered. Certain scientists believe that there is a hereditary component in the occurrence of neoplasia in budgerigars. In view of the fact that certain strains of poultry are more resistant to tumor formation caused by a certain virus, though not to infection by the virus itself, it may be possible to reduce the incidence of mortality in budgerigars due to neoplasia by careful selection.

In the area of reproduction, the use of an endoscope, which consists of a tube and optical system, allows the veterinarian to observe the reproductive organs of a bird and thus sex it. (Endoscopy may also be used as an aid to diagnosis in sick birds). This is of particular relevance to aviculturists involved in the breeding of species which are difficult to sex using visual or behavioral criteria. Artificial insemination has been used successfully in budgerigars and in some species of parrots and its importance in the breeding of endangered species will increase in the future. The value of having dead chicks examined and the cause of death determined should be borne in mind during the breeding season. Eggs that fail to hatch should also be considered a source of information on reproductive performance. Veterinarian and fancier should discuss the information garnered this way to prevent further losses and to improve on future breeding performances. Selection for fertility should be practiced in conjunction with selection for desirable show features when dealing with exhibition stock. Such selection must be done carefully with due consideration being given to maiden birds and to the condition of the birds when they were paired up.

Much attention has been given to the nutrition of birds in recent times. The nutritional requirements of birds, other than poultry, are not known and this situation is unlikely to change overnight. Dietary components vary with the species kept and include:

- Seed mixture (including millet sprays) or nectar for nectar eating birds.
- Protein supplement.
- Fruit (fresh and dried), nuts, vegetables.
- Greens.
- Sprouted seed, seeding grasses, live food.

Sprouted seed has been successfully used by many breeders. However, the risk of bacterial and fungal proliferation when contaminated seed is soaked should be considered. It is also worth bearing in mind



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that fruit, free of potential disease causing organisms when introduced into cages, is likely to be contaminated with such agents after twenty-four hours. The extent to which vitamin/mineral supplements should be used should be decided on after careful evaluation of the diet. The role of mycotoxins in disease has yet to be evaluated in aviary birds, but advice on seed storage is available from the veterinarian, as is information on laboratory analysis in cases where the seed is believed to be responsible for ill health in an aviary.

The management system practiced in an aviary has a profound effect on the health, well-being and productivity of its occupants. A practitioner can advise the aviculturist on proper husbandry techniques by utilizing her/his knowledge of avian diseases and by keeping current with information being produced by avian research workers.

Good ventilation is important in a birdroom and lies between draughts on one hand and stuffiness on the other. Given the diverse structure of aviaries, the provision for adequate ventilation relates very much to each individual aviary. General details on inlet and outlet sizes and position can be provided by a veterinary practitioner. Temperature and humidity extremes are to be avoided, with birds most comfortable at the cooler and the drier end of their temperature and humidity ranges.

Stocking density is a factor to which owners often pay scant attention. Overcrowding, which may not be apparent to the fancier in question, can lead to poor health status in a flock, mortality, failure to reach peak condition and additional breeding failures. Another vital aspect of management is good hygiene. This involves regular cleaning of cages and flights, feed and water containers, together with disinfection at appropriate intervals. Construction of the floors of outdoor flights should allow easy cleaning, with trays of earth/turf placed over a readily cleanable surface. Such trays can be replaced at frequent intervals. Owners should ensure that their own



hygiene is good when preparing soft food, feeding the birds, or examining nestboxes, so as to prevent the introduction of infection. Good hygiene may also prevent the transmission of diseases that are communicable from vertebrate animals (includes birds) to man under natural conditions. Much attention has been paid to chlamydiosis (psittacosis). Newcastle disease has been reported in people who were in contact with poultry infected with the virus. In an outbreak of salmonellosis in an aviary, there could be a risk to the fancier if contamination of his/her food with fecal material occurred. Veterinarians can give advice on this subject.

Proper record keeping is an integral part of good management and fanciers should discuss with their veterinarian the type of records to keep. They should include:

1. The number of birds in the aviary.
2. Breeding data.
3. Birds that become sick; birds that die: details on the occurrence of each case, including diagnosis, treatment, and where indicated, necropsy report.
4. Feeding: types of food given and the source of the food.
5. Management procedures: dates when cleaning performed and when disinfection was carried out. Note of any change in husbandry procedure.
6. Results of routine tests for parasites.
7. Birds exhibited and birds purchased.

Research is ongoing in several areas of avian disease and we should learn more as results are produced. However, currently available knowledge on avian veterinary medicine can and must be used to greater effect.



DYSPNEA IN CAGED BIRDS

By Tracey Sandbank '87

The avian respiratory system is anatomically and physiologically unique. A complete understanding of this system is necessary before diagnosis or treatment of any respiratory disease is possible. In the following essay, two diseases of the avian respiratory system will be discussed in relation to the pathogenesis of dyspnea in each.

A common cause of dyspnea in caged birds, domestic fowl, and wild birds, is the avian pox virus. Avian pox is caused by a large enveloped DNA virus which infects dermal and mucosal epithelial cells. Many immunologically related host-adapted strains of this virus exist resulting in differences in virulence and distribution of lesions in different species of birds.

A break in the continuity of the skin or mucosa is necessary for pox virus infection to occur. Transmission can occur by direct contact or via mechanical insect vectors. There is also evidence of aerosol transmission in crowded aviaries where the disease spreads rapidly. The disease may be precipitated by stress. Pox virus infection occurs in one of two forms or a combination of both of these forms of the disease. The cutaneous form is characterized by small pustules which dry out and develop into warty epithelial crusts on the nonfeathered parts of the body. In the diptheritic form of the disease, white opaque plaques develop in the mucous membranes of the oral cavity, crop, esophagus, trachea, and sinuses. It is this form of the disease that results in the respiratory signs seen in an avian pox infection.

Avian pox virus can produce signs of respiratory distress via one of three routes: formation of diptheritic membranes, secondary bacterial pneumonia, or viremia leading to lung congestion. Diptheritic lesions in the upper respiratory tract can develop from contamination of the mucosa directly or from spread of virus from cutaneous lesions around

the oral cavity. Although the virus replicates in the nucleus of the infected epithelial cells, intracytoplasmic inclusion bodies can be demonstrated with a hematoxylin-eosin stain. Virus replication results in the death of infected cells. Cell degeneration and necrosis in a well vascularized epithelial surface may result in the oozing of serum out of the vessels to produce a fibrinonecrotic exudate which can organize into a pseudomembrance within the respiratory passages. Dyspnea results when respiratory airways are partially blocked by diptheritic plugs in the tracheobronchial system. These lesions will cause death by suffocation if airway blockage is complete. The infraorbital sinus is frequently involved in the diptheritic form of avian pox. It can become greatly distended as it fills with a caseous exudate. This form of sinusitis can also lead to dyspnea as a result of further compromise of the upper respiratory airways.

Septicemia resulting in pneumonia can occur as a result of secondary infection of pox lesions by opportunistic bacteria or fungi. The lesions in the respiratory tract related to septicemia often represent as discrete focal pneumonia with a turbid thickening of the air sacs. In these cases dyspnea results from compromised lung parenchyma and decreased flexibility of the air sacs.

Acute viremia following an avian pox infection often results in the death of the bird. Upon postmortem examination few internal lesions can be found except congestion of the lungs and upper respiratory tract. Dyspnea preceding death occurs as a result of compromised airways of both the upper and lower respiratory tracts. The prognosis for a bird with internal involvement of the avian pox virus is poor.

Aspergillus fumigatus is a fungal agent that infects the respiratory tract of all avian species. It is a common cause of death in captive wild birds, newly imported exotic birds, and recently hatched domesticated fowl in which the disease is known as "brooder pneumonia". The disease is contracted by the inhalation of infective spores from the environment and acute and chronic forms of aspergillosis are observed. It is not contagious between birds.

When otherwise healthy birds are exposed to overwhelming numbers of spores an acute infection occurs. Clinical signs appear rapidly and death ensues in less than a week. Dyspnea results from primary lung lesions. At post mortem the lungs are found to be studded with thousands of grayish or yellowish white lesions known as miliary granulomas. Severe parenchymal damage resulting from the granulomatous response to the invading fungi results in dyspnea and, in most cases, death. "Brooder pneumonia" results from an acute infection of *Aspergillus fumigatus*.

Chronic aspergillosis may follow an acute attack or develop slowly without any noticeable signs until dyspnea is observed. Dyspnea is initially observed after mild exertion. Within a few days, constant labored open-mouthed breathing develops. Many birds harbor this fungus within their respiratory tracts in a latent state. A stress induced immunosuppression results in a decrease in host resistance and development of chronic aspergillosis. This is the mechanism of infection in newly imported exotic birds and captive wild birds. Infection is also seen where hygiene and living conditions are poor or when antibiotics are used inappropriately.

The two most commonly observed sites of primary colonization in the chronic form of aspergillosis are the posterior thoracic and abdominal air sacs and bifurcation of the trachea. Sporulation of a colony of *Aspergillus fumigatus* occurs after four days of growth. At this point in time spores may be spread through the entire respiratory tract. As the spores settle, the mononuclear phagocyte system gears up to destroy the spores and control the spread of the infection. The rate of progression and

the severity of the disease depends on the effectiveness of their respiratory defense mechanisms. A lesion at the site of the tracheal bifurcation may never progress into the lungs or air sacs if the area is well defended. However, the growth of fungus at this site alone can cause severe dyspnea if a bronchus becomes occluded. If the spread of infection in the lungs and air sacs can not be controlled by local defenses, severe dyspnea and eventual death is sure to result. The avian respiratory tract is very susceptible to such a fungal overgrowth because of the lack of a mucociliary clearance apparatus in the air sacs. In the upper respiratory tract and the major bronchi where such an apparatus operates, the continuous movement of cilia toward the oropharynx, together with the secretion of a mucus layer over the mucosa, aid in the expulsion of foreign material, infectious agents and exudate. When the air sacs are infected by fungus, become inflamed, and produce an exudate, the material becomes trapped in the air sacs and accumulates until there is spill over into the air capillaries of the lung, drowning and asphyxiating the bird. The preceding sequence of events results in severe antemortem dyspnea as the exchange of oxygen and carbon dioxide in the lung is prevented by fluid accumulation in the air capillaries. Primary granulomatous inflammation in the lung contributes to the loss of gas exchange surface.

In a less severe infection in which the major lesion is a thickening of the air sac membranes with a resulting decrease in pliability, the function of the air sacs as reservoirs in the bellows type ventilation system found in birds is compromised. This relatively mild lesion will result in a less severe dyspnea compared to that seen with primary lung involvement.

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