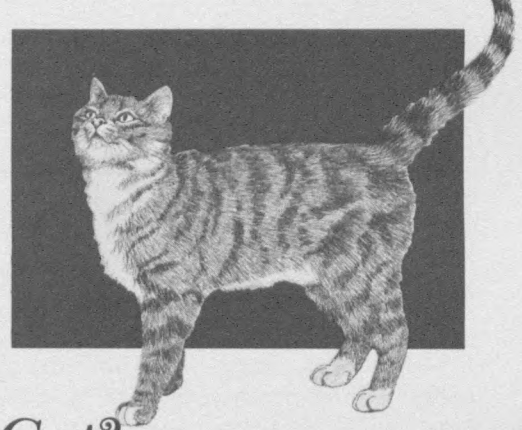

Perspectives On Cats

*A Newsletter for Cat Fanciers
From The Cornell Feline Health Center*

Spring 1988



How Smart is the Cat?

Katherine A. Houpt, B.S., V.M.D., Ph.D.

Everyone wants their favorite pet to be the smartest. Certainly cats are intelligent. They have been smart enough to manipulate millions of humans into feeding them, buying them bags of litter and providing them with the best in medical care. They are also smart enough to be able to survive on their own in both urban and rural areas.

Although cats have a very small brain, their brain-to-body-weight ratio is better than that of any other domestic animal. One percent of a cat's weight is brain tissue, in comparison to 2% of a human's and 0.1% of a horse's.

Objective tests of intelligence in which species are compared are as likely to be biased as are human intelligence tests. For example, jumping an obstacle is easy for a horse, but is more likely to be climbed by a cat. However, a cat would find it much easier to manipulate a string than a horse or even than a dog. Maze

learning is relatively free of problems related to the animal's anatomical constraints, but cats do not do well on maze learning. They are inferior to dogs and all the farm animals. Their memory for which box contains food or which door leads to freedom is better, but cats still do less well than dogs.

Learning

Cats learn to operate on their environment, a form of learning called "operant conditioning". For example, in one study, cats learned to select and pull a string to which a piece of food was attached from among several other strings. Cats can be classically conditioned, i.e. to blink or to salivate in response to a tone (conditioned stimulus) paired with an unconditioned natural stimulus (i.e. the sight of food in the case of the salivation) because the cat must operate in the environment to get the reward.

Neurosis can also be produced in cats, by requiring them to discriminate between two very similar stimuli.

Discrimination

The cat's ability to learn discrimination has been used to great advantage by psychophysicists in studying vision. For example, color vision can be studied by teaching cats to discriminate between two symbols and then to discriminate between the symbols when they differ in no characteristic except hue. Cats can, in fact, make this discrimination but only after 1,400 trials. Cats do have color vision. However, the color stimulus must be large (i.e., a big object) before the cat is able to make use of the hue.

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Rewards

Unlike dogs, cats will not usually perform in order to be reunited with a person. However, cats will perform for food rewards. Feline finickiness can interfere with the reward value of food. Kittens will learn more quickly when the reward is freedom to explore a room than when the reward is food.

Problem-Solving

Cats are able to form learning sets, a skill once thought to be confined to primates. A learning set or learning-to-learn is the underlying principle by which a variety of related problems can be solved. Cats can learn to solve a problem, such as choosing the object on the left when identical black squares were the stimulus, and would learn much more quickly on the next problem to choose the object on the left when white triangles were presented. After four problems the cats' errors fell to 36% of the original errors, and only 58% of the number of trials originally necessary were needed to reach criterion. They have learned to learn.

Cats seldom show insightful behavior; they do not learn to move a light box under a suspended piece of fish in order to reach the fish. Captured feral cats learn discrimination more quickly than cage-reared ones. These findings indicate that a varied environment or experience may lead to an increased learning ability in cats.

Imitation

Cats learn by observation or imitation. Cats watching another cat press a bar or jump a barrier to obtain food learned to press the bar or jump the barrier much faster than cats which did not observe a trained animal. Cats can also be misled. If the cats watched a cat that obtained food by simply approaching but not pressing the bar, they learned to bar press for food more slowly than nonobserving cats.

Kittens can also learn by observation. Studies show that they learn more readily by watching their mothers than by watching another adult cat.

Summary

Any cat fancier will attest to the intelligence of the cat. However, having a better understanding of how cats learn can be invaluable to the cat owner. ■

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Perspectives On Cats

*A Newsletter for Cat Fanciers
From The Cornell Feline Health Center*

The ultimate purpose of the Cornell Feline Health Center is to improve the health of cats everywhere, by developing methods to prevent or cure feline diseases, and by providing continuing education to veterinarians and cat owners. All contributions are tax-deductible.

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This publication is made possible, in part, by a grant from **9-Lives Cat Foods**. We gratefully acknowledge this interest and support in the furthering of feline health. This acknowledgement of our gratitude is not an endorsement of any particular company or product.

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Blood Parasites: The Hidden Threat

A parasite is an organism which finds its food source by living in or on another animal (host). This particular relationship benefits the parasite, but may harm, or occasionally prove fatal, to the host. Parasites can be one-celled organisms, such as protozoa, or complex organisms, such as insects or worms. Certain parasites thrive within the blood. Anemia develops from infestations of these parasites because they destroy the red blood cells. Biting and blood-sucking insects (i.e. fleas, ticks, mites) have been implicated as the vectors for blood parasites.

Feline Infectious Anemia

Feline infectious anemia (feline hemobartonellosis) is caused by the rickettsial organism *Hemobartonella felis* which destroys the cat's red blood cells. This parasite is responsible for about 10 percent of all feline anemia cases. Feline infectious anemia is usually secondary to an immunosuppressive disease such as feline leukemia (and probably feline T-lymphotropic virus infection).

The disease is seen most often in young male cats 1 to 3 years of age, although it is seen in both males and females of all ages. Risk for males is 2 1/2 times that for females. Seasonally, feline hemobartonellosis occurs slightly more frequently in the late spring.

The precise mode of transmission has not been proven, but it is known that blood from an already infected cat must somehow be transferred into the bloodstream of a healthy cat to produce the disease. Biting insects, particularly fleas, are likely carriers of the parasite.

Intrauterine transmission is well established. The organism has been found in still-born kittens and in kittens within 3 hours of birth.

Symptoms:

The most common symptoms are depression, weakness, loss of appetite, and pale mucous

membranes. Weight loss, vomiting, and dehydration can also occur.

Symptoms are somewhat dependent on the rapidity with which the anemia develops. If anemia develops gradually, the cat may lose a considerable amount of weight but be bright and alert. If anemia develops quickly, the cat will have lost little weight, but be markedly depressed and jaundice. Early during the disease process, the rectal temperature is high (104°-105° F) but it will drop to subnormal in the dying cat.

Diagnosis:

Identification of parasites in stained blood smears is the primary method of diagnosis. However, due to the cyclic nature of the parasite, several blood samples may need to be taken for your veterinarian to actually observe the parasite in the blood.

Treatment:

Antibiotics or arsenical drugs and steroids are used to treat feline infectious anemia. Broad spectrum antibiotics such as tetracycline, oxytetracycline, and chloramphenicol have been used with variable results. Oxytetracycline has been the most widely used and seems to be the most effective. Cats are treated orally for three weeks.

In addition, treatment with a glucocorticoid such as prednisolone may be prescribed by your veterinarian to treat immune-mediated injury to erythrocytes.

No drug appears to totally eliminate organisms from infected cats, and consequently recovered animals remain chronically infected. With proper therapy, most cats recover from the acute phase but remain inapparent carriers. No immunity is conferred.

(continued on next page)

Prevention:

A comprehensive pesticide control program for both the animal and the environment is prudent, since blood-sucking insects have been implicated in the spread of this disease.

Babesiosis

Feline babesiosis, a hematozoan disease, has been reported in South Africa (coastal region), South America, Asia, India, Sudan, and Kenya. Although feline babesiosis has not been reported in the United States, the possibility of infection exists. The *Babesia* species infecting wild and domestic cats include *B. cati*, *B. felis*, *B. herpailuri*, and *B. pantherae*. Cats at highest risk appear to be cats under two years of age.

Within the last decade *Babesia* has been recognized as a human pathogen. However, human cases of babesiosis have been related to infections in rodents and ruminants. The transmission of *Babesia* from dogs and cats to people has yet to be determined.

Symptoms:

The disease is characterized by loss of appetite, lethargy, weakness, dehydration, and pale mucous membranes.

Diagnosis:

Diagnosis is based on identifying the organism in a stained blood smear.

Treatment:

Primaquine phosphate is a very effective therapeutic drug. If the cat is severely anemic your veterinarian may recommend a whole blood transfusion.

Cytauxzoonosis

This is a fatal hematozoan disease that was first identified in cats in 1976. Cases of cytauxzoonosis have been reported in Missouri, Texas, Oklahoma, Mississippi, Louisiana, Alabama, Georgia, and Florida. It is thought that the disease is transmitted by ticks, however,

there is no published documentation at this time to support this hypothesis.

Symptoms:

Symptoms observed include loss of appetite, labored breathing, lethargy, dehydration, depression, pale mucous membranes, and a high fever (103-107° F).

Diagnosis:

Diagnosis is made by observing the parasite in a stained blood smear. An indirect fluorescent antibody (IFA) test has been developed for the detection of the tissue phase of the disease. However, the test is not currently available.

Treatment:

Unfortunately, attempts to treat the disease have proven unsuccessful. Supportive fluid therapy and broad-spectrum antibiotics (e.g. tetracycline) may prolong the course of illness but do not effect a cure.

Prevention:

A parasite control program and confining cats indoors may be effective methods to prevent Cytauxzoonosis.

Summary

Aggressively eliminating fleas, ticks, and mites in the cat's environment is a good preventive measure to protect your cat against infestation of blood parasites. If you observe any of the previously mentioned symptoms, schedule an appointment for your cat with a veterinarian as soon as possible. Early diagnosis and treatment is important. ■

Postage Stamps Feature Cats

The United States Postal Service introduced in February four new stamps that feature eight different cat breeds (Siamese, Exotic Shorthair, Abyssinian, Himalayan, Maine Coon, Burmese, American Shorthair, and Persian). The stamps are currently available at local post offices for a limited time.

Home Dental Care for Cats

June E. Tuttle

Feline teeth are used in grasping, tearing and chewing of food. A mature cat has 30 teeth (4 canines, 12 incisors, 10 premolars, 4 molars). Proper care of your cat's teeth is just as important as proper care of your own teeth. General health is improved by eliminating tooth infections and related gum disease. Most owners believe that gum disease will not occur until their cat becomes aged. However, this is not true. Gum disease has been diagnosed in cats only 2 years old. Therefore, it behooves the cat owner to be on the alert for signs of gum disease and to take preventive measures.

Signs of Gum Disease

Bad breath (halitosis) increases as plaque accumulates on the tooth surface. The first teeth to be affected are the premolars and molars. Over time the plaque mineralizes, forming a yellowish-brown discoloration on the tooth surface (tartar). The gums become inflamed (gingivitis) as more deposits accumulate. The pain from the inflamed gums causes difficulty in eating and a loss of appetite. The cat may begin pawing at the mouth, and bleeding at the gums may occur as the disease progresses. (Siamese cats often have greater inflammation of the gums in relation to the amount of tartar.) The final outcome of untreated gingivitis is loss of teeth and possibly systemic infections. Upper teeth are lost more frequently than lower teeth.

Home Dentistry

Daily removal of plaque is a prime factor in preventing and controlling dental disease. There is documented evidence that daily cleaning reduces tartar formation by 95 percent; or 76 percent for weekly cleanings. (If you own an older cat, it would be prudent to first schedule your cat for a professional dental cleaning with a veterinarian.)

Home dentistry consists of "brushing" your cat's teeth. Begin the process by acclimating your cat to being handled around the muzzle

and opening its mouth. This should be a slow process combined with considerable praise to prevent your cat from panicking. You need to instill trust in your cat, after all you will be putting your fingers in direct danger of being bitten. Do not shortcut the time spent in this very important step. However, if your cat continues to be uncooperative, more routine dental checkups should be scheduled with a veterinarian.

After your cat completely trusts you and submits to the handling of its mouth, wrap a piece of clean gauze around your index finger. With your free hand gently lift the upper lip to expose the teeth (or the lower lip to expose the lower teeth). Dip your wrapped finger in a dilute solution of hydrogen peroxide or 0.2 percent chlorhexidine solution. (Do not use human toothpastes as they cause excessive salivation and if swallowed may result in gastrointestinal upsets.) Gently rub the teeth, being sure to include the gums. Perform your cat's teeth cleaning at a regularly scheduled time so that it becomes a habit for both you and your cat. Eventually you may be able to substitute a soft-bristle, small child-sized toothbrush. However, some cats may not tolerate the brush.

Also, the abrasion caused by dry cat foods can aid in removal of tartar buildup.

The Role of the Veterinarian

Regular dental checkups performed by a veterinarian are very important. He/she can perform professional teeth cleaning to remove built-up tartar and plaque, and remove any infected teeth. (These procedures are performed under anesthesia.)

Also, your veterinarian can run diagnostic tests to confirm or rule out the presence of kidney disease, diabetes, hypothyroidism, feline T-lymphotropic virus infection, or feline leukemia which can predispose cats to gum disease. ■

Subject Index

The following is a categorical listing of past articles published in *Perspectives on Cats*. If you are interested in receiving a past issue or a reprint of a particular article, there is a charge of \$1 per request to cover the cost of handling and mailing.

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- Cause of Cat Scratch Disease, Sum '86

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- How Viruses are Diagnosed, Apr '82

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- Giardia Can Cause Chronic Diarrhea, Fall '85
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- Abscesses in the Cat, Fall '85
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- Lincoln Sets Pace for Cardiology, Spr '86

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- Inside Story on Rodenticides, Sum '87

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- Rodent Ulcer is Perplexing Disease, Fall '86
- Don't Let Fleas Become a FAD, Spr '86

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- Kidney Disease in Cats, Spr '87

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- FeLV Transmission, Human Risk, Mar '81
- Cornell Study Herpesvirus, Mar '81
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- Feline Rabies on the Rise, Win '83
- Answers to Questions on FIP, Win & Spr '84
- Rabies Alert! Fall '85
- FeLV Vaccine is Now Available, Spr '85

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The following individuals have contributed \$100 or more to support the Cornell Feline Health Center's work on feline diseases. We are most grateful for their support and the support of many others who are not listed on the honor roll.

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We also wish to express our thanks to the following **cat clubs** for supporting the work of the Cornell Feline Health Center.

Garden State Cat Club, New Jersey
 Illinois-Iowa Cat Fanciers, Iowa
 Janesville All-Breed Cat Club, Illinois
 Mohawk Valley Cat Fanciers, New York
 National Capital Cat Show, Virginia
 Tabby & Tortie Club of the West, California

Special Thanks

We received a very heartwarming response to our 1987 wish list with many people sending in contributions. We are grateful and appreciative of your support. In appreciation, we have acknowledged those who responded to our appeal for equipment:

Sharon Bedford, New York
Dr. Glen Carlson, California
Dolores Casella, New York
Patricia Collins, New York
Mr. & Mrs. Albert Coppola, New York
Amelia Diamond, Pennsylvania
Mr. & Mrs. Roger Ditman, New York
(In memory of Tenth Street's "Mamma Cat")
Mr. & Mrs. Erwin Edelman, Connecticut
(In memory of "Fang")
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