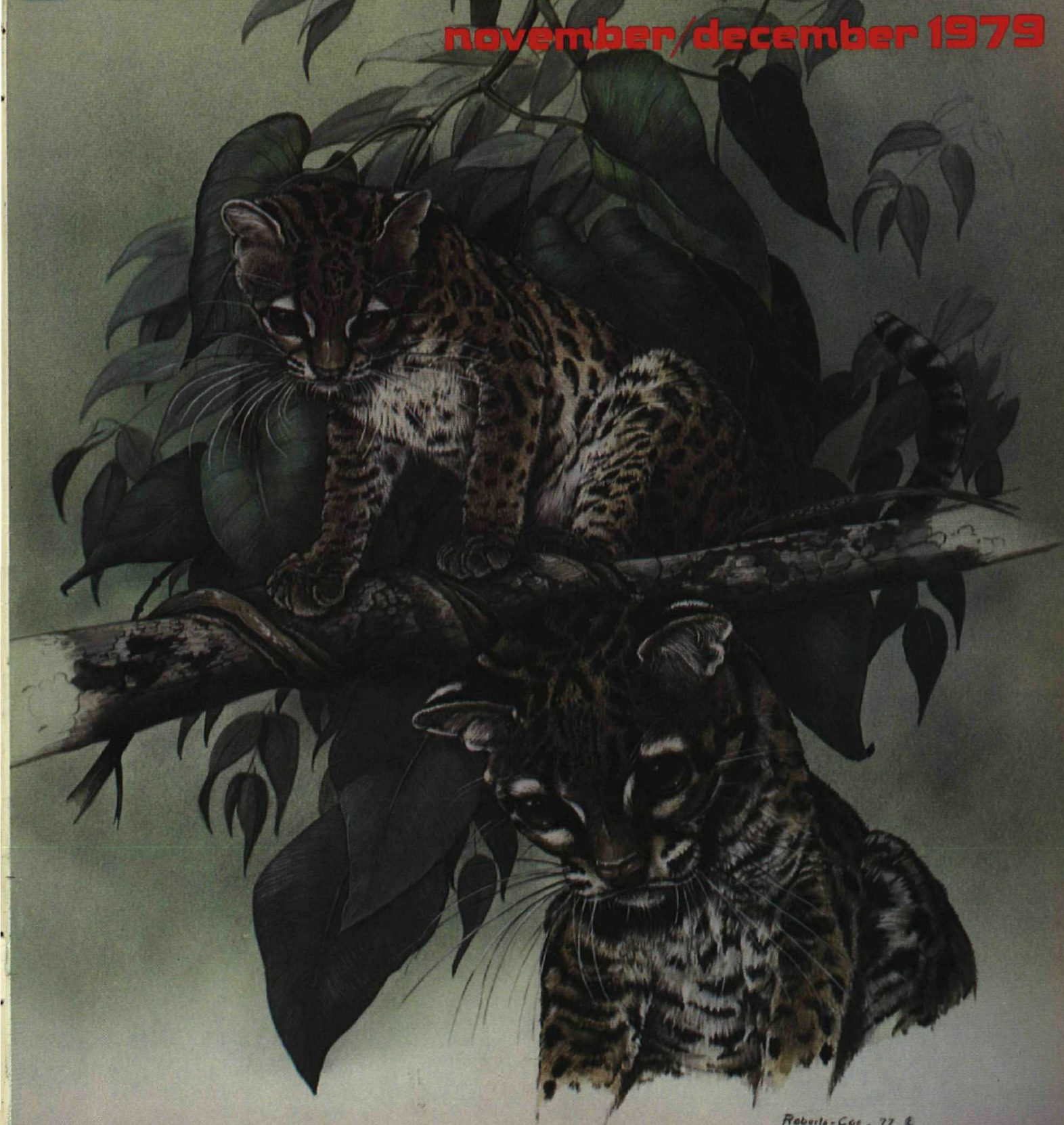


Today's

\$1.25

Animal Health

november/december 1979



Roberts-Coe, 77 ©

How best of care can mean best in show.

by Jane and Bob Forsyth



Nationally known dog handlers, Jane and Bob Forsyth, demonstrate one important aspect of their tried-and-true training regimen.

A few years back, the owner of an English Setter named Duke approached us with a problem. Duke had been on the show circuit a couple of years and had amassed an enviable record, but due to a sudden lackluster attitude, he hadn't been doing too well of late.

We soon realized that Duke was a bit on the lazy side and had to be coaxed into exercising. So, each day, rain or shine, we had him "jog" by trotting alongside our car. After just one month, this daily exercise—coupled with the balanced diet we fed him—enabled Duke to recapture his form and return to the ring as a top contender for two more years. Duke's experience reinforced our belief in the importance of diet and exercise in helping a show dog reach—and maintain—his full potential.

There are, of course, many ways your dog can get the exercise he or she requires. In Duke's case, it was jogging. But long walks, or bicycle

rides with your dog trotting alongside, under control on a lead, are also good for him—not to mention for you! You've probably noticed that dogs in pairs or a group exercise almost continuously; so if you have the space, erect a paddock for two or more animals, then watch them go!

Now, with all this running about, your friend will be using a great deal of energy. And that's good. But energy in dogs, as in man, must be replaced when used. Many of our dogs, for example, attend up to

80 or 90 shows a year, or 160 to 180 days a year under abnormal stress. That can be very difficult for dogs, and we can't overemphasize the value of feeding a high-protein meat diet to maintain the proper energy level.

A top-quality, fortified meat diet keeps our valuable charges in prime, hard condition, and helps them respond like the champions they are. One top canned meat dog food we recommend is ALPO® Beef Chunks Dinner. It has meat by-products and beef, and it's fortified with soy protein and vitamins and minerals for a complete and balanced diet.

As you know, meat is a rich source of protein in itself and it also contains fat. Both meat and fat are staples of a high-energy diet. Fat alone has more than twice the energy capacity of a similar amount of carbohydrates. But fat alone isn't enough to meet all a dog's energy needs. For that, you must feed the

protein, vitamins and minerals found in a fortified meat dog food like ALPO Beef Chunks Dinner.

Best of all, dogs love meat. So when you feed him ALPO Beef Chunks Dinner, he gets what he needs—and enjoys it, too!

A daily exercise program and the proper diet—as well as good coat and muscle tone—are all tangible components of the conditioning dogs need to be at their best. But there's also an intangible component that prompts a dog to want to do his best for you, and that's your attitude regarding him. Dispensing the tender, loving care he needs from his special person will do much to improve his attitude and his performance.

Right about now, you're probably thinking, "Okay, I'll follow your advice to the letter. Does that guarantee my dog will win best in show?" Well, as in so many endeavors, there simply are no hard and fast guarantees. But we sincerely believe that, by feeding your dog the right balance of vitamins, minerals and meat, such as in ALPO Beef Chunks Dinner, to assure good nutrition—as well as by putting in the often long hours of conditioning we've described—you'll certainly go a long way toward placing your dog in the middle of the ring to receive that best-in-show ribbon. It's the hoped for pinnacle we all aspire to. The greatest satisfaction for any one involved in the sport of showing purebred dogs is the knowledge that others recognize your dog's championship qualities... and your championship techniques!

Robert Forsyth
Jane Forsyth

Today's Animal Health

Volume 10/Number 6

November/December 1979

STAFF

Richard S. Glassberg, D.V.M./Editor
Jane Wright/Associate Editor
Pat Taketa/Art Director
Harry Maiden/Circulation Manager
D. M. Diem/Staff Photographer
Dyana Paul/Youth Editor
Millwood Custer, D.V.M./
Companion Animals Editor
Robert J. Schroeder, D.V.M./
Ecology and Public Health Editor
Oscar W. Schalm, D.V.M./
Research Editor
Wesley A. Young, D.V.M./
Exotic Animals Editor

ADVERTISING SALES

Will Decker, Advertising Director
22312 Kirkwood
El Toro, CA 92630
(714) 770.8050

TODAY'S ANIMAL HEALTH is published bi monthly by the nonprofit charitable Animal Health Foundation
8338 Rosemead Boulevard
Pico Rivera, California 90660
Single copies \$1.25 6 issue subscription, \$4.50 Copyright, 1979 Animal Health Foundation

TODAY'S ANIMAL HEALTH is published to inform animal owners about responsible animal ownership and animal health. There are subscribers in all 50 of the United States and in 17 foreign countries. The magazine is used as a tool for client education by veterinarians and for educational purposes in classrooms and school libraries.

The ANIMAL HEALTH FOUNDATION supports research in animal health and pet population control. The Foundation also provides free veterinary care to pets belonging to elderly persons living entirely on social security benefits and those living on Aid to the Totally Disabled in the Southern California area. This program is made possible through the cooperation of local veterinarians. These activities are supported by donations from the public and can be maintained only through your continued financial support. Your contributions to the Foundation are tax deductible.

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dialogue

Reference is made to your "Dialogue" column in the July/August issue of Today's Animal Health, in which a reader, F. M. Loew, stated that the seal killing is **NOT** "inhumane and decreasing the population."

Even someone of limited intelligence can discover that one seal killed decreases the population. The population is then **PERMANENTLY** decreased because every seal killed also eliminates **ALL** descendents of each seal. Further, to bash in **ANYONE's** head is not only inhumane, but a criminal act.

Also, I noticed in F. M. Lowe's title, "Chief, Laboratory Animal Medicine"... There is no such thing as a "laboratory animal" - only ordinary animals which are termed such because they are held captive in such diabolical institutions.

Lastly, as to the motive of the animal organizations, as an animal lover I would sooner trust other members of the public who support these groups, than the pathologists, mammalogists, etc. who are interested in filling their pockets with tax money and furthering their careers over the mutilated bodies of our fellow beings.

We, the public, are **DONATING** funds, not scurrying to obtain grants with which to build our egos.

Kerry Jensen

I recently read your latest issue of "Today's Animal Health" and enjoyed the articles very much. I found them to be very informative as well as entertaining. Thank you.

Mrs. Linda S. MacLean
Dallas Texas

I'm presently conducting research concerning true pet owners' experiences communicating with their pets after they have died. I've already received some true and interesting stories through association with animal organizations, colleges, ESP groups, mediums, and my present employment managing a pet shop. I'm convinced through my own personal ex-

periences with pets that many such happenings do exist but many people are afraid to discuss them. Many people are unable to explain how such phenomena do occur and would feel foolish if they discussed them publicly. Any information you may have involving animal phantoms, animal ghosts, animal spirit hauntings (audio or visual) and any other unusual phenomena concerning pets would be appreciated.

Please send information and referrals to:

B. J. Spellman
P. O. Box 8483
Parkville, MD 21234

Recently our dog Rusty was injured in a dog fight. We were lucky that his wounds were not real serious and our veterinarian's bill was affordable. The incident brought home to us, however what havoc a serious injury could have done to our budget. Are there "free clinics" for pets in Los Angeles or are there any ways a family can join a "prepaid" health plan for dogs so that a pet's care can be budgeted for?

Mrs. L. Wilson
Los Angeles, CA

We don't know of any "free clinics" for dogs and cats in Los Angeles (that doesn't mean there isn't one). There are, however, a number of companies offering "prepaid type" medical plans for pets. The Southern California Veterinary Medical Association (SCVMA) has endorsed the **principle** of these plans but has not specifically endorsed one plan. The SCVMA has established a set of guidelines to help pet owners and veterinarians evaluate these plans. These Guidelines are just now being formulated and may be altered in the future. As they stand now they are:

Guidelines

1. The plan must be in the public interest with clearly specified protection for the pet owner.

2. The plan must not place the veterinarian or employees in the position of selling it.

3. The plan should not seek to regulate the veterinarian's fee nor should the veterinarian concern himself with amount of protection offered by the plan.

4. The plan should not restrict the freedom of pet owners to select the veterinarian of their choice. Referrals to specialists should be permitted.

5. The plan should not endorse any specific veterinarian.

One plan in your area which we are familiar with is the Pet Health Support Plan. This plan operates by charging an annual premium based on the age of the pet. Average membership fees are \$40.00 for dogs, \$33.00 for cats. Dogs and cats up to 7 years, 11 months are eligible. Once a pet is enrolled he or she will always be eligible for re-enrollment, no matter what the age is.

This plan covers office calls, hospitalization, anesthesia, surgery, medication and diagnostic tests up to \$350.00 a year and as much as \$800.00 for a pet's lifetime. There are some conditions, (such as allergies) which are not covered. With this plan there is "no deductible". A participant in this plan can go to any veterinarian anywhere and be reimbursed for what he spends to treat his pet's sickness or injury.

A unique feature of this plan is that the company encourages spaying and neutering of pets by rewarding the owner with a \$10.00 reduction in the second year membership fee if the pet is spayed or neutered during the first 12 months he or she is enrolled in the plan.

While Today's Animal Health and the Animal Health Foundation do not endorse specific plans, we join the SCVMA in endorsing the concept of those plans meeting the SCVMA Guidelines listed above. ed.

I would like to congratulate you on a fine publication, Today's Animal Health. I would also like to thank you for making Morris Animal Foundation a part of the July/August issue.

We appreciate very much your carrying the news release for Morris Animal Foundation. These releases contribute greatly to keeping all companion animal enthusiasts up-to-date on our efforts toward better health for animals.

Cindy Clark
Morris Animal Foundation
45 Inverness Drive East
Englewood, Colorado 80112

worth reading

BOOKS FOR CHRISTMAS GIVING

Three Children's books:

Elephants on the Beach

By: Irene Brady

New York: Charles Scribner's Sons

1979: \$7.95

F*T*C* Superstar

By: Mary Anderson

New York: Atheneum

1979: \$8.95

Bunnacula

By: Deborah and James Howe

New York: Atheneum

1979: \$7.95

"Elephants on the Beach" is the sketchbook of the author as she observes life on a California beach. The sketches are in black and white and sepia and are lovely - her comments mirror her fascination with the world of nature.

"F*T*C* Superstar" is written about Frederick Morosco Bitterman, Schubert alley cat, who has aspira-

tions to be a stage star, and his friend, Emma, a literate pigeon, who teaches him the art of acting. Very funny, for older boys and girls (and their parents - this reviewer enjoyed it too).

"Bunnacula" is written by Harold, the dog, who lives with Chester, the cat, at the Monroe's. The Monroes went to the movie, *Dracula* and guess what, found a bunny, whom they named, of all things, Bunnacula. Is Bunnacula a rabbit vampire? Well, Chester certainly thought so and tried his best to remedy the situation. Another funny one for older boys and girls.

Seal Song

By: Brian Davies with photographs

by Eliot Porter

New York: Penguin Books

1979: \$5.95

The harp seals speak for themselves in this lovely paperback. Brian Davies was an investigator for the New Brunswick S.P.C.A. and in the course of his work became totally intrigued

with the beautiful little white baby seals who are slaughtered by the thousands for their pelts. He has done considerable research on the seals and the photographs in color and black and white are superb.

How To Be Your Dog's Best Friend

By: The Monks of New Skete

Boston-Toronto: Little, Brown & Co.

1979: \$8.95

This is titled "A Training Manual for Dog Owners," but it is much much more. The monks of the Brotherhood of St. Francis support themselves by breeding, raising and training dogs at their monastery. This is no ordinary "how-to" text. It is a paean to the value and abilities of dogs. The theory behind their training program is understanding and with understanding comes communication and compassion. An unusually exciting book, illustrated with excellent photographs. A magnificent present for any dog owner, young or old.



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help clean and whiten teeth. The Chew Food's 100% nutritious too, in Original or Beef flavor.



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MILK-BONE
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The right teeth-cleaning size and 100% nutritious too!
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The Healthier Chew Food

ANIMAL BEHAVIOR

VISUAL LANGUAGE

Photos courtesy author

C. P. Ryan, D.V.M.

PART V



1

1. Boy and dog

As this young man and his dog check the environment below they receive vastly different messages. The dog's vision is color blind, but he has a complex odor detection system enabling him to detect the rabbit below that can't be seen.

VISUAL LANGUAGE

In order to be aware of visual language, the animal must first be able to see. Interestingly, some animals have better vision than ours, and some domestic animals may not take full advantage of their vision. For example, pigs have eyes that are highly developed and similar to human eyes, but the pig doesn't use its vision nearly to the extent that man does. If strong responses to non-visual cues, such as smell, are developed in searching for food early in life, later the adult pig will not use vision in food gathering and will have difficulty finding food scattered in front of him on the ground.

NIGHT VISION SUPERIOR

Light is detected by the lining of the eye called the retina. Cells in the retina called rods detect variations of black and white, while the cone cells are responsible for color vision. Chickens have many more cone cells than man, and color vision is very important to the chicken. Cats and horses also have color vision, but they do not have the color discrimination that we do. Dogs are color blind and see only various shades of grey, similar to a person who is color blind.

Many domestic animals, such as cats, dogs and horses, have night vision which is superior to that of man. In a situation which we would perceive as total darkness, a cat or dog could make out objects, particularly those that move. In addition to having more rods to perceive various shades of grey, the cat and dog also have a larger pupil than ours, which allows more light into the eye. Like all other domestic animals, except the pig, dogs and cats have a reflective layer behind the retina which reflects light back out to stimulate the rod cells, again enabling more efficient use of available light. The reflective layer, called the *tapetum lucidum*, is responsible for the greenish-blue reflection seen when a light is first shined into an animal's eyes at night.

ANIMAL EYES SEE MORE

A visual field refers to the width of an area which an individual can see without moving the head. A human

eye has a visual field of about ninety degrees. Many domestic animals, by virtue of placement of the eyes in the head, have larger visual fields. A horse's eye has a visual field of about 215 degrees. The horse's combined field, using both eyes, is almost a 360 degree panorama. The horse's blind area is along the back and tail. When approaching a horse, do it from the front or side so the horse knows where you are. Do not approach directly from behind.

Binocular vision, that portion of the visual field which is seen by both eyes simultaneously, in man is about 140 degrees, whereas the horse's binocular vision is only about sixty degrees. The chicken has binocular vision of about 26 degrees. Binocular vision in dogs varies from 80 to 110 degrees, depending on the shape of the skull.

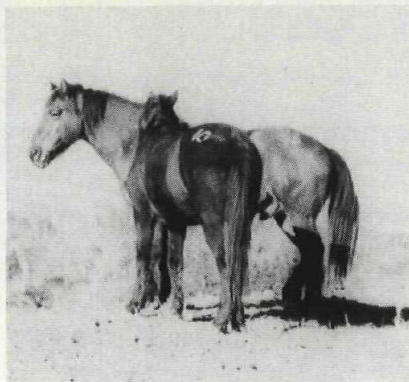
BODY LANGUAGE

Visual communication is extremely important to domestic animals, but unless we are aware of it, we fail to see the large amount of information being transmitted. Veterinarians and others who work with animals daily soon learn to clue in on this obvious straightforward language used by animals. Much has recently been written about the "hidden dimension" in human communication which involves various visual messages given by people. In humans, many of the visual messages exchanged between individuals may have double meanings, and vary from one community to another. In animals, visual messages are generally direct and understood by members of the same species and do not require prolonged learning.

The general body posture of an animal transmits information to others. In cattle, as well as in the American bison, the broadside body position can be a threat and a prelude to more serious fighting. Fortunately, for every threat signal there exists a submissive signal. On the cattle range, if a bull gives the broadside threat to another bull, the other bull can simply move away and resolve the conflict. If the bull returns the broadside body threat, then the contest is on. A bull may also signal his intentions by pawing, rubbing



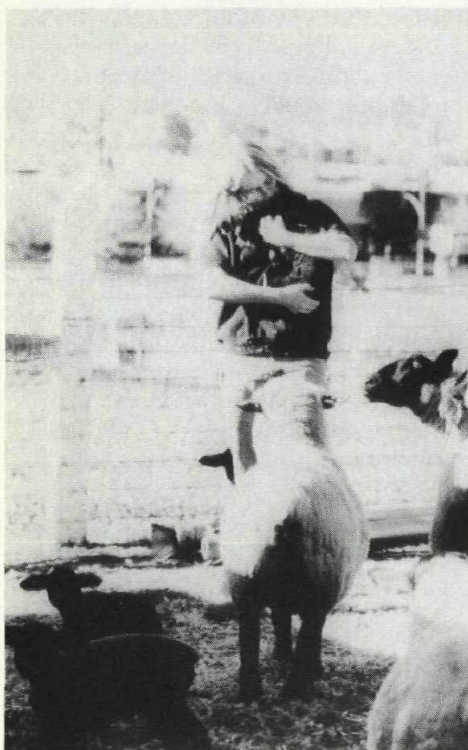
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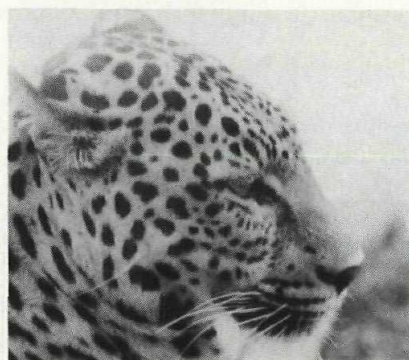
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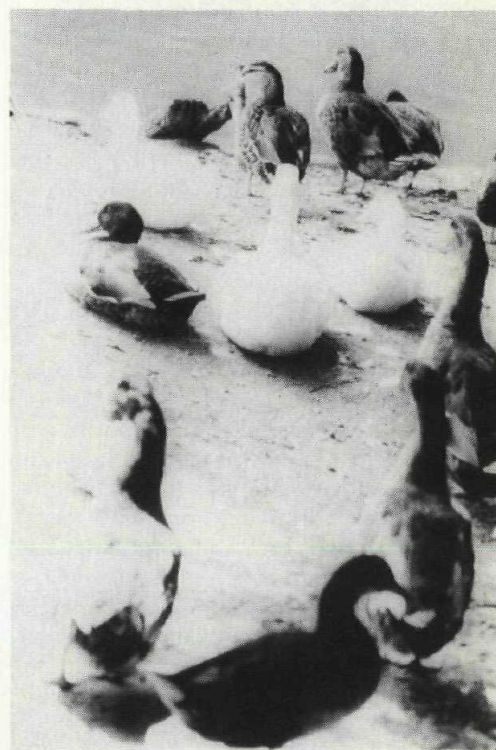
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2. Dairy cattle

Dairy cattle often balk when they spot an unusual object in their path. The herdsman is reassuring her cows who have become apprehensive because of a stranger in the milk barn.

3. Horses on hill

As these horses view the valley, it is as if they were viewing through a super wide angle lens, since by using both eyes they see almost a 360 degree circle.

4. Examining goat's eye

Checking a goat's eyes. This goat was showing abnormal behavior by bumping into objects and having difficulty locating his food. Examination by the veterinarian revealed developing cataracts. Animals have many of the same eye problems that we do.

5. Ewe and person

The ewe is keeping a close eye on the herdsman who has just

picked up her lamb. Interestingly the mother generally tells her lamb apart from others not by sight but by smell.

6. Cat in tree

As this cat peers from a fork in a tree the location of the vertical pupils becomes evident. Horses' pupils are horizontal while we have a circular pupil.

7. Spotted cat

Does this cat give any signals that can help determine her present mood? Is she angry or friendly? The ears and whiskers are held slightly backwards as she was about to be attacked by another cat.

8. Ducks

Domestic ducks are descended from the mallard, and body language plays an important role in duck communication. Birds gain more information about their surroundings through their eyes than any other sense organ.

ANIMAL BEHAVIOR

his neck on the ground and digging his horns into the dirt. This direct threatening message is understood immediately by other cattle and people dealing with cattle. As one rancher puts it, "When a bull does that, it means run for the fence."

A body posture familiar to many people is the passive, submissive crouched body posture of puppies. Often after crouching on the ground, the puppy will roll over on its side when the owner or another dog approaches to show that it means no harm.

An animal uses body language to signal his or her intentions to other animals, including man. It is difficult to inhibit this type of behavior, since it is strongly rooted in instinct and the animal displays visually, vocally and chemically how he feels. Veterinarians have difficulty working with animals who don't display normal body language, because it is hard to determine what type of behavior to expect.

EYE CONTACT AND SOCIAL DISTANCE

Whether or not an animal looks at you when you approach is meaningful. The eye, besides receiving visual messages, can also be a sender of visual messages. Eye contact in cats and dogs regulates social contact. A direct stare is used by cats and dogs to regulate social distance. If one cat begins to follow another cat, and the leading cat turns and stares at the pursuing cat, often the pursuing cat will stop and then leave. When approaching a strange dog, it is best to make eye contact since this will allow you to get some idea of how the dog will react to you. Dogs that tend to avoid eye contact are usually submissive, but if the dog keeps eye contact with a direct stare, be careful. Pupil size can be a direct clue to the emotional state. Fearful animals have dilated pupils, and the same holds true for people.

Other clues a veterinarian looks for, besides observing the eyes and how they are used, are the movements of the tail, ears, mouth and overall body posture. Tail wagging indicates friendliness in a dog, while the tail held between the legs generally indicates fear. If the tail is held upright it shows confidence on the dog's part, and may indicate arousal and even aggression. With aggression, other body signals, such as facial expressions, are also given. Cats also use their tails in a similar way to express their feelings.

In some domestic animals, the tail plays a very minor role in communication. Sheep have their tails docked or removed when they are very young for sanitary reasons. Pigs have very small tails which often cannot be seen unless you are to the side or rear of the pig. In cattle the tail is customarily used in self-grooming to brush flies and other irritants off the skin. It may also be used to express intense emotion and displeasure. Anyone who has milked cows becomes immediately aware of tail-switching when they sit on the low milk stool beside the cow.

EARS

The ears of an animal can transmit a great deal of information about his emotional state. Ears held upright or forward convey a completely different message from ears pulled back or held flat against the head. An animal with his ears perked forward usually indicates an alert, inquisitive state. A defensive threat may be indicated when the ears are partly flattened against the head. A veterinarian makes use of this type of information daily. When approaching a strange horse, if the horse begins to pull his ears back, one should proceed with caution. The same is true for cats and dogs.

LIPS AND MOUTH

The position of the lips and mouth are very much involved in facial expression, and this is a form of communication the average person is more tuned in to. The snarl, with the lips raised to expose the dangerous canine teeth, is a very obvious threatening expression, and it is often seen when the animal is about to attack. The individual for whom the snarl is intended can then reciprocate with a signal, depending on his or her intent. Return the snarl and stand firm, snarl and move forward, or turn and leave.

DIDO THE CAT

An animal has a wide variety of communication methods, and also many different methods of detecting his environment. It might be viewed by the military as built in contingency planning; if one system or method fails, others can take over.

Animals have a remarkable ability to adjust to circumstances, as your veterinarian can tell you. Patients may be presented for vaccinations who are blind, unknown to their surprised owners. The following appeared in the April, 1883 issue of **The Veterinary Journal and Annals of Comparative Pathology**, concerning a cat that became blind from cataracts when he was about four years old.

"At first the cat would sit and meow piteously; and when he tried to move about, he met with all conceivable mishaps—ran against walls, fell downstairs, stumbled over sticks and so on . . . When called he would run about in a bewildered way.

'Ere long, however, Dido showed a power of adaptation to altered conditions. He became able to run downstairs at full speed, turning into the hall after the last step. In this process he went to one side of the top till he felt the banister touch his whiskers, and by these he was guided . . . But if an unexpected object was placed in his way, he showed by running against it that he was still quite blind . . . His value as a mouser does not seem to be in the least diminished. Put in a closet where rats were suspected, he was found in the morning mounting guard over a large rat he had killed."

BANDING CAGE BIRDS

By Mary Alice W. Minderhout
David J. Minderhout

Photos courtesy authors



1. A permanent closed metal band being slipped over the forward three toes of a week old canary.



2. A split colored plastic band on an adult border canary.

Have you ever noticed the small metal or plastic band on the leg of a parakeet or canary in a pet shop or someone's home? That band was put there by a breeder to help identify some characteristic of the bird such as its family or the year it was born. The band is the bird's fingerprint, quickly identifying it to the knowledgeable bird owner. To someone who is planning to buy a pet bird a band may serve to tell how old a particular bird is. The age of a prospective pet is useful information since younger birds are more amenable to training. Also a band may indicate the degree of care a bird has received prior to your purchase. Breeders who produce birds in large quantities for the retail market seldom bother to band birds. The hobbyist or show breeder who deals with smaller number of birds is more likely to take the time to band his birds -- and to give them individual care. So ask to examine the band on a bird you are considering for a pet.

Generally bands are of two types, open and closed. Open bands are split, allowing them to be placed on a bird at any age. Most open bands are made of colored plastic and can be opened with a special expansion tool and then slipped over the bird's leg. With the band in position the tool can then be withdrawn leaving the band encircling the leg. Serious breeders prefer closed band to open bands since open bands can be used fraudulently to suggest that a bird is younger than it really is. Closed bands are not split and therefore must be placed on the bird's leg when the bird's toes are small and flexible enough to be threaded through the hole. This happens when the bird is about one week old, though some larger breeds of parakeets may have to be banded when only five or six days old. The forward toes (two for parakeets, three for canaries) are threaded through the band first. Then the band is pushed over the ball of the foot and up over the leg and remaining toe (canaries) or toes (parakeets) until the toes can be pulled through the band. The whole operation takes but a few minutes, and the baby may be returned to its parents with minimal

disturbance. The closed band is permanent and remains on the bird's leg its entire life. Some breeders use both open and closed bands on the same bird, with the closed band identifying the year of birth and the open band identifying the parents of the bird. Thus the breeder can identify at a glance one bird among several similarly colored birds in a large flight cage.

Both open and closed bands may be obtained through dealers advertising in magazines dealing with bird care. The breeder generally specifies the color of the band and the year to be stamped on it; the breeder's initials may be included. Several cage bird societies such as the American Budgerigar Society issue specially coded bands to their members, the code consisting of a color designating a year and a number designating the breeder. For instance, the ABS band for 1979 is green. Unfortunately the more than fifty cage bird societies in this country have not agreed to use the same color band in a given year, and a green band on a canary is no assurance that the bird hatched in 1979. Bands are also available for other cage birds such as parrots, love birds and finches, but these birds are more easily disturbed in their nests. Finches in particular resent intrusions in their nesting affairs; they are likely to abandon the nestlings the owner is so earnestly trying to identify. Open bands are the best alternatives for these birds. Bands on finches are particularly useful since they can help to distinguish birds bred in this country from those captured in the wild and shipped to this country. The authors prefer not to buy imported wild birds, not only because the age and condition of these birds is suspect, but also because the authors object to the depletion of the wild bird populations in Africa, India and elsewhere due to wild bird trapping. But many breeds of birds have been bred for generations in cages (two hundred to three hundred years for canaries and parakeets), and these are the birds which are more likely to be banded. So take a closer look the next time you see a band on a cage bird. Someone is trying to tell you something.

MYTH OF THE UNWANTED CHRISTMAS PET

by Shirley A. McDermott

The standard humane society attitude toward Christmas pets usually is "give pet rocks." In fact, conventional humane society wisdom assumes that large numbers of thoughtless individuals adopt Christmas pets, then return them during the following months. In response to that, most societies conduct a pre-Christmas educational campaign counseling people against gift pets. A few societies have taken the stronger stance of closing adoptions during Christmas week and/or issuing pet coupons. Later, after the Christmas madness, the coupon can be redeemed for a pet handpicked by the family or person who ultimately will care for him.

Evidence Doesn't Agree

Those programs are an attempt to short-circuit pet-buying grandparents who see a "fluffy little puppy that would be so cute for the kids." In six months, the puppy becomes a nearly full-grown sheep dog or St. Bernard. The children find him exuberant and unmanageable, he tracks mud on mom's clean floors and only really can be handled by dad, who is gone the better part of the day. Supposedly, the family becomes disenchanted with the fluffy no-longer-puppy romping through his life and returns him to the humane society.

Logically then, shelter figures should show a rise in the number of animals turned in for adoption during the months of January, February and March. However, there appears little or no evidence to support the Christmas pet adoption-and-return syndrome.

Explains Jill Williams, American Humane associate director of education and research, "Watching the figures come in over the last couple of years, I began to suspect it wasn't true. The more I watched the statistical flow, the more convinced I became."

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Certainly, animal statistics are some of the more difficult to compile. Some, like the number of animals abandoned, are impossible. However, the figures do support the fact more animals are adopted at Christmas, but not that they are brought back during the following three months.

Individual shelter managers vary rather greatly regarding the extent to which they support the Christmas theory. Ron Hemmingsen, director of the Nebraska Humane Society at Omaha lists the following statistical animal flow from December 1977 to July 1978:

Nebraska Humane Society Animals Received and Placed December 1977—July 1978

Month	No. Received	No. Placed	% Placed
Dec.	313	91	29
Jan.	504	81	16
Feb.	346	52	15
March	441	79	17
April	414	84	20
May	349	74	21
June	306	61	20
July	440	91	21

Hemmingsen cautions that "statistics are misleading" and says, "A large number of animals are adopted during the Christmas season and come back—usually in far worse shape. Of course, there is no way to check that." Hemmingsen's figures, like many other shelter statistics, indicate a larger percentage of the available animals (29 percent) were adopted in December.

None of the 91 animals adopted during December were adopted the week of Christmas, though. The Omaha shelter has a no-adoption policy that week. Hemmingsen defends that policy saying, "I suppose that represents an income loss, but we'd rather have the quality than quantity. So we will issue a pet gift cer-

tificate and the family can come in, make a relaxed, unpressured choice and at least spend a few minutes getting acquainted with the animal before they adopt it."

In contrast, Albert Keller, manager of the Wisconsin Humane Society at Milwaukee, doubts the Christmas pet adoption-return theory, saying, "My statistics just don't support it." Keller first began looking back over his statistics while studying manpower allocation. That is, when peak periods call for more part-time employees and when slow periods allow him to schedule vacation time. He insists, "As far back as 1957, there are no predictable trends in the flow of animals. I couldn't find any evidence to support the Christmas theory or, for that matter, the theory that people turn in larger animals in times of recession—something else that is widely believed."

Indeed, Keller's statistics for the eight-month period indicate a fairly steady flow of animals:

Wisconsin Humane Society Animals Received and Placed December 1977—July 1978

Month	No. Received	No. Placed	% Placed
Dec.	1613	488	30
Jan.	1216	366	30
Feb.	1210	331	27
March	1499	363	24
April	1320	381	29
May	1351	370	27
June	1367	406	29.5
July	1421	383	27

In response to that flow, he says, "The advertising we do for public awareness is very constant throughout the year. However, at Christmas we do encourage people not to give an animal on Christmas Day because with all the excitement, it often gets mishandled. However, we do not cur-

tail adoptions at Christmas."

Earl Wentzle, vice president and assistant secretary of the Animal Rescue League of Boston, has found a similar situation in his area:

**Animal Rescue League of Boston
Animals Received and Placed
December 1977—July 1978**

Month	No. Received	No. Placed	% Placed
Dec.	3046	555	18
Jan.	2516	377	15
Feb.	1994	308	15.5
March	3362	535	16
April	3451	568	16.5
May	4004	482	12
June	3770	507	12.5
July	3717	408	11

According to Wentzle, "We are out of animals by noon the day before Christmas, so adoptions are high. But they don't seem to bring them back any more often than usual.

"Most pets are acquired for children," he explains. "Once the kids fall in love with their animal, you have to pry it loose from them. Most people don't have the heart to do it."

The West Coast appears no exception in terms of Christmas pet adoptions. Richard Avenzino, executive director of the San Francisco SPCA (Society for the Prevention of Cruelty to Animals), handled the following number of intakes and adoptions from December 1977 to June of 1978:

**San Francisco SPCA
Animals Received and Placed
December 1977—June 1978**

Month	No. Received	No. Placed	% Placed
Dec.	1607	548	34
Jan.	1636	509	31
Feb.	1494	490	33
March	1849	483	26
April	1902	501	26.5
May	2086	507	24.5
June	1108	461	41.5

Avenzino's organization follows the official policy of closing down the day before Christmas. In addition, he says, "We do our best to encourage getting pet gift certificates the week before. However, Christmas is still our best adoption season." According to Avenzino, the San Francisco shelter is monitoring that very closely by placing follow-up telephone calls to individuals and families who have adopted animals and requiring ex-

planations from people who return animals.

The Humane Society of Greater Miami has had the same experience as most of the other organizations. Ken McGovern, executive director, says, "We have too many animals when they are not in demand—late spring and early summer—and too few when they are in demand—around Christmas. If I could save some of those kittens from June and July to adopt out at Christmas, it would be great."

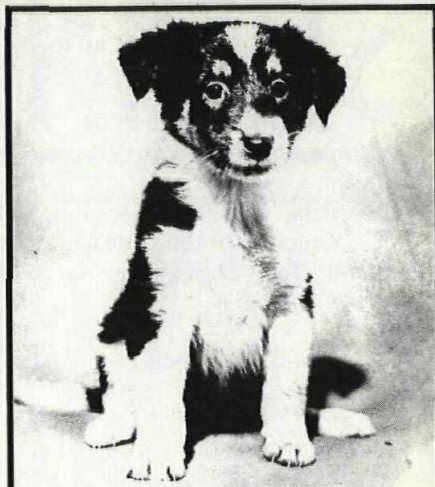
In view of the statistical realities of Christmas pet adoptions, is it time for humane societies to reconsider and possibly even encourage pet adoptions at Christmas?

A September 1977 Toronto Humane Society pet survey sheds a different light on Christmas pet purchasing and adoption. The door-to-door survey of 18 representative districts revealed that people obtained their dogs from the following places: pet stores, 8.6 percent; friends, 37.2 percent; breeders, 32.3 percent; humane societies, 9.7 percent; city animal pound or shelter, 3.6 percent; gifts, 4.3 percent, finding it, 4.3 percent.

Obviously, those figures indicate friends and breeders are the greatest source for dogs. The percentages for cats probably are not radically different. Humane society educational programs regarding proper choice and care of a pet, therefore, are more important than ever. They should be directed at the general public, not just at persons visiting the society's shelter. Whether the animal is from a pet store or humane society, the person receiving the animal must want him and be willing to care for him properly.

Perhaps the fact that humane societies don't see a large return of animals in the months immediately following Christmas is a tribute to the success of educational programs. Especially since dogs which come from friends may be accepted as a way of doing them a favor. It seems fair to assume a purebred dog for which an individual pays a sizeable sum is less likely to be abandoned or given up for adoption.

Perhaps humane society workers can even pat themselves on the back. As Earl Wentzle suggests, "Since they don't seem to be bringing them back after Christmas any more than usual, maybe societies have done such a good job that they have overcome the problem."



**No, Little Puppy...
There Is No Santa Claus**

If there were, he would never let you be cold or hungry again. He wouldn't let you paw through garbage for some tiny frozen morsel of food.

He wouldn't let you seek warmth and refuge under cars or in vacant buildings. He wouldn't let you suffer the agonies of a lonely death that thousands like you go through each day. Little puppy, if there were a Santa, he'd give you a warm home. Plenty to eat. And enough love to last you to the end of your days.

No, little puppy, there is no Santa. There are only people. There were the people who threw you out to fend for yourself. The people who saw you lying injured by the road but didn't bother to help...

But there are other kinds of people, too—people who care about your frozen limbs and your hunger, your fear and your pain. And they're the people we at Tree House Animal Foundation turn to for help. Their support of Tree House makes it possible for us to get you the veterinary care you need. To feed you. Shelter you. And love you until you can go to a new home of your own.

**No, Little Puppy,
There Is No Santa...
But There Are People!**

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STRANDED BABY

A True Story

by Patricia Theofan

The baby whale lay absolutely motionless in the shallow waters of the small Bay. She was alone. She was near death.

B-a-a-a-n-g. Cr-a-a-ck.

The shots sounded like cannon fire over the tranquil sun-burnished afternoon seas, off Vancouver Island.

B-a-a-a-ng. Th-w-a-a-ck.

The strident scream of the gulls became a tumultuous crescendo as the waves were whipped to a frothy white foam by the death throes of the magnificent glistening black and white whale. Slowly red mixed with the white and became an ever-widening stain spreading into the remaining pod of Killer whales. They were in a frenzy of terror from the shattering noise of the rifles, the ear-splitting screech of the gulls and the cries of their dying companion. Again and again the shots

reverberated until at last the whales fled in panic from the horror, leaving the blood-flecked body of the majestic mammal dead on the surface of the magenta hued waves, alone.

Not quite alone. As the churning upheaval subsided, a tiny infant whale could be seen cringing in fear and bewilderment against her mother's side. Blood gushed from the dreadful bullet wounds in her little body, slowly mixing with that of the adult in the ever increasing circle of blood, now indigo in the setting sun. Hours passed. The black canopy of night came and a deathly quiet prevailed. Still, the baby clung to the only protection she knew. Now the once warm familiar security of her mother's body became cold and the warm nipples always pulsating with sweet nourishment became frigid and dead.

The lone fisherman rowed idly in his faded wooden boat, line trailing, quietly enjoying the serenity of the sun-warmed waters of the small Bay.

Suddenly he noticed the tiny body, unmoving on the still surface. He rowed closer.

"I don't believe it," he said aloud in wonderment. "A baby Orca whale.....alone."

Bill Davis knew whale pods never abandon sick or injured members of their pod unless under the most extreme circumstances. He came alongside the infant and saw at once she was near death. The gaping bullet wounds were now covered with layers of thick green algae and parasites. The emaciated little body was dwarfed against the endless backdrop of sea and sky. Outrage overwhelmed him. Who would do this brutal savage thing?

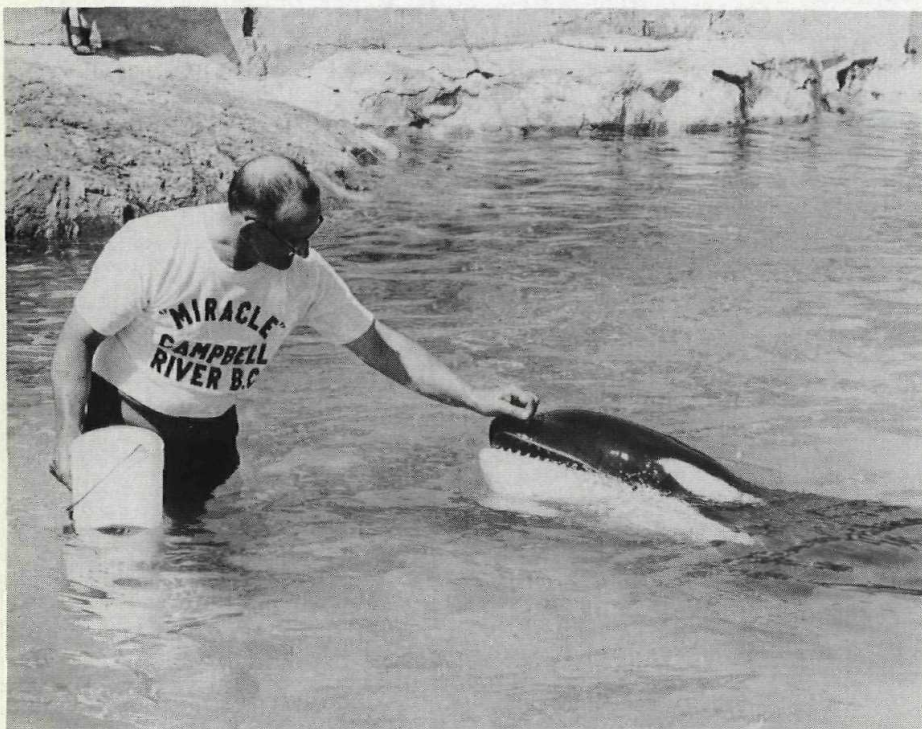
"You haven't eaten for a long, long time, have you little one?" He spoke to the hapless creature. How would he be able to help?

"Do you think you could manage to eat a small fish?"

From his bait box he drew a small herring. He knew infant whales nurse from their mothers for about two years before being taught to fish for themselves. It was obvious this one was much too young to have learned. He was aware that the name "Killer" came from an old idea that this species of whale was dangerous to man. These friendly, curious, extremely intelligent members of the dolphin family have never been known to attack a human or even a boat.

The starving pain-wracked infant filled his heart with an immediate deep sympathy. The baby's eyes followed his every move. He held out the small fish and after some hesitation she actually accepted it from his outstretched hand!

Photos by Jim Ryan



Grinning with incredulous delight, he rummaged once more in the bait-box.

"You wait right here, don't move, and I'll be right back." He rowed quickly towards the harbor. She waited, flicking the surface lethargically now and then with her tail.

Later, Bill Davis rowed back to the foundling. He had telephoned the Marine Biological Station at Nanaimo, where specialists even now were contacting Provincial and Federal Governments with the story of the infant whale's plight. He had arranged too, time off from his work at a local lumber mill to stand guard over his charge until help could come. Several days passed. He left her side only to obtain food for himself and for her, even then arranging for friends to stand watch while he was away. She continued to take food from his hand and she remained alive.

"Here we are, Bill," came the welcome cry across the water as Bob Wright, owner of "Sealand of the Pacific" in Victoria arrived on the scene. Mr. Wright together with many members of the local community, his own specially trained staff and equipment specially designed for this type of rescue, together with two topnotch Marine Veterinarians (one from New York City), worked hour upon hour placing nets around the precious rare orphan. Feeding was continued in hopes she could gain enough strength for the hazardous journey into Victoria, where a small salt-water pool had been donated for use as a hospital-nursery. The odds were

estimated at this time to be 1000 to 1 against her survival.

"Come on little girl," whispered Bill to the helpless orphan. "We've got to risk this trip to get you some medical attention."

To the rescue team's complete astonishment, she stayed alive. Upon arrival at the salt-water pool, they quickly lowered her into the water. Teams of divers stayed at her side twenty-four hours a day. Twice within a short interval she sank suddenly to the bottom of the pool and once was declared officially dead. Each time she was lifted gently back to the surface and treated for shock. The very best of medical attention and equipment were provided. As many as six veterinarians at a time were on hand constantly fighting for the little whale's survival. Within days she began to respond to the treatment and showed small but definite signs of improvement.

"We've named her Miracle," said Mr. Wright at the end of that long week. "It seems appropriate as it is nothing less than a real miracle that she has survived this long."

The odds were now lessened to about 50-50. The gaunt white faces of the rescue team showed the strain of the uphill battle. The infant whale was displaying a tremendous will to live.

Now Miracle became famous. Television and newspaper crews arrived and her story was carried across the continent. Hundreds and then thousands of people came, cards and letters poured in, donations of freshly caught salmon were brought and

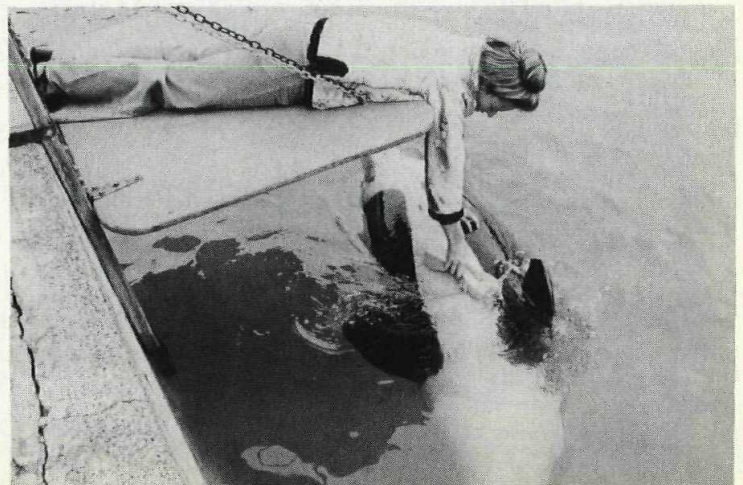
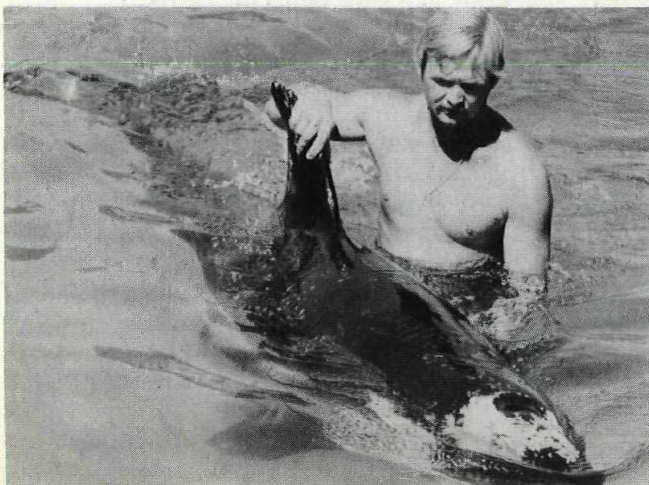
busloads of children came to visit. Everyone was pulling for this rare infant whale's recovery. Progress bulletins were given daily on local radio stations, medicines and antibiotics were donated by local pharmaceutical houses, and special equipment and advice came from Seattle, New York and San Diego. Marine experts from around the world were paying close attention, knowing history was in the making.

Last February thousands of astounded spectators watched their special little pet suspended from a sling on a helicopter! She was at long last well enough to be moved from the little nursery pool to the newly constructed large deep pool at "Sealand of the Pacific" in Victoria, which adjoins that of Haida the much-loved resident male Killer whale performer. Now she had company of her own kind.

Once again Miracle made history as she became the first whale in the world to fly. In six minutes and ten seconds the transfer from one pool to another had been completed, proving this hitherto unheard of mode of travel for a whale a total success.

"Squeak, squeal, clickety-click" she chortles merrily now as she swims, dives and flips, leaping and splashing in her new-found freedom in the large pool. She will remain there due to her total dependence on and trust in humans. She would never survive the constant danger of marauders and whale-hunters in the open sea.

She is safe.....at last!



A LESSON IN ECOLOGY

provided by Round Island near Mauritius

Reprinted from Animalia, publication of World Federation for the Protection of Animals

Round Island lies approximately 12 miles to the Northeast of Mauritius in the Indian Ocean. The island is an extinct volcano rising 260 metres above sea level and covers an area of 374 acres. Kai Curry-Lindahl, Senior Adviser of the United Nations Environmental Programme in Nairobi (Kenya), in a communication to the WFPA, stated in reference to this island the following: "Only about one hundred years ago Round Island was covered by a forest, but because of the monumental stupidity of introducing goats and rabbits on this uninhabited island about 1850 there is nowadays no trace of this forest. This has upset food chains, removed shelter, and undermined the whole eco-system. Victims of this area are not less than five species of unique reptiles and some species of birds." The Ministry of Natural Resources and the Environment of Mauritius, in a release dated 17 December 1974, was unable to give an estimate of the number of snakes on Round Island but confirmed that one species, *Bolyeria multicarinata*, which lives underground, had not been seen for the past three years and that *Casarea dussumieri* had only occasionally been observed.

Use of poison advocated

Wild goats are notoriously destructive animals, as seen on many Pacific islands, and the war that Australia, New Zealand, and Chile have waged against the European rabbit is well documented. It cost New Zealand about 6 million dollars in 1975 to control the rabbits which had been intentionally introduced to this country. However, when it became known that the Government of Mauritius considered the use of strychnine sulphate to put down the goats and rabbits on Round Island in a planned conservation measure, the Mauritius Society for the Prevention of Cruelty to Animals (MSPCA) in common with other humane societies in the world and indeed the veterinary profession opposed the use of this inhumane killing method.

Already in August 1973 a copy of a plan to eradicate rabbits and goats on Round Island, which had been submitted by a research biologist of the World Wildlife Fund and the International Council for Bird Preservation (ICBP), was sent under confidential cover to the University Federation for Animal Welfare (UFAW) by the Secretary (Great Britain) of the ICBP and the Federation's comments were invited. The plan involved the use of the poison strychnine sulphate which was to be applied in a solution to 1-1/2 tons of alfalfa or clover

which would then be dropped on the island from a low flying aircraft in 12,000 bundles each weighing about 100 grams. In a trial test of the poison the bait was fed to a rabbit which died two minutes afterwards.

On 3rd September 1973 UFAW replied under confidential cover to the Secretary (Great Britain) of the ICBP that it was appalled at the mere suggestion of using such a cruel poison for the control of rabbits and goats and strongly advised the International Council for Bird Preservation and the World Wildlife Fund that some alternative means to achieve their objective should be found. It was also pointed out that apart from the cruelty to the animals specifically concerned there was absolutely no guarantee that others, the protection of which was sought, would not also suffer.

In August 1974 an article was published in *Wildlife* 16: pp 370-374 which reported "With help from the International Council for Bird Preservation, World Wildlife Fund, New York Zoological Society and the American Embassy on Mauritius, the local government is now undertaking a careful and selective poisoning programme to eradicate the rabbits and goats. Preliminary tests have been encouraging; rabbits, at least are poisoned, while the indigenous reptiles and birds are unaffected." On receipt of this information and confirmation from other sources, telegrams were sent by UFAW on 5th September 1974 to the sponsoring bodies mentioned above requesting that the poisoning operation be cancelled. Early in October a letter dated 30 September 1974 was received from the Mauritius High Commission, London, to the effect that the Ministry of Agriculture, Mauritius, had undertaken the poisoning programme against rabbits and goats on the advice of the research biologist of the ICBP, that the main drive was planned for October, that the advice had been that strychnine resulted in a relatively quiet death, and that the Ministry of Agriculture did not propose to interrupt the poisoning programme on Round Island.

Thereupon the Mauritius Society for the Prevention of Cruelty to Animals appealed to the Government to stop the use of strychnine. Subsequently, the authorities asked the MSPCA to consult with scientists for a humane method of controlling the rabbit and goat population on the island. The project with the aim of finding a more humane method than strychnine for killing goats and rabbits on Round Island, of destroying as many of them as possible during the time spent on the island, and instructing a Mauritian national in their destruction was carried out between the 22 October and 30 November 1976.

Shooting recommended as alternative

UFAW had recommended the shooting of the feral animals by a skilled marksman as the most humane method applicable on the island. Their field officer counted 17 goats at the time of arrival on Round Island. He reported that they were extremely wary, probably due to the fact that they were hunted frequently as the Island was littered with a number of empty rifle cartridge cases. Due almost certainly to harassment by shooting parties they were mainly nocturnal, lying by day in the most precipitous places.

The rabbit population at the time of the arrival of Mr. Gouldsbury, the field officer, on the island was estimated at about one thousand. Air temperatures on the island did not permit the use of the more humane poison Alphachloralose in the eradication and control of the rabbits. Though ferrets might have been usefully employed to evict rabbits from rock crevices or to kill them there, the risk posed by escaping ferrets to groundnesting birds and possibly even to the snakes and lizards was too great. Since rabbits on Round Island did not use burrows, cynogas could have been used only in crevices which in most cases could not have been blocked up sufficiently well for the gas to be lethal to rabbits, made its use unacceptable.

It was likewise found impossible to anchor snares without the use of iron pegs, and even when these were used it was not possible to implant the "teeler" (to prop up the noose) in the normal way in view of the rocky composition of the ground. Runs were almost impossible to detect on the rock, and as had been anticipated the very first time snares were set a petrel was caught. Due to the unevenness of the ground, the fact that rabbits appeared to live and feed in the same area and could therefore not be driven into a net, and because iron posts driven into holes bored in the rock surface would be the only practical method of supporting the nets, this method had to be ruled out.

Without doubt shooting remained as the most humane and successful way of dealing with the problem.

Lessons learned

At the end of his visit to Round Island Mr. Gouldsbury of UFAW summed up his report with the following conclusions and recommendations:

"It is suggested that an operator trained as a first class rifle shot with experience of fieldcraft be posted permanently on the island, or, if for administrative purposes this is not possible, on the neighbouring Flat Island (distance 9 miles), with a boat made available for him, though, in view of the difficulty in landing on Round Island by sea at most times of the year this would obviously be far less effective than permanent residence on Round Island. Failing this, periodic visits once, or if weather conditions permit, twice a year would be sufficient to keep down the rabbit population. It would be unnecessary to replenish water and other supplies for a marksman and his companion/cook on a two week visit. Radio communication would be essential in case of emergency. Apart from the obvious advantage in controlling the rabbit population afforded by permanent occupation of the island, the pressing need for the protection of the red-tailed tropical bird from predation by fishermen and others would also be met.

Consideration was given to the possibility of fencing off certain areas in order to protect seedlings of the two endangered palms from rabbits and to encourage the growth of other vegetation. This project would require a three feet high wire mesh fence to seal off completely certain selected areas and would undoubtedly present a very serious hazard to the petrels and shearwaters who would be in danger of colliding with the fence while airborne or could become trapped in the enclosure and starve to death. It should perhaps be explained here that while both these birds are extremely efficient flying

Continued on page 17

THE COST OF KEEPING MY DOG HEALTHY IS MAKING ME SICK

No one can blame you for feeling ill over pet medical bills. If it's any comfort, your veterinarian too is pained over inflation and his ever increasing costs. But, there's now a remedy you should try: a 12 month health warranty for dogs and cats that reimburses pet owners anywhere for hundreds of dollars a year in veterinary fees. You will be happy to learn more about the plan.

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GOLDFISH

DON'T MURDER YOURS

by Dorell DiRicco

Have you ever visited the local pet shop and, on a whim, purchased one or two goldfish and one 7" fish bowl? Then sadly one or two weeks later have you found the fish dead? The experience is disappointing for the whole family and especially heartbreaking for the child whose "pet" has died.

Goldfish are delicate creatures, extremely vulnerable to the usual mistreatment suffered at the hands of their new owners.

You can keep your lovely goldfish alive longer by avoiding all of the classic fatal mistakes of neophyte goldfish keepers. Here's how.

1. Do NOT use too small a bowl.

Each fish requires at least one gallon of water. This will require a bowl that will hold one gallon of water comfortably. A two gallon bowl is better. The reason for the large amount of water is to provide the fish with sufficient air to breath.

Although most people prefer the tall flat sided type of bowl because it allows a better view of the fish, the two gallon horizontal drum-shaped bowl is best for the fish's health. This type of bowl provides abundant air surface necessary for good health.

A ten gallon aquarium can be used, but do not overstock with too many fish just because the tank is large. Keep no more than two fish for best results.

A filter is needed to keep the aquarium clean. The bottom filter type is a good choice for a tank, since it cleans and aerates the water. If only one fish is kept in a bowl, a filter is not necessary if the bowl is kept clean and sanitary. A small sub-sand filter, made just for bowls, can help do the job.

2. Do NOT put more than one fish in the bowl.

Although it is pretty and enjoyable to have two or more fish together in the same bowl, your fish has a better chance of surviving in a bowl if it is alone. When one fish contracts a disease, the other will get it, too, if they are together. Choose your fish carefully. Some fish already have a disease when they are purchased at the pet shop. Check for whiteness around the mouth, torn fins, missing scales and sluggishness before you purchase.

It is best to purchase a new bowl. A secondhand bowl, which has been bought or borrowed from former goldfish owners, was obviously the habitat of one or more dead fish. Therefore, the bowl has been contaminated with bacteria. A used bowl should be boiled (in a large enough kettle) to insure that it is sanitary.

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3. Do NOT use chlorinated tap water directly from the tap.

Chlorine kills goldfish. Tap water can be treated with a dechlorinating chemical purchased at a pet shop.

Another method of dechlorinating the water is to allow the chlorine to dissipate by letting it sit in an open container, such as a bucket, in a dark place for about two weeks. You will have to get the water ready two weeks, or more, before you purchase the fish. After your goldfish is established at home, keep a couple buckets of water standing to be ready for replacement in the bowl.

4. Do NOT use sharp shells in the bowl or aquarium.

Sharp shells can injure the fish. Use fine gravel or sand purchased at the pet store. Wash it with de-chlorinated water, before putting it into the bowl, to remove dust and dirt that will cloud the water.

5. Do NOT use plants that are not meant for aquariums.

Many plants found around the house are poisonous to fish. Purchase aquarium plants at a pet store. Wash the plant in de-chlorinated water to remove dirt and debris that will cause bacteria to grow in the bowl. A plant is good for the fish and provides food.

6. Do NOT overfeed.

The main cause for the demise of goldfish is overfeeding. Not only does too much food cause health problems, but the bacteria resulting from unconsumed, decaying food produce disease in goldfish. A goldfish needs no more food than it can eat in five minutes.

7. Do NOT change the water.

Changing the water is harmful to goldfish because the change in water temperature causes Ich, which is a serious goldfish and tropical fish disease. Ich can be treated with a chemical, but it is easier and better for the fish to avoid the necessity of this treatment by maintaining its water properly.

The water can be kept clean by siphoning or dipping out one-half of the water every few days, and replacing with clean (stored de-chlorinated) water that is the same room temperature as the water in the bowl. Do not remove the fish. Debris can be removed daily with a fish

net to avoid decay in the bowl. Hang the fish net out to dry in the sun. Replace the plant periodically with a new piece that has been rinsed in de-chlorinated water.

8. Do NOT overdo the use of chemicals.

Pet shop shelves are stocked with many varieties of chemicals intended to cure the ills of aquarium fish, but their successful use is a tricky business best left to the authority of fish physicians. Delicate goldfish cannot take the abuse resulting from guesswork about what will make him well again. Proper care of your goldfish is the best way to keep him alive and healthy.

9. Do NOT put the goldfish bowl in the direct sunlight.

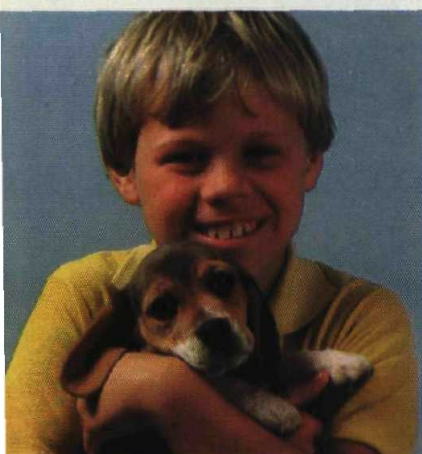
The bowl should be placed in an area that is light enough for the plant to grow, but not so light that algae will grow rapidly, causing cloudy water.

10. Do NOT put rocks that have been gathered outdoors into the bowl or aquarium.

Some rocks are poisonous to goldfish. Purchase rocks at a pet store. Ornaments should be carefully selected. They should have no sharp edges or places where the fish can get caught.

If you do not commit these crimes against your goldfish, you should have a better chance to enjoy the pretty creature for months, or even years, instead of a few days or weeks.

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Sergeant's
the pet care people

A LESSON IN ECOLOGY

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machines, when on the ground they are unbelievably clumsy and inept at walking and with the combination of short legs and long wings find it extremely difficult to become airborne from flat ground unless they face the wind and have a long runway clear of obstacles. There is a very real risk of fishermen stealing the wire mesh for the construction of fish traps—a method of fishing much used round the island. The fence would also suffer damage during cyclones due to falling trees and sheer wind force. For the same reasons the division of the Island into sections by fencing to enable the rabbits to be eliminated section by section would not be feasible, while the capital and recurrent cost of such a project would be very high.

In the event of a decision to introduce the horrible disease of Myxamatosis it should be noted that the normal vectors of this disease, i.e. fleas and mosquitos appear to be absent from Round Island. If introduced it is virtually certain that the disease would spread to domestic rabbits in Mauritius.

It would appear that even though rabbits and goats were to be entirely eliminated or effectively controlled, the re-forestation of Round Island will be an extremely costly and lengthy business. With introduction of these interlopers over 100 years ago, it would be impossible to believe that the Island was once thickly clothed with forest and other vegetation, were it not for the presence of the dead stems of many hardwood trees said to be Ebony, Bois de Ronde and Benjoin, lying in the area. The ability of the ground creeping convolvulus of the Ipomea family to establish itself in areas which appear to be entirely devoid of any soil at all, and to extend its tendrils for long distances across bare rock is already producing a certain amount of mulch and is providing a hold for silt eroded from above. In view of the fact that this plant does not seem to be eaten by goats or rabbits it is probable that its proliferation is limited by periodic cyclones and drought; which factors undoubtedly restrict the growth of the established grasses and other plants.

The damming of gullies in such a way as to form terraces which will hold up silt and reduce the velocity of water "run-off" after heavy rain will create areas where soil depth will build up and form suitable places for the generation of trees, grasses and other vegetation. Construction of these will have to start near the source of the gullies and work downwards, and reinforcement with iron bars implanted in the ground will certainly be necessary. Since most of the Round Island vegetation is exotic, it is possible that some plant intruder will cause problems as a result of the drastic reduction and control of goats and rabbits. The creeper *Passiflora suberosa* which forms one of the chief food reserves for these mammals may pose a serious threat to the seedlings of the palms and pandanus. Even with the high population of rabbits and goats on the Island at the time of the visit, this creeper had taken a firm hold on many of the pandanus plants and was tending to smother them.

Finally, if all else fails, it may perhaps become necessary to transfer a nucleus of the endangered palms and reptiles to the neighbouring island of Gunners Quoin (Coin de Mire), Ilot Gabriel (12 miles from Round Island) or Flat Island (Ile Plate) in order to preserve them from extinction.

FELINE INFECTIOUS PERITONITIS

Fredric W. Scott, D.V.M., Ph.D.
Yasutaka Hoshino, D.V.M.
Richard C. Weiss, V.M.D.

Feline Infectious peritonitis (FIP) is a contagious viral disease of domestic and exotic cats. Traditionally FIP has been described as a sporadic disease of low incidence characterized by an insidious onset, persistent nonresponsive fever, and a progressively debilitating course leading to death. Granulomatous inflammatory reactions occur in the abdomen and may occur in the eye and the central nervous system. An accumulation of fluid may be present in the abdomen or thorax or both.

If limited to that description, FIP is far less significant in the cat population than the important viral diseases of cats, such as panleukopenia, respiratory viral diseases, and leukemia. However, recent research findings and clinical reports from veterinarians and cat breeders indicate this view of FIP may be only the tip of the proverbial iceberg. The FIP virus appears to be quite prevalent and may produce far more problems than was originally thought.

History

FIP was first recognized in the 1950s by Dr. Holzworth of Angell Memorial Animal Hospital in Boston. In the mid 1960s the disease was characterized and named infectious peritonitis because of its predilection for producing inflammation of the tissues in the peritoneal (abdominal) cavity and the infectious nature of abdominal ascitic fluids from natural cases. Examination of tissues from infected cats revealed viruslike particles, but extensive attempts to isolate this virus were negative.

The granulomatous, or dry, form of FIP, characterized by lesions in the abdomen, eye, and central nervous

system, was recognized subsequently. More detailed studies of FIP became possible when the serological diagnostic test was developed in the mid 1970s by Dr. Niels Pedersen of the University of California, Davis.

The first successful isolation of the FIP virus in cell cultures was accomplished in our laboratory in 1978. Recently, the FIP virus has been propagated in newborn mice by Osterhaus in the Netherlands.

The possible association of the FIP virus with an extensive kitten mortality complex in catteries throughout the United States was first suggested in 1978 by investigators at the Cornell Feline Research Laboratory.

Incidence

The incidence of clinical FIP is relatively low, and cases are usually sporadic, only one or two occurring in a group of cats. However, some multiple-cat households and catteries have experienced several cases over a period of several months.

The incidence of infection with FIP virus as indicated by a positive FIP antibody test is far greater than that previously recognized using only clinical symptoms. Subclinical infections (or mild clinical disease not recognized as FIP) are therefore common. The incidence of cats testing positive for FIP antibodies varies tremendously among individual subpopulations (households, catteries, colonies). Generally if there is considerable contact between cats within these subpopulations, the positive incidence is either 0 percent or greater than 90 percent.

Etiology

FIP is caused by a virus classified as a coronavirus.

Coronaviruses of humans and animals generally infect either the respiratory tract (colds or bronchitis) or the intestinal tract (enteritis). The FIP virus appears to have a predilection during primary infection for the respiratory tract (and possibly for the intestinal tract), but during the secondary disease generalized infection occurs, producing severe effects upon many organs, especially the liver.

FIP virus is relatively unstable and is inactivated by most disinfectants (especially those active against lipids) and by normal environmental conditions. It apparently is inactivated within twenty-four hours at room temperature once it is outside the cat.

Transmission

The exact mechanism of transmission of FIP virus from infected to susceptible cats is not known. Fluid, tissues, and urine of acutely infected cats have been shown to be infectious. Cats that are FIP antibody-positive presumably are chronic carriers and shredders of virus since susceptible (FIP antibody-negative) cats placed in close contact with positive cats will develop positive FIP antibody titers in two to six weeks. It is postulated that the virus is shed from the respiratory system, through the kidney in the urine, and possibly from the intestine in the feces. Direct cat-to-cat contact and contamination of items of common use such as food and water dishes and litter pans would seem to be the most likely methods of transfer of virus. Other possibilities might be transfer by aerosol, transfer on people's hands, shoes, and clothing, and in utero or neonatal transfer from carrier queens to their kittens.

Infection and Disease

Infection of cats with FIP virus produces a variety of host-parasite interactions that may result in no disease, mild disease, or progressively debilitating, fatal disease. There is much yet to be learned of this host-parasite interaction. Current research in our laboratory is aimed at understanding this interaction and the resulting immune response.

The following is a summary of the various diseases either known or currently postulated to be caused by FIP virus. Further research will undoubtedly add others and delete some from this list.

- A. Primary disease
 - 1. Subclinical infection
 - 2. Mild chronic respiratory infection (?)
- B. Secondary disease
 - 1. Effusive (wet) FIP
 - Peritonitis
 - Pleuritis
 - Pericarditis
 - 2. Granulomatous (dry) FIP
 - Peritonitis
 - Ophthalmitis
 - Encephalitis
- C. Kitten mortality complex (?)
 - 1. Repeat breeders
 - 2. Fetal resorption
 - 3. Abortions
 - 4. Stillbirths
 - 5. Fading kittens
 - 6. Acute congestive cardiomyopathy (?)
 - 7. Effusive or granulomatous FIP
 - 8. Endometritis and bloody vaginal discharges of queens
 - 9. Chronic mild respiratory disease of adults and kittens.

Primary disease. Initial exposure of a susceptible kitten or cat to an FIP virus-shedding cat results in a primary viral infection within a period of a few days to a few weeks. This infection is believed to occur in the respiratory tract, although the exact mechanism and tissues involved have not been completely ascertained. Most cats show no outward signs of illness during this primary infection. However, some cats may exhibit signs of mild chronic upper respiratory disease, including sneezing and moderate watery ocular and nasal discharges. High fever, loss of appetite, and purulent

ocular and nasal discharges have not been associated with primary FIP infection. Cats that exhibit signs of upper respiratory infection may also have low-grade bacterial or mycoplasma infections, the mixed infection accounting for the signs. Although antibiotic treatment will often reduce clinical signs, they may return a week or two after therapy is stopped.

Carrier cats. From epidemiological investigations it appears that most FIP-infected cats remain persistently infected with virus, and are a potential source of infection to contact-susceptible cats. The exact mechanism by which the virus is shed, the duration of shed, and the quantity of virus being shed are not known.

Secondary disease. After a period of a few weeks to a few months a small percentage (probably less than 1 percent) of cats infected with FIP virus develop a secondary disease, either the effusive or the granulomatous form of FIP. It is believed that this secondary disease may have an immunopathological component; that is, an adverse immunological reaction occurs that results in damage to tissues, clinical disease, and eventually death rather than recovery and health. This immunopathological component of FIP is under investigation in our laboratory.

Stress may have a role in precipitating this secondary disease. For example, it is known that cats infected with feline leukemia virus and FIP virus have a far greater chance of developing secondary, or typical, FIP. Other forms of stress such as poor nutrition and psychosomatic conditions could also play a part.

Secondary FIP manifests itself initially as an inflammatory response starting around blood vessels (perivasculitis) in the abdominal viscera or omentum, the lung, the pleura and pericardium, the eye, and the central nervous tissue. This inflammatory reaction is a granulomatous response accompanied by a chronic outpouring of inflammatory cells and fibrin, resulting in perivasculitis. In some cases there is an active secretion of fluid into the abdominal or thoracic cavity or both, resulting in the effusive (wet) form of FIP. If this process is sufficiently severe, it can produce clinical disease that is usually progressive and eventually fatal after a few days to several weeks.

FIP antibody-positive cats may

develop an acute focal viral hepatitis after exposure to large quantities of FIP virus. Death usually occurs within four to seven days of this exposure. Although this form of FIP is seen under laboratory conditions, it is not common under conditions of natural exposure.

Kitten mortality complex (KMC). During 1977 and 1978 it became evident to the authors that a specific disease complex is occurring in breeding catteries throughout the United States. This disease complex results in unusually high levels of reproductive failure and kitten mortality. The exact cause of the complex is not yet known, but there is increasing suspicion that it may be associated with FIP virus infection. This possible relationship is currently under investigation. Clinicians and cat breeders should be aware of the seriousness and extent of the problems and of its possible link with FIP virus.

Until the exact cause is established, the term kitten mortality complex (KMC) has been adopted to indicate a variety of diseases or manifestations of disease that occur in kittens during an outbreak and that almost invariably result in the death of unborn fetuses, newborn kittens, and very young kittens.

The common initial complaint is that the breeder cannot raise kittens to selling or showing age. Some breeders have experienced zero productivity from several queens for as long as two years. Usually, one or two queens will have nearly 100 percent loss of litters during such a period while other queens will have scattered losses. These problems (if the onset is acute) generally are preceded by the appearance of a mild persistent upper respiratory infection in a cat after shipment for breeding, return from a show, or introduction of a new cat into the breeding group. In any one outbreak several of the problems listed above are observed, and in some cases the entire list occurs.

To date we have investigated over thirty catteries experienced KMC; some investigations involved extensive laboratory studies, others case histories only. Virological workups have indicated that panleukopenia or the common respiratory viruses are not involved. Very few of these catteries have had a history of feline leukemia virus (FeLV) infection; most have tested negative for FeLV by the immunofluorescent slide test. However, all of the catteries have had

FELINE INFECTIOUS PERITONITIS

a high percentage of breeding queens that show positive antibody titers to FIP virus, and many catteries have a history of one or more clinical cases of effusive or granulomatous FIP. In addition at least three research colonies of cats are FIP antibody-positive and have experienced the same problems with KMC.

Clinical Signs

Primary disease. Most initial infections occurring after natural exposure to virus are asymptomatic. Some cats develop a mild chronic upper respiratory infection characterized by sneezing, watery eyes, and watery nasal discharge. These signs may wax and wane for weeks, but the cat does not stop eating and usually does not run a fever. Primary FIP infection is not a life-threatening disease.

Secondary disease. FIP antibody-positive cats that develop secondary disease may show a variety of signs, and the diagnosis is often extremely difficult to make clinically. The onset of illness is frequently insidious; a persistent fever that does not respond to antibiotic therapy is characteristic. A progressive decrease in appetite and body weight occurs, and the cat becomes more and more lethargic. An accumulation of fluid in the abdomen or thorax or both may occur. Cats with lesions involving the liver and kidneys may present with signs of liver or kidney failure. Lesions may be evident in the eye, and occasionally cats show signs of brain and spinal cord involvement.

Although there have been a few apparent recoveries, the mortality of those cats showing definite signs of secondary FIP is in excess of 99 percent.

Diagnosis

The diagnosis of FIP is based on clinical signs, analysis of abdominal or chest fluid, laboratory data, a positive FIP antibody test, and rather characteristic gross and microscopic pathological changes.

Treatment

In most cases treatment does not alter the fatal course of secondary, or typical, FIP. In a few cases temporary remission has occurred after treatment

with immunosuppressive drugs. These therapies are not, however, without inherent risks.

Once a definite diagnosis of secondary FIP has been made, it would seem advisable in most cases to recommend euthanasia.

In any case where treatment is tried, extensive supportive therapy and good nursing care are imperative.

Prevention and Control

Vaccination. At present a vaccine is not available to protect cats against FIP infection. Research is under way to characterize the basic responses of cats to FIP virus in order to eventually develop an effective vaccine.

FIP antibody-negative catteries. It is apparent that FIP virus is quite contagious and persistent once it is established within a cattery or multiple-cat household. If a cattery has not yet been infected with FIP virus, it would be prudent to establish a sound management program to prevent introduction.

Each breeding cattery should be screened for FIP virus infection. Since 80 to 100 percent of adult cats in an infected cattery are FIP antibody-positive, testing the serum from 10 to 20 percent of the cats (a minimum of three cats) for FIP status of that cattery. Cats chosen for testing should be those over one year of age that have had the greatest degree of contact with other cats in the cattery.

Once a cattery is declared FIP-negative, rigid policies and procedures should be established to maintain this negative status. The following should be considered:

1. No cat should enter the cattery unless it comes from an FIP-negative cattery and has tested negative within the past thirty days. Even a cat that has tested negative should be kept in quarantine for two weeks before entering the cattery.
2. Cats from the cattery should not be sent to FIP-positive catteries for breeding and should not contact FIP-positive cats in any other way.
3. Care should be exercised at shows to prevent contact of negative and positive cats.

Cats returning from a show should be quarantined for at least two weeks. If any signs of upper respiratory infection occur, the cat should continue to be held in quarantine and should be tested for FIP after three to four weeks.

FIP antibody-positive catteries.

Once a cattery is thoroughly infected with FIP virus, it is doubtful that the virus can be eliminated short of depopulation of positive cats and repopulation with negative cats, as has been done for leukemia virus infection. Realizing that the vast majority of FIP-infected cats will live a normal and healthy life (even though they may be shedders of virus), cattery owners may decide to live with the infection. The present limited state of knowledge about FIP makes it difficult to provide specific recommendations for control of FIP infection. However, a few general suggestions might be helpful.

1. Try to maintain the cats within the cattery in as good health as possible. Reduce stress by providing good nutrition and eliminating psychosomatic conditions.
2. Eliminate or isolate FeLV-positive cats.
3. Provide plenty of air circulation but keep the temperature warm.
4. Use an effective viricidal disinfectant in cleaning. Household Clorox® diluted 1:32 is an effective all-around viricidal disinfectant for feline viruses, including rhinotracheitis, calicivirus, and pancytopenia. It should also be effective against FIP virus. To increase the cleaning properties, Clorox® can be safely combined with the detergent-disinfectant A-33® (Airkem, available from Airwick Industries, Carlstadt, New Jersey 07072) to give a final concentration of 1:32 Clorox® and 1:64 A-33® (4 oz/gal and 2 oz/gal, respectively.)
5. Eliminate those breeders that have repeat problems of bloody vaginal discharge, reproductive failure, and loss of young kittens to KMC.
6. Wean kittens as early as possible and hand-rear them away from other cats.

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Feeding and Care of the Cat

Lon D. Lewis, D.V.M., Ph.D.
Associate Professor
Mark L. Morris Chair in Clinical Nutrition
Colorado State University

Presented at the Annual Meeting of Morris Animal Foundation June 11, 1978. Chicago.

Methods of feeding:

The two methods of feeding the cat are self-feeding and hand-feeding. Each has advantages and disadvantages. The major advantage of self-feeding is that it takes the least amount of work, thought and knowledge. All you have to do is leave some food in the bowl at all times. In addition if several cats are fed together it ensures that the meek animal will get his share and not be crowded out at the dinner table.

The major disadvantage of self-feeding is that some cats may overeat if the food is always available free choice and will therefore get fat. These cats therefore should not be self-fed. Obesity, however, is much less a problem in cats than in dogs and humans. From 25-30% of the dogs kept as pets are overweight, as compared to 6-12% of cats. The cat is much better able to control his energy intake on a free choice feeding regime than is the dog, and does not commonly become obese even when quite palatable rations are available free choice. A dry or soft-moist ration must be used for self-feeding.

The second method of feeding is hand-feeding. With this method you must know the correct amount to feed and remember to do it. Frequent feedings throughout the day are all right. In fact nutrients are utilized more efficiently with frequent feedings of small amounts. The kitten from weaning up to six months of age and the queen during lactation should be fed at least three times per day. All other cats should be fed at least twice a day. Establish a regular meal routine.

Other advantages and disadvantages of the two different methods of feeding are primarily as a result of the form of the ration used and not the feeding method.

There are three forms of cat food available: dry, soft-moist and canned. The adult cat needs a minimum of 21% protein and 7-8% fat in the ration dry matter. The

kittens' fat requirements are the same as that of the adult but the minimum protein needed is 33%. Most good quality commercial cat foods, in any of the three forms, will meet the nutritional requirements for both the adult and for the kitten.

The major advantages of dry foods are that they are cheaper, may be self-fed and provide good exercise for the teeth and gums. Cats and dogs raised in confinement and fed exclusively canned or soft-moist rations accumulate tartar on the teeth and the gums become inflamed. Dry foods are abrasive enough to prevent much of the accumulation of tartar. These are the reasons that on an energy basis 60% of the cat food and 80% of the dog foods sold in the United States are in the dry form.

Dry rations, however, do have some disadvantages. For most cats unless they are accustomed to the dry foods these rations are less palatable than the other forms. The dry foods may be moistened with water or milk if this is preferred by the cat. If this is done add just enough to moisten it, not make it mushy. Milk may be used if the cat can tolerate it. Many cats past nursing age cannot and will develop diarrhea. Moistening the dry food, however, prevents the beneficial effect on the teeth and gums.

Dry foods generally contain less protein than the other ration forms, although most do contain enough for growth and considerably more than that needed by the adult. However, the less protein in the ration, the less palatable it is for the cat. As for the quality of the protein in the ration that depends on the ingredients it contains and not the form it is in. Cereal products generally contain a lower quality protein than animal products, but dry and canned foods are both mixtures of animal and cereal products. Protein quality depends on the ingredients the manufacturer uses not upon the form of the ration.

The heating used in processing dry rations, if in excess, may decrease its digestibility and cause vitamin and fatty acid losses. Whether this is a disadvantage of the dry ration depends on the manufacturer.

During storage fatty acids in a dry ration undergo oxidation or become rancid, which destroys their nutritional value. Increased temperature and humidity decreases the time this takes. Whether this is a

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disadvantage of dry rations again depends on the manufacturer, the amount of fats added to the ration and the processing method used, and the length of storage prior to being consumed. As a general rule, cat food should not be over six months old at the time it is fed.

Although a fatty acid deficiency is not common in the cat, if it occurs, it causes a dry lusterless hair coat. It is treated by adding 1 teaspoon of cooking oil or bacon grease to the cats ration each day. Even if a fatty acid deficiency is not present, these are occasionally added to the cats diet to promote a glossier coat, although there are no controlled studies of the effectiveness of this practice.

The major disadvantage of dry rations is that if fed as the sole diet for the cat there appears to be an increased incidence of urolithiasis or urinary stones. Urolithiasis is a very common and troublesome disease of cats. Up to 5% of the cat population develops this disease and following treatment it reoccurs in 70% of these cats.

Urolithiasis results in the passage of bloody urine, frequent voiding of small amounts of urine and partial or complete obstruction of urinary excretion. Castration and obesity do not predispose to this disease. Viruses have been incriminated and may certainly play a role, but they do not appear to be involved in most cases. High dietary magnesium and phosphorus levels are involved, and, as little as 0.4% magnesium in a dry ration will cause urolithiasis in as short a time as 1 month. Although this is higher than that present in most commercial cat foods some have levels of 0.25%, which if fed over a longer period of time are likely to cause calculi formation. For these reasons we feel that cat foods should contain less than 0.01% magnesium and 0.7% phosphorus in their dry matter content.

Dry cat foods generally contain less energy in their dry matter than that present in the dry matter of most canned rations. Therefore, in order for the cat to consume the same amount of energy on the two diets a greater amount of dry matter will be ingested when the dry ration is fed than when the canned ration is fed. Thus if both the dry and canned rations contained the same magnesium and phosphorus content in their dry matter more of these minerals would be ingested, and therefore need to be excreted in the urine, when the dry ration was being consumed. The increased excretion of these minerals in the urine increases their formation into calculi and therefore increases the incidence of urolithiasis. This appears to be the reason for the higher incidence of urolithiasis reported in cats which are consuming exclusively dry rations as compared to those consuming primarily canned rations.

To prevent urolithiasis in the cat:

1. Feed a canned ration most of the time.
2. Use a ration containing less than 0.1% magnesium and 0.7% phosphorus.

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3. Add 1 teaspoon of table salt and 1/2 teaspoon of ammonium chloride to the ration daily. Salt increases water intake and therefore urinary excretion which helps flush out the calculi before they become large enough to obstruct urinary excretion. Ammonium Chloride acidifies the urine which increases the solubility of the calculi producing minerals.
4. Always insure that there is good fresh water available free choice and that the cat is able to urinate as frequently as it desires.

In summary dry cat foods are cheaper, may be self-fed and help promote healthier gums and teeth. However, they are less palatable for some cats. They contain adequate protein for the cat and protein quality may be equal to that in canned rations. Improper processing and prolonged storage may decrease vitamin and fatty acid content. If fed the sole diet for the cat the incidence of urolithiasis may be increased.

Another form of commercial cat food is the soft-moist type. These rations contain a higher protein, fat and water content than that present in dry rations. The increased level of all three of these makes the soft-moist rations more palatable than dry rations for most cats. In addition, the soft-moist rations, like the dry rations but in contrast to the canned rations, may be self-fed. However soft-moist rations don't promote healthier gums and teeth as do dry rations and are generally more expensive. In addition they may contain a high phosphorus content because phosphoric acid is frequently utilized as a preservative. As stated high dietary phosphorus content predisposes to urolithiasis.

The third form of commercial cat food is the canned ration. There are two major types of these: the regular rations which are sold in the large 12-15 oz. cans, and the speciality or gourmet rations which are sold in the small flat 6 oz. cans. Canned rations contain about 75% moisture, so when you buy them three-fourths of what you are paying for is water.

All of the different forms of cat food may be sold in a variety of flavors, although the greatest variety offered is in the rations in the small cans. These rations, besides being available in a variety of flavors, generally contain much more protein and fat than that present in any of the other rations. Thus these rations are generally more palatable. This doesn't, however, mean that they are the best nutritionally. In fact they are not intended to be fed as the sole diet for the cat but instead to be used along with other rations and simply add variety and taste appeal to the cats' diet.

The advantages of both types of canned rations is that they are more palatable than the other ration forms. Second, their nutritional value doesn't decrease upon storage as it may for dry rations. Third, the incidence of urolithiasis appears to be lower in cats fed primarily canned rations.

Canned rations do have several disadvantages. They are more expensive, particularly the speciality rations in

the small cans. Three-fourths of what you are paying for in the canned ration is water compared to only 10% water in the dry ration, therefore you can afford to pay nearly 3-4 times more per pound for the dry ration than for the canned ration and still be receiving the same quantity of nutrients. A second disadvantage of canned rations is that they can't be self-fed. Third, some of the speciality rations in the small cans are not nutritionally complete and therefore should not make up over 1/4 if the cats total diet, i.e. they should not be fed any oftener than once in every four feedings. If the ration is nutritionally complete the label should say "complete, perfect, scientific or balanced." If it doesn't, assume that it is not nutritionally complete and use it only for an occasional meal, never as the major diet. A fourth disadvantage of the rations in the large cans is that although they contain adequate nutrients for the mature cat for maintenance, they may not contain adequate quantities for lactation or for the kitten for growth. If the label doesn't recommend or give instructions for feeding it to the kitten or lactating cat assume it is not adequate for them and use a different ration. A fifth disadvantage of canned rations is that they don't provide exercise for the gums and teeth. If fed as a sole diet the cat will accumulate tartar on the teeth and have more gum and teeth disease.

In summary there are advantages and disadvantages for each of the three different forms of commercial cat foods. Therefore, my recommendations for feeding the cat are:

1. To assist in decreasing urolithiasis feed canned rations as the major diet--for expense and nutritional balance the larger cans, but to add variety to the diet feed one of the small cans of the speciality foods once every few days.
2. For convenience, to promote healthier gums and teeth, because many cats like to eat between regular feedings, and because obesity is not a problem for most cats leave a dry ration out and available free choice for them at all times. Feed only enough canned ration so that on the average they are eating about one-fourth of their diet as dry food.
3. Switch flavors of rations fed so your cat doesn't become addicted to a single flavor or food.

From weaning on you should feed a variety of commercial foods--variety both in form, type and flavor. If this is done you will have no trouble in getting the cat to eat the various forms and types of food or in changing the cats' ration as may at times be necessary. Many cats if you allow them to will develop a fixed food preference. This is undesirable and may be detrimental to their health. This is easily prevented by feeding a variety.

Although obesity is not a problem for most cats it certainly is for some. If your cat is one of these the feeding recommendations given above must be modified. Don't self-feed these cats. Initially decrease the amount fed to about one-half that needed so that the cat will lose weight. Once optimum body weight is reached feed enough to maintain the cat at this weight. Weigh the cat frequently to ensure that the body weight is being maintained. Obesity decreases the cat's life, enjoyment

of life and your enjoyment of the cat as a pet, and predisposes to a number of medical problems.

Amount to feed:

There may be significant differences between individual animals. There are not only breed differences, but differences in activity levels which must be considered. Either high or low environmental temperatures will increase the amount of food needed, as will pregnancy, lactation and growth. In addition even cats that have the same genetic background, general activity and similar environment can have different rates of food utilization. For these reasons the cat should always be fed based on individual requirements and body condition as much as possible. Thus the best guideline to determine how much to feed is the amount necessary to maintain a normal body weight and condition. Most cats are able to control their energy intake quite well so that if quality palatable food is available, they will eat the proper amount. Unless your cat is obese don't restrict it. Give it all the food it wants.

Common errors made in feeding the cat:

Over-supplementation with vitamins A and D, and calcium and phosphorus is a common error made in feeding the cat. Vitamin A and D toxicities are much more common than deficiencies because of unnecessary supplementation with the vitamins directly, or with products high in them, such as fish oils. Too much calcium decreases the absorption of phosphorus and other minerals and too much phosphorus decreases the absorption of calcium as well as other minerals. These supplements are not only not needed they may be quite detrimental. What is needed is a good well balanced ration in which case supplements aren't needed. If a poor or unbalanced ration is fed don't supplement it either, since you're not very likely to balance the ration, instead simply switch to a better ration.

A number of supplements may be given to the cat which are not harmful, such as cooking oils or bacon grease if not over one teaspoon per day is given, vitamins, B, C and E, and additional higher quality proteins. Although these aren't harmful there is little data based on controlled studies to indicate that additional quantities above the cat's minimum requirements are of benefit.

A second nutritional problem encountered in the cat is feeding milk. Although milk is an excellent food and is particularly good nutritionally for cats during pregnancy, lactation and growth, past the nursing age it will cause diarrhea in many cats and cannot be fed to them for this reason.

A third nutritional problem is allowing the cat to eat only one food item. Generally this will be meat, fish, or a glandular organ such as liver or kidney. The cat becomes addicted to these and won't eat anything else. Although many of these are excellent as a supplement and for specific nutrients, they are very unbalanced nutritionally and will cause a number of problems, therefore they should never make up over one-fourth of the cats' total ration. Meat, liver and kidney are all very high in phosphorus and low in calcium and if fed in excess will cause extensive bone problems. In addition liver is very high in vitamin A and will cause vitamin A

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toxicity. Raw fish contains an enzyme which destroys vitamin B-1 (thiamine) which if deficient results in convulsions and brain damage. If the fish is cooked, however, this enzyme is destroyed. Fish also contains excess quantities of unsaturated fatty acids and is deficient in vitamin E which will cause inflammation of the body fat. Raw egg white contains an enzyme which destroys vitamin B-2, or biotin, which if deficient causes a dry flaky skin and hair. Egg yolks and cooked egg whites do not cause this problem and are an excellent source of protein.

A fourth nutritional problem may occur as a result of feeding bones, particularly chicken bones and smaller bones which may splinter as the cat chews on them. These splinters may damage a cat's throat, and gastrointestinal tract.

The most common error made in feeding the cat is feeding dog food. Some dog foods may meet cat requirements but many do not and will cause a number of problems. The cat's nutritional requirements are very different from the dog. These differences are:

1. Adult dogs don't need amino acid arginine, whereas cats can die after eating a ration that doesn't contain it.
2. Cats require over twice as much protein and B-vitamins as do dogs. Most animals have the capacity to adapt to various levels of protein intake, whereas the cat does not. The cat cannot efficiently conserve nitrogen and therefore has a high protein requirement. All animals decrease their food intake when dietary protein is deficient but the cat is especially sensitive. If the cat's diet is inadequate in protein, they will quit eating and die. If the B-vitamins are deficient it may result in a number of disease problems.
3. Cats can't convert beta-carotene to vitamin A as can dogs and other animals. Therefore the cat must ingest preformed vitamin A present in animal tissues, whereas other animals can meet their vitamin needs from the beta-carotene in plants. Without adequate vitamin A, the cat develops night blindness, runny eyes, photophobia and may die from pneumonia or diarrhea.
4. Cats cannot convert the amino acid tryptophane to B-vitamin niacin as can the dog and most other animals. Therefore the cat must have niacin in the diet, whereas the dog needs only tryptophane. Without niacin in the diet the cat develops pellagra, a black, sore, swollen tongue, quits eating and dies.
5. Cats cannot convert amino acid methionine or cysteine to taurine as can the dog. A number of cases of taurine deficiency have occurred in cats fed dog food and have resulted in retinal degeneration and blindness.

6. Cats need fatty acids arachadonic and linoleic acid in the diet, whereas dogs need only linoleic acid. Linoleic acid is present in both animal fats and vegetable oils. Arachadonic is present only in animal fats. Vegetable oils alone therefore are adequate for the dog, whereas the cat must have animal fats in the diet. If no fats are in the diet they develop a dry lusterless hair coat and flaky dermatitis.

In summary to alleviate these problems in the cat:

1. Feed a good well balanced ration and don't supplement it.
2. Feed a variety of different rations.
3. Don't feed dog foods or a human type of diet.

General considerations in care of the cat:

Frequent grooming is recommended, particularly for long haired cats. It helps keep the loose hair off the furniture and decreases the danger of your cat swallowing too much hair when she cleans herself, which may form a hairball and cause gastrointestinal problems. A steel comb works best for long haired cats. If the fur is tangled use scissors and cut with, not across, the hair.

Generally don't bathe the cat. It washes away protective natural oils. If the cat gets so dirty you need to clean her up, sprinkling corn starch onto the coat and brushing it out is often adequate. If a bath is necessary use warm water, in a warm room and use a very mild shampoo intended for the cat.

Every cat should have a scratching post. They use it as much for exercise as they do sharpening their claws. Use a soft piece of wood. Don't cover it with carpet. Many cats will not differentiate between that carpet and the carpet on the floor.

Annually take the cat to the veterinarian:

1. For a physical examination.
2. To give booster vaccinations for:
 - a. feline panleukopenia or distemper.
 - b. rabies, although it may be needed only every 2-3 years, and
 - c. upper respiratory diseases.
3. To check for and if necessary treat for external parasites, such as fleas, lice, ear mites and so forth.
4. To do a fecal examination to check for internal parasites or worms and to give the specific treatment for the types found.
5. For routine cleaning of teeth and dental care if needed.

Feeding and care during pregnancy, lactation and growth:

Prior to breeding take the cat to your veterinarian. It is very important that she be given her booster vaccinations at this time so that she has a good immunity to pass on to her kittens. Without this the kittens may die before they are old enough to produce a good immunity themselves and be given their own vaccinations. In addition it is important that she be free of internal and external parasites and be in good health prior to breeding. Ensure that she is in a good nutritional state, not too thin or obese, and that she is on a good nutritionally complete ration. Don't breed the cat until she is fully mature. Most cats reach maturity at about 10 months of age. If she becomes pregnant before this time she may not develop fully herself.

Pregnancy is 9 weeks although it may vary three to four days from this. The kittens can generally be palpated by the 3rd or 4th week of pregnancy. During the last week of pregnancy she will appear restless. At this time introduce her to the maternity box daily so that she becomes familiar with it. This box will be used during birth and nursing.

A maternity box may be made from a cardboard box. Use one with a top and large enough so she can stretch out and stand up in it and have plenty of room to spare. Cut an entrance 3 to 5 inches up from the floor so she can easily get in and out but it will keep the kittens in. Leave the top on the box so that it will be dark inside, but cut three sides leaving the fourth side attached to act as a hinge so you will have easy access into the box from the top. Line the floor with old rugs, blankets or rags. Place in a quiet, warm, draft-free location away from normal family activity.

During labor leave her alone. In between labor pains she may walk around and drink some water. Don't insist that she stay in the box, she will return to it herself when she's ready. If she has had strong contractions for over two hours and no kittens have appeared, call your veterinarian. Don't wait too long. She and the unborn kittens weaken rapidly which lessens their chances for survival if a caesarean is needed.

Normal birth of 4 kittens takes 2 to 3 hours. Each kitten will arrive in a semi-transparent membrane. The placenta or afterbirth is attached to the umbilical cord and follows the kitten out. The mother will tear the sac from around the kitten, nip the umbilical cord with her teeth and eat the afterbirth. She will clean the kittens' nostrils of mucus and lick the kitten dry. Don't try to help. It is rare that a mother won't do these procedures perfectly. However, she may stop if you interfere. Some mother cats may in fact eat their kittens because of too much human meddling at this stage.

If you have been present during the entire delivery be sure to count afterbirths to make certain that all of them have been expelled. A retained afterbirth usually means serious difficulties for the new mother. A dark red discharge after the delivery usually means all afterbirths have been expelled, bright red indicates danger of hemorrhage and a discharge of any other color, particularly greenish, or if she has not eaten for over 24 hours after giving birth, may mean one of the afterbirths has been retained and an infection has set in--in which

case take her to your veterinarian.

For the first 3 days after birth don't clean the box, pick up the newborn kittens, or allow any visitors. Throughout lactation make sure you're feeding a well balanced ration that is adequate for growth and lactation, and allow her to eat all that she wants. Her nutritional needs, energy as well as all other nutrients, are increased 3 fold above that needed prior to pregnancy.

The greatest kitten mortality occurs at birth or within the first week. Keep a close watch on the babies to see that each one is getting its share of food and growing normally. If necessary; you may want to help the little fellow who seems to be crowded out, to get his fair share.

It is important that the kittens receive a sufficient supply of milk from their mother. You will be able to tell if they do not because they will whine almost constantly and be generally uneasy. If she is not producing enough milk for them increase the quantity of good quality canned food in the ration.

A lack of milk from the mother is the most common cause of death in kittens. So check the mother's breasts to see if she is producing milk by gently squeezing them. Hungry kittens cry a lot, their bellies sink in and are not fully rounded as they should be, and they will lose weight instead of gaining the approximately 1/2 oz. per day that healthy kittens should in the first weeks of life. During the first few weeks of life the kittens should just eat and sleep. If they cry, it probably indicates they're hungry. If they aren't getting enough from their mother you will need to supplement their diet by feeding a kitten milk replacer such as Borden's KMR with a pet nursing bottle or an eye dropper.

When the kittens are 3 weeks old start giving them canned food. To get them started on it, mix enough milk with it to make it mushy and smear it on their lips. By licking it off their lips, they find it really tastes pretty good. This is often quite helpful in getting them to lap it from a saucer. Don't let the food get in the kittens' nose. Gradually decrease the amount of milk mixed with the food until they are completely on solid food. After the kittens are weaned, feed at least three times a day or self-feed so they can eat all they want.

The mother will generally begin weaning the kittens when they are 6 to 10 weeks old. If she doesn't or if you are going to wean them wait until they are at least 6 weeks old and preferably 8-10 weeks old. The day before weaning don't feed the mother at all. The day of weaning feed one-fourth of her maintenance level, the next day one-half, the next three-fourths and then from the third day on after weaning feed her regular maintenance level. This procedure is quite helpful in decreasing her milk production and preventing the discomfort of extensive distension of the mammary glands.

This paper has discussed the different methods of feeding, the different forms and types of cat foods, some of their advantages and disadvantages, some of the common problems encountered in feeding the cat, and feeding and care of the cat for maintenance, pregnancy, lactation and growth. It is hoped that this information will be of assistance to you in the feeding and care of your cats.

PUPPY BEHAVIORAL DEVELOPMENT

The Breeder's Challenge

By Peter J. Vollmer

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My specialty is in canine behavior and, as a result, much time is devoted to helping clients who are having difficulty with some aspect of their pets' behavior. The majority of the people I see are intelligent, concerned individuals whose animals are not suffering from gross psychophysical impairment. On the other hand, many of the dogs have failed to develop into well-adjusted adults.

High Failure Rate

The most recent data we have indicates that it is the *exception*, not the rule, for the family pet to be considered a welcome, positive addition to family life. According to the 1975 Pet Food Institute survey, only 17% of the sample reported such an experience. Conversely, 43% of those sampled either viewed their dogs as potentially harmful and said they lacked control over them, or reported their pets were more trouble than satisfaction.

These findings are supported by still other statistics. Officials of humane societies and animal shelters report that 80% of the animals they process annually are turned in by their owners. This contributes to a euthanasia rate of 80% to 90% at the shelters. Officials estimate that 13 million pets are destroyed annually.

What are the reasons behind such a high failure rate? We all know that they are many and varied. Some people are simply not suited for dog ownership, either because of their particular life-styles, or personality characteristics. Others acquire puppies that are physically and/or psychosocially deficient, thus begin the rearing process with several strikes against them. And still others start with normal, healthy animals, but due to popular misconceptions about dogs, proceed to raise the animals in a less than ideal manner. I'm sure there are other reasons behind the enormous failure rate, but my experience as a specialist in canine behavior disorders indicates the priority of the above.

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Breeders Not First Source

Put yourself in this position. You're relatively naive about dogs, but you'd like a nice pet for yourself or your family. Perhaps your parents had a pet or two and you decided when the time was right you would have a pet of your own. What do you do next? Look through the classified section of the newspaper? Make a trip to the local animal shelter? Ask neighbors and friends if they know of anyone with pups? Drive down to the nearest pet shop? Or try to locate reputable show breeders in your area?

My experience tells me that few novices first consider the latter. It's only after that first, or even second poor pet experience that they become aware of the fact that there's more to having a puppy develop into its full potential as a companion animal than they first realized. They've failed, but they're confused as to the reasons for this failure.

Providing Superior Puppies

The challenge to you and to me is to begin reversing this failure rate so that in the years to come the majority of pet-owning families are successful. And I feel that the particular challenge to you as breeders and competitors of purebred dogs is to provide your pet clients with not just good animals who approach the breed standards but with superior animals—animals who excel in their psycho-social development. And along with a superior puppy, provide them with information—basic information about dogs in general, your breed in particular, but most important, information on what to do in the next several months in order to prevent problems from occurring and to develop that superior pup into its full potential as a companion animal.

Support Educational Programs

Earlier I asked you to put yourself in the position of a novice. I then suggested that you'd probably not consider locating and contacting a

reputable show breeder for your first puppy. Herein lies another challenge—one of visibility. You must continue to find ways to penetrate the public consciousness so that an awareness is developed concerning the pitfalls of selection and the ongoing responsibilities of dog ownership. Many communities have initiated area pet councils whose functions are educational. In still other communities people trained in public relations are being recruited by humane and animal welfare societies for educational positions. Gaines has pledged its continued support to the Super Dog Obedience Competition. This program has exposed and continues to expose the lay public to the companion animal at its best. All of these educational endeavors, and many more, need your active support as your expertise and your time will insure the quality of these programs. I sincerely believe that without your visible participation and support in designing and implementing public education programs, the failure rate in dogs will continue to be excessive and you'll probably continue to be the last person considered as a pet source by the public.

New Behavior Findings

The balance of this paper will be devoted to bringing you up to date on what has been learned about canine developmental behavior and how you can take advantage of these findings to produce well adjusted, superior puppies—puppies readily able to adjust to their new owners and home setting.

This century has produced a wealth of information concerning the interrelationship between the environment and young, developing animals. Prior to these recent discoveries, early breeders of domestic animals attributed, most, if not all, of the reasons for the temperament characteristics of their stock to either "good" or "bad" breeding. But the scientific community began to make inroads on the effects of environmental influences upon the developing phenotype. The early

question then became one of Nature vs. Nurture. Is behavior primarily a function of genetic influences or environmental influences?

We now know this question to be much more complicated than anyone first realized. The difficulty in separating precisely the genetic and environmental influences is enormous; many feel impossible. Each depends upon the other, as it is the interrelationship between the individual phenotype and its impinging world that determines how it will act.

For example, we all know that certain species of song birds emit a characteristic sound. Ornithologists are able to identify many species by sound alone. For many years it was thought that bird song was purely instinctive. It was only recently that the discovery was made that the characteristic species song is not due entirely to genetic preprogramming. When young pre-vocal birds are exposed to tape recordings in which their typical species songs are distorted, they are not able to replicate the species songs when adults. Nor do they mimic exactly the distorted sounds played to them during the critical period for song acquisition. This and many other experiments indicate the extreme difficulty in separating nature from nurture, or vice versa.

However, the research generated by the Nature vs Nurture question has led to many discoveries concerning the interaction between the environment and the developing organism and fortunately for us, new knowledge about canine behavioral and physical development has been gleaned.

Effects of Early Positive Experience

Some thirty years ago an observation by D. O. Hebb working at McGill University led to a major discovery concerning animal psycho-physical development. Hebb was interested in the effects of early experience on mature, adult problem-solving behavior. His first attempts with rats blinded at different stages of development did not reveal significant differences when later tested on general food-finding ability. However, when the experiment was repeated using a simple maze he had developed for other reasons, notable differences between the groups were found. This preliminary discovery led to further testing in which sighted rats were home reared as pets and compared to ordinary cage-reared subjects. The

home-reared group proved to be far superior to the cage-reared group in the maze test. Hebb did not attribute the results to the fact that the pets were tamer, thus less disturbed by testing, as he found that the pet group improved their relative standings during the last 10 days of testing. In other words, the pets improved more than the cage-reared, thus he concluded that "the richer experience of the pet group during development made them better able to profit by new experiences at maturity."

Since this early work pioneered by Hebb, researchers have discovered that not only are animals who are environmentally stimulated when young better problem-solvers at maturity, but they are also better able to survive in stressful situations, better able to adapt to novel situations, show faster-maturing EEG patterns, weigh more, show increased brain mass, have higher levels of neurotransmitters, are more resistant to disease, have elevated hormonal levels and heavier adrenal glands. As we shall see shortly, many of these effects also are seen in dogs.

Effects of Early Negative Experience

The obverse of the enrichment studies are those experiments which look at the effects of stimulus deprivation procedures. In particular, puppies reared in isolation or semi-isolation are characterized by behaviors ranging from the bizarre to chronically asocial and/or immature. These behaviors include whirling fits, defecation, resting tremor, freezing in place, howling, pronounced avoidance of people and/or other dogs, howling when touched, passive aggression, diffuse reactions to novel stimuli and decreased manipulative ability, as well as learning deficiencies. In many cases, these effects persisted well into maturity.

So the evidence for the effects of differential handling during early maturation is quite clear. Not only does isolation produce long-lasting behavioral deficiencies in dogs, but also in some species early environmental stimulation leads to psycho-physically superior animals. But is the latter also true of canines? The answer is in the affirmative.

Enriched Environment

When puppies are provided with varied stimulation beginning shortly after birth and continuing throughout the third to twelfth week socialization

period, clear-cut differences over non-stimulated controls are observed. These differences include larger vestibular (inner ear) neurons; elevated neurotransmitter and hormonal levels, superior coordination while standing and walking, increased exploratory behavior, high sociability toward humans, better problem-solving scores, less random activity, more social dominance over controls, less emotional arousal in novel situations, earlier-maturing EEG patterns and differences in heart rate development.

Researchers are still puzzling over the reasons behind these effects, but for our purposes, the message is quite clear. In order to enhance the chances that psycho-socially superior individuals will develop, not only must we develop a sound breeding program and provide for adequate nonisolated environment, but we also should provide the developing puppy with an *enriched, stimulating milieu* that promotes and enhances development beginning shortly after whelping and continuing throughout early life.

The laboratory settings originally designed for the canine stimulation experiments were by necessity well controlled and elaborate. For example, visual stimulation was often provided by precisely regulated flashing lights, auditory stimulation by pure tones of specified duration and so on. It was later learned that the same effects could be achieved using simple stimuli presented at less frequent and shorter intervals. In other words, it's entirely possible for breeders to provide their pups with enriching stimulation that does not require an elaborate laboratory-type setting. It can be done "at home" and is not necessarily a time-consuming process.

Puppy Stimulation

The following guidelines are suggested as a means of stimulating neonatal and older puppies in accordance with the development of the sensory system.

Birth Through Three Weeks

1. Weigh the pups daily beginning shortly after birth. Daily weighing will enable growth rate to be closely monitored, thus nourishment and other health problems will become more readily apparent.

2. Before placing the pup on the scale, briefly rock it back and forth and up and down in an upright and in-

for young people

“A Week from a Dog’s Diary”

by Gloria A. Truitt

We belong to Cinder, an independent mongrel who we assume is part black Labrador, terrier and German Shepherd. Recently, just for the fun of it, I decided to choose a random week and record Cinder’s activities from her viewpoint. What started out to be an entertaining project ended as an invaluable disclosure of Cinder’s rationale. I’m sure if she could write, a week from Cinder’s diary would read as follows:

March 12th - Mother always puts the Sunday roast on top of the refrigerator to thaw, but today she left it on the counter for me. After church they were so surprised to see that I had eaten 4 lbs. of half-frozen meat! (They hollered all afternoon.) I hope she cooks my next roast. It was much too cold and tough.

March 13th - I hate Mondays. John and Laura go back to school. Dad goes to work, and I’m left alone with Mother. It’s not that I don’t like Mother, but she never plays with me. She only pats my head once in a while when running by with clothes baskets and dust mops. Speaking of dust mops, I found one on the back porch today and pulled out all the funny, little pieces of yarn. There must have been thousands! I have to admit a dust mop is more fun than a rubber bone.

March 14th - Today was quite awful! It rained all day and mother tied me up outside in that mud. She must have forgotten about me since I was out there for hours. I was so happy to come inside that after jumping up to kiss Mother, I ran like crazy all over the

house. (The carpet cleaner must be a mean man because Mother started crying when she talked to him on the phone.)

March 15th - I had no idea today would be special, but it was. Mother woke up early and started looking through magazines. I heard her say she was hunting a shamrock pattern...whatever *that* is. Finally she found one and made three round cakes. After they cooled, she placed them on a big piece of cardboard and cut them in the shape of a giant clover. At last it was smothered in white and green frosting with fancy writing on top. I couldn’t believe it was meant for me, but she left it on the counter, right where she’d left the roast. I tried to surprise her by eating the whole thing, but I had an accident and it fell to the floor upside down. She was very angry because I messed up her clean floor. The next time she’ll know better and break it up in my dish.

March 16th - I don’t know what’s going on around here, but today they spoiled my room. In the winter I sleep inside my dog house on the sun porch, and in the summer I love the smooth, cool floor. Well, Dad moved out my dog house and brought in all these rolls of tape and bottles of glue. Then he came in with 20 yds. of carpeting! Ugh! All evening he worked putting that stuff down, but even though they seem to like it, I hate it! At least they put my dog house back. I haven’t decided what I should do about that carpeting, yet.

March 17th - Well, I decided what to do about the carpeting. I tore it all

up early this morning. I made huge piles of stringy stuff while trying to find the smooth floor. I did a pretty good job except for the foam rubber backing which stuck to the floor in many places. They were sure angry and chased me with that deadly weapon, the newspaper. I guess they don’t love me anymore because Mother yelled something about calling the pound. I’ll have to plan my escape tonight.

March 18th - Today was really mixed-up! After they tied me out this morning I managed to snap my rope when no one was looking. I ran for hours trying to find a friendly face, but everyone scared me away. Finally I met a terrier and we played together in his yard. He was quite nice and even shared his water with me. As the day grew long I became more tired and hungry. At last I found myself in a very strange neighborhood. There was no grass, and the houses nearly touched each other, stretching up into the sky. They all had big, front windows through which I could see crowds of people searching through racks of clothes. Hundreds of cars zoomed up and down the broad street and a man in a blue suit and cap tried to catch me. Just as I was about to fall down from exhaustion, Dad’s car pulled up. The whole family cheered as Dad jumped out of the car. He lifted me in his arms and laid me on the front seat, saying, “C’mon, girl, we’re taking you home.”

I guess they forgot about calling the pound, so I’m glad to be back home. They must love me after all! (I wonder if Mother will leave the roast on the counter for me tomorrow.)

FELINE INFECTIOUS PERITONITIS

Continued from page 20

Public Health Aspects

There are no known public health aspects of FIP virus infection of cats. This virus apparently infects only domestic and exotic cats.

Future Research Needs

A number of problems regarding FIP remain for further research. These include (1) understanding the basic immune response to the virus, (2) developing a vaccine, (3) establishing the possible role in KMC, (4) establishing effective control methods, (5) developing an effective treatment, (6) establishing the incidence of FIP-infected catteries, and (7) developing better diagnostic tests.

Summary

FIP virus infection is far more common and of considerably more importance than was previously believed. Initial exposure to the virus usually results in subclinical infection, although mild respiratory disease may occur. This sensitizes the cat so that subsequent exposure to virus or stress may precipitate a secondary disease (effusive or granulomatous FIP) that usually is fatal.

A new disease complex, the kitten mortality complex, which causes unusually high incidences of reproductive failure and death of young kittens, has been seen in many catteries throughout the United States. The cause of this complex has not yet been established, but there is increased suspicion that it may be associated with FIP infection.

Continued research is urgently needed to provide answers to the many current questions about FIP and to develop effective methods of prevention and treatment.

Further Information

To obtain more information about the work of the Cornell Feline Research Laboratory or to make a donation to support the work of the laboratory, write to:

Cornell Feline Research Laboratory
New York State College
of Veterinary Medicine
Cornell University
Ithaca, New York 14853

PUPPY BEHAVIORAL DEVELOPMENT

Continued from page 27

verted position. This provides vestibular or positional feedback to the receptors located in the inner ear.

3. After weighing, briefly and briskly rub the pup's body surface with your hands. With your thumb and forefinger, moderately squeeze the skin between several of its nails (fore and hind limbs). This provides additional stimulation to the tactile or touch receptors.

4. The surface of the nest box should provide for hind limb purchase, thus should not be smooth. Old carpet remnants (non-shag) are acceptable and can be cleaned periodically.

Three Weeks Through Placement

1. Introduce various auditory stimulation of different intensity—radios, rattles, hand claps, bells, vacuum cleaner, clapper boards, voice and so on. Always begin with a low intensity level and gradually increase to a non-startling level.

2. As soon as increased locomotor ability is present, encourage further development by providing simple obstacles to traverse. These obstacles can be made from smooth boards, newspapers, cardboard, etc. Always start with a simple problem and gradually make it more difficult, but do not exceed the pups' abilities. Make sure each pup succeeds in the task.

3. Encourage following and grasping by introducing rolling objects, such as rubber balls, empty cans, etc. These items can be baited with small amounts of cheese or ground meat.

4. As soon as possible, introduce the pups on a rotating basis to the normal home environment. Brief excursions into various areas of the home will provide variable visual, olfactory, auditory and tactile stimulation as well as accustom the pups to dealing with novelty.

5. Weather permitting, introduce the pups on a rotating basis to the outside environment. Gradually accustom them to car riding by first going for short rides, then systemically increasing the distances.

6. Encourage various visitors of different ages to handle the pups, while seated and under supervision.

7. As soon as size and locomotor ability permit, introduce the pups to steps, starting with the last step first (in

either direction) and bait with a food reward.

8. Introduce grooming, nail clipping and other maintenance tasks gradually, i.e., light stroking with soft brush or comb—two to three nails at a time. But do it as early as possible. Begin handling around the muzzle area, ears and groin region while placing the pup in a prone position on its side. Control struggling by placing your hand on the neck scruff. Praise profusely when the pup settles.

Developing Genotypical Potential

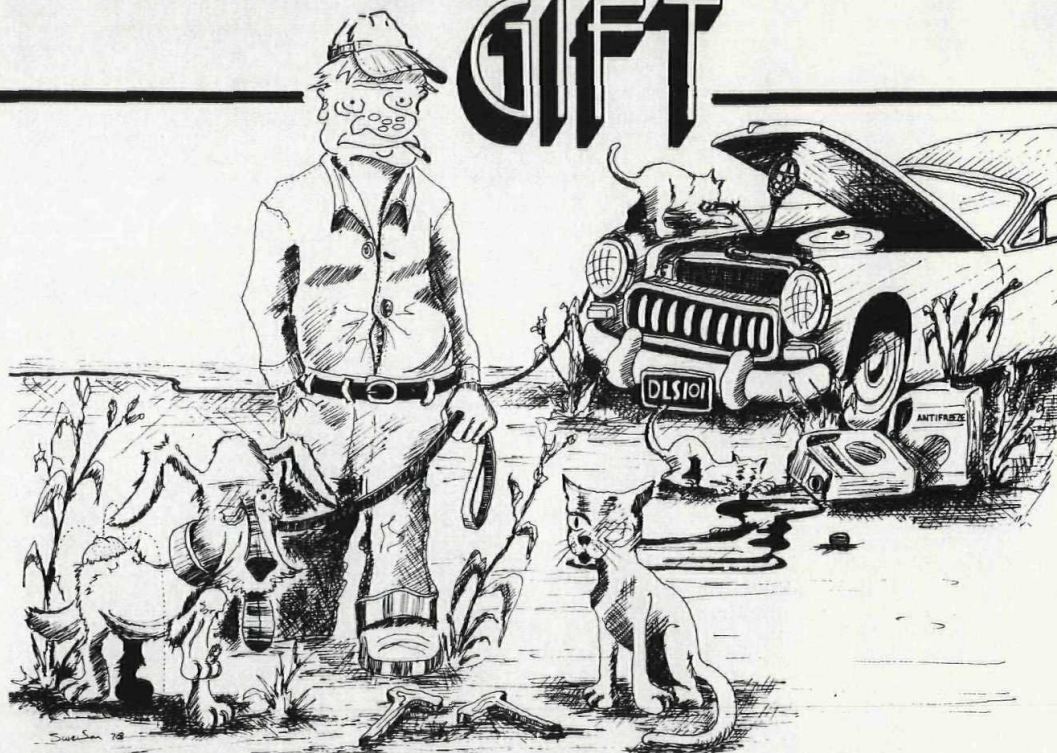
These are just some of the things that can be done to provide stimulation. I'm sure that you're already doing many that were mentioned and others that were not. The essential points to remember are (a) stimulation is mediated through the sensory receptors, thus must coincide with their operational development, (b) stimulation should not be excessive either in intensity or duration, (c) stimulation should be gradually introduced. Building up to more intense levels allows for accommodation to occur, and (d) more complex problem-solving tasks should gradually be introduced to insure success.

By providing your puppies with these early experiences you are, in a sense, *challenging* them to develop toward their genotypical potential. Cubs whelped and reared in the wild are customarily exposed to a demanding, challenging environment. Man, in domesticating canines, has inadvertently removed much of the stimulation that now appears vital for maximum psycho-physical development.

The challenge to you as breeders of purebred dogs is to actively and visibly compete with the numerous alternate sources available to the novice. And it is largely through quality educational programs that the lay public will become aware of the differences between a well-informed breeder whose interest is in producing psycho-socially superior show and pet animals and the breeder who is only interesting in producing animals.

Once this awareness is achieved, I believe the failure rate will begin to subside and you'll have faced and overcome an extremely worthwhile challenge.

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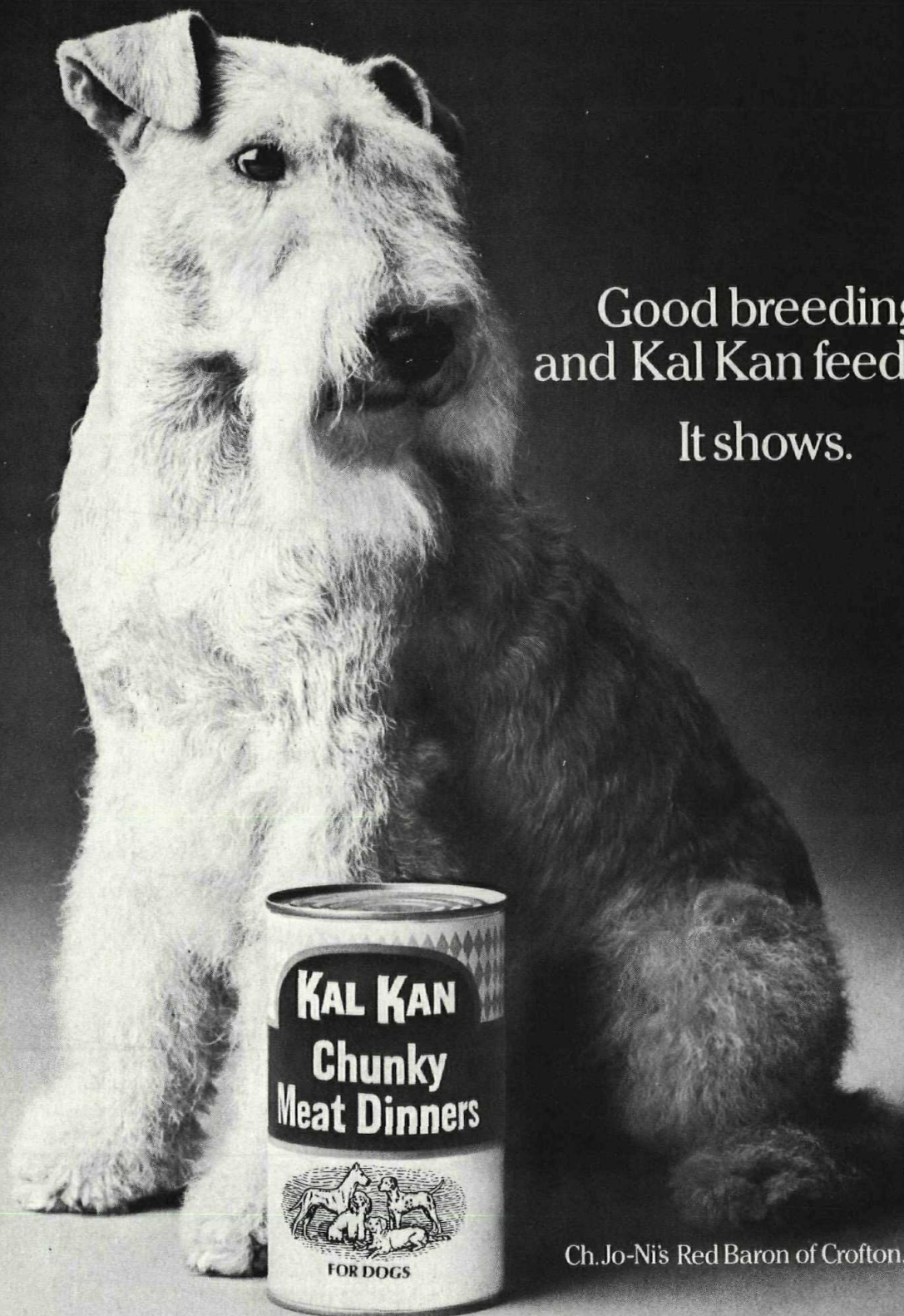
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