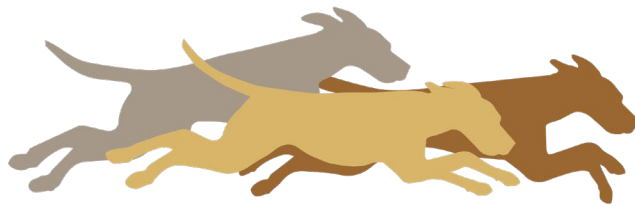


FOXHOUND KENNEL NOTEBOOK



MASTERS OF FOXHOUNDS ASSOCIATION
OF NORTH AMERICA

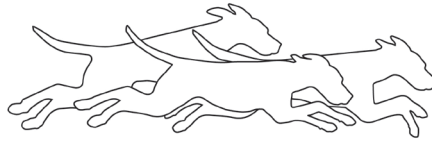
Promote. Preserve. Protect.

SIXTH EDITION

MASTERS OF FOXHOUNDS
ASSOCIATION

2022

FOXHOUND KENNEL NOTEBOOK



MASTERS OF FOXHOUNDS ASSOCIATION
OF NORTH AMERICA

SIXTH EDITION

*Organized and Produced
by the Kennel Notebook Committee*
G. Marvin Beeman, DVM, MFH, Chairman
Jane Jeffries, DVM, MFH

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INTRODUCTION

This edition of the Foxhound Kennel Notebook was produced at the direction of Dr. John R. (Jack) van Nagell, MFH, and president of the Master of Foxhounds Association. This edition is an attempt to gather the latest and most up-to-date information for your review.

Certainly, there are other solutions to the many challenges we face each and every day as we care for our hounds. We intended for this notebook to be a guide only using individual conditions to dictate your final direction and decisions. You will note that prevention of problems is our focus, while also bringing new solutions and procedures to your attention.

You will note that this edition of the Foxhound Kennel Notebook has been shortened. This was in part an effort to focus on the job at hand by removing questionable and non-medical information. Also, the entire section on Training has been deleted for the same reason. Many other quality sources of information on training, scent, etc., are available to cover the subjects in greater detail than we could possibly cover in this notebook.

Additionally, this notebook is designed to assist with the training of new huntsman in association with the Hunt Staff Benefit Foundation's Professional Development Program (PDP). It is intended as a source of information, a training tool, and guide to new huntsmen as they embark on their new position to care for and hunt a pack of hounds. It is impossible to include all aspects of kennel care, but is an attempt to gather the most important information.

We hope this notebook serves you well.

G. Marvin Beeman, DVM, MFH
Chairman

Submission of Materials for Future Supplements

The Kennel Notebook Committee will continue to seek useful information on subjects covered in this Notebook. New information and updates for the Kennel Notebook will be available through the website of the Masters of Foxhounds *www.mfha.org* until a new edition of the Foxhound Kennel Notebook is published.

Anyone wishing to contribute material or articles is invited to do so. Please submit all materials to:

Masters of Foxhounds Association
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*Mason H. Lampton, MFH
Dr. George F. Seier, Jr., ex-MFH*

The task of gathering information to assist foxhound packs in North America has spawned the thought: What are the duties of the kennelperson? This book has broadened the scope of the conventional idea of a kennelman as it becomes obvious that most of our membership wrap the kennelman's duties into the total responsibility of managing hounds, including all aspects of involvement. The kennelman, in most cases, is "the chief cook and bottle washer." All too often, the kennelman has MFH behind his or her name. With this fact in mind, we have chosen to include all aspects of this book into the kennelperson's scope of responsibilities. This role must attend to the breeding, training, care, and housing of that most treasured ingredient of the hunt—the hound.

1.1 • Emergency Phone Numbers, Supply and Repair Directory

Emergency Phone Numbers (Figure 1.1-1), Supply and Repair Directory (Figure 1.1-2), are suggested forms to be posted in your kennels for use by the kennelman, or whoever may be on duty, should a need arise.

Use the MFHA Guide to Kennel Standards of Care Checklist (Figure 1.1-3) to make sure all details and tasks have been attended.

EMERGENCY PHONE NUMBERS

Fire Department	_____		
Police	Village Township	_____	
	Sheriff	_____	
	State	_____	
Ambulance	_____		
Doctors		Office	Home
Dr.	_____	_____	_____
Dr.	_____	_____	_____
Dr.	_____	_____	_____
Veterinary	_____		
Dr.	_____	_____	_____
Dr.	_____	_____	_____
Dr.	_____	_____	_____
Master(s)	_____		
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Secretary	_____	_____	_____
Treasurer	_____	_____	_____
Other Hunt Officials	_____		
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

Figure 1.1-1 Kennel Form: Emergency Phone Numbers

SUPPLY AND REPAIR DIRECTORY

Hound Feed


Biscuits

Puppy Supplements


Medicines

Disinfectants

Other



MFHA Guide to KENNEL Standards of Care Checklist



Kennel Inspection Details

Date: _____

Location of Kennels: _____

Person(s) conducting inspection: _____

MFHA Kennel Checklist * Also check state law as each state is slightly different

Hound List location: _____

Emergency/Important Points of Contact posted with telephone/email

- Kennel backup contact: _____
- Veterinarian Name: _____
- Fire Department: _____
- Police/Sheriff Department: _____
- Game Warden: _____
- Animal Control Officer: _____
- Dog Food Supplier: _____
- Waste Disposal: _____

List of Dates:

- Bitches in Season: _____
- Brucellosis testing of bitches to be bred: _____
- Leishmaniasis testing of bitches to be bred: _____

Is there a Cleaning program: ☐ Yes ☐ No

Is there a Feeding program: ☐ Yes ☐ No

Is there a Exercise program: ☐ Yes ☐ No

Is there a Waste disposal program: ☐ Yes ☐ No

Is there a Insect control program: ☐ Yes ☐ No

Is there a Worming and Inoculation program: ☐ Yes ☐ No

Are Breeding records maintained: ☐ Yes ☐ No

Are Health records maintained: ☐ Yes ☐ No

Are No Trespassing signs posted: ☐ Yes ☐ No

Is the kennel clean and organized: ☐ Yes ☐ No

Proof of Rabies Inoculation: ☐ Yes ☐ No

Is County License posted (if required): ☐ Yes ☐ No

Is there a Sufficient space, shelter; properly cleaned and protection from severe heat, cold, rain and wind: ☐ Yes ☐ No

Are hounds receiving adequate Space in primary enclosure: ☐ Yes ☐ No

Adequate Exercise: ☐ Yes ☐ No

Is there access to Vet care when needed: ☐ Yes ☐ No

What kind of transportation is available for hounds? _____

Basic MFHA Essentials

- ▲ Outside runs should provide sufficient room for hounds and escape avenues under benches or in barrels
- ▲ At least 2 separate lodging rooms each with connecting outside runs
- ▲ Separate lodging and connecting outside runs for the whelping and raising of puppies, care of sick hounds and the isolation of bitches in season
- ▲ Suitable raised sleeping benches
- ▲ Adequate light and drainage with an efficient waste disposal system
- ▲ Fencing and yards that will contain hounds and keep them separated
- ▲ Clean sanitary kennels and a clean feed storage facility protected from rodents and flies
- ▲ A watering system that assures hounds have clean water always available

Figure 1.1-3 Kennel Checklist

1.2 • Duties and Responsibilities

The kennelperson is responsible for the health, feeding, cleanliness and maintenance of the kennel.

1.2.1 Kennel Care

Daily cleaning of kennels both inside and outside. Washing, disinfecting, and picking yards. Daily maintenance and repairs to fencing, lights, water systems, drainage, and waste control.

- Clean kennels daily
- Disinfect as required
- Clean and disinfect all watering buckets or bowls and feed containers daily
- Ensure clean, fresh water is available at all times
- Report maintenance needs to huntsman or Master
- Ensure all feed storage rooms are clean and rodent free
- Feed hounds per huntsman's instructions if huntsman not available

1.2.2 Hound Management

- Inspect hounds daily, looking for unusual behavior, general health conditions, wounds, or any external parasites, report observations to huntsman
- Report bitches coming into heat, record date and hound on kennel records, and remove bitch to heat pen or hot bitch kennel
- Assist huntsman in treating hounds or any other health related activities.

1.2.3 Maintenance

Maintain kennel grounds and buildings to ensure clean, well-groomed appearance by cutting grass, painting and performing general maintenance.

1.3 • Kennel Sanitation

Hounds will develop to their genetic potential and perform well while hunting, only if kept in good body condition and fed a complete and balanced diet. However, if the conditions under which they are housed or maintained are not sanitary, or are heavily contaminated with parasites, insects and/or rodents, you will realize that both their performance and condition will suffer.

1.3.1 Kennel Construction

Whether you have a kennel built for 24 hounds or for 150, it is important that the construction of the facility be such that it is easy to clean and maintain. This should include restrictions for insect and rodent entry and hiding areas within the kennel.

Kennel Construction is covered in Section 3.0 in more detail, but it is extremely important to enable proper kennel care and ensure the health of our hounds by building good kennels.

1.3.2 Cleanliness, Trash and Debris Pickup and Removal

All unnecessary materials such as empty feed bags or unused, broken or discarded equipment should be removed from the kennel area. This material provides more hiding places for insects/rodents and makes the cleaning of the facilities difficult. For easy cleaning of hard-surfaced inside facilities, we recommend a commercial-size power vacuum cleaner. This is very effective for picking up hair, dust, and other small debris, particularly in cracks, corners, and crevices.

Use of a vacuum cleaner helps prevent the dusty conditions that occur when the material is swept. Since the vacuum is effective in picking up dust and hair, it will also take less time.

Keeping the feed off the floor on raised benches or pallets, removing trash and reducing entryways will also help control rodents. In housing areas, use of rodent traps may be the best choice rather than poisonous baits. Rodent bait can be used and is very effective, especially the new generation of warfarin which needs only a small amount to be lethal to the rodent. However, care should be taken that the hounds cannot get to the bait or eat any rodents that have consumed the poison material. A good method to ensure control of the bait is to use an old mailbox. A small hole is cut or drilled in the side, back or front of the mailbox, just big enough for the rodent's entry. The front door can be closed securely with a snap or tie allowing cleaning of the box or checking levels of bait.

1.3.3 Washing, Scrubbing, and Spraying

The best tools for kennel cleaning depend upon the size and type of kennel facility. Individual doghouses are best done with a scrub brush and bucket, while larger facilities may be cleaned most rapidly and effectively with a portable power sprayer. This sprayer is available from various equipment companies and moves easily on two wheels. An electric or gasoline motor turns the pump, creating a high level of water pressure. This 1.3

- Kennel Sanitation continued

unit also has an attachment enabling detergent or disinfectant to be metered into the stream to facilitate cleaning. This amount of pressure gives good penetration of the porous surface and will be much more effective than a regular scrub brush. A sprayer of this type can be used not only on the solid floor and walls of the building but also on resting platforms, whelping boxes and other equipment.

We recommend that you follow the instructions carefully for any detergent or disinfectant used in an animal facility. Hounds should never be allowed to drink the solution. When disinfectants are used, the surfaces should be allowed to dry before the hounds are turned back into them. Again, instructions on the package or bottle should be followed closely.

One of the best and least expensive disinfectants is Clorox (sodium hypochlorite) but, as with all disinfectants, extreme care should be used. Clorox is one of the few products that will kill viruses and can be left on most surfaces with minimal problems but must be used in a well-ventilated area at a 10 percent solution (1 oz. Clorox to 9 oz. of water) only. If used in stronger concentration, chlorine gases can accumulate and are dangerous to the kennelman and hounds when inhaled.

Food and water bowls should be washed daily. They can be washed in a detergent solution and rinsed in a disinfectant. The bowls should be allowed to dry prior to putting them in use again. Using good disinfectants in a kennel facility not only helps kill any disease-causing organisms, but also aids in reducing kennel odor. Disinfectants will not overcome any defects in the kennel such as cracks and crevices in a floor or wall area or failing to regularly remove droppings. They should be used only as a final cleaning agent.

The hound food should be piled neatly upon wood or metal pallets 8 to 10 inches off the floor. The pallet should be at least 18 inches from any wall so that it can be cleaned behind and underneath. The wall and floor of the feed storage area can be sprayed with insecticide.

Insecticides should not be sprayed onto feed pallets, feed bags, or any bowl or container that holds feed or water. Insecticide mist will drift, so precaution should be taken during the application.

Flypaper can be attached to the ceiling of a kennel and fly baits can be put on windowsills or other areas in a kennel not accessible to the hounds.

1.3.4 Summary

Good sanitation is paramount in maintaining the health of our hounds. Many problems, including diseases, parasites, rodents, and insects, can be controlled and prevented through good sanitation. A

1.3 • Kennel Sanitation continued

waste collection and disposal system becomes important as the size of the pack grows. This is discussed in the Kennel Design section. Hard surfaced kennels should be washed down daily. Many types of disinfectants are used by various packs, but it is important to follow directions on the label of the disinfectant and to disinfect regularly.

1.4 • Kennel Management Routine**1.4.1 General**

Care of hounds is a matter of medically established practice, common sense, and close observation. It is not possible to lay down absolutely fixed orders. The kennelman or huntsman must be alert to conditions which require special treatment. For this reason, these notes are to be used as a guide, and their purpose is to help the memory of experienced staff and guide the inexperienced in emergencies.

Cleanliness is directly related to health and is an absolute “must”! The routine of kennel management begins and ends with cleanliness.

1.4.2 Example of Daily Kennel Management Routine

- Pick up the kennel yards
- Pick up the lodging rooms
- Rinse and refill the water pails
- Prepare the feed. In kennels that cook, feed may be prepared in the afternoon for use the following day
- Feed the hounds. Because animals get used to routine, feed at the same time each day, calling hounds into the feeding room by name, the slow and shy feeders first
- Clean the feeding area and utensils with hot water
- Walk the hounds out on foot after feeding, even if time only permits the shortest period. Food consumption stimulates the hounds to have a bowel movement and relieve themselves. If the hounds are to be exercised, do it prior to feeding.
- Treat hounds, if necessary for cuts, sores, etc.
- Remove from the kennel empty feed sacks and other discarded material which can become a haven for parasites
- At the end of the day, be sure that the water pails are full of clean, fresh water. Leave the kennel neat and workmanlike. Anything less is a reflection upon the kennelman and the huntsman.

I.4.3 Other Kennel Management Routines

- When hounds are given parasite prevention, make sure ear mites are controlled as well; control of both internal and external parasites are a must
- Bedding is used primarily during cold weather months. It must be changed whenever it becomes musty or fouled, usually once per week. Good clean grass hay is considered by some to be better than straw, having less chaff. If used, it is preferably cut early
- Kennel floors should be swept, washed down, and disinfected regularly
- Exercise hounds daily, with horse or bicycle, consistent with the time of year. Do not confuse this with the practice of walking out hounds after feeding, allowing the hounds to relieve themselves

2.1 • Introduction

Dr. Jane Jeffries, MFH

The guidelines for this section, Care of the Foxhound, have been gathered from veterinary literature, personal interviews, and experience, and from previous editions of the Foxhound Kennel Notebook. The information also has been edited by the Veterinary Committee to meet current recommendations and standards of care.

The following information should serve only as a guide. Individual kennel problems, regional problems, and health management programs will vary. We recommend a close working relationship with your local veterinarian who is an excellent source of information and guidance in the care of your hounds.

You will note many diseases and/or parasites in this section have the potential to infect humans. Although still relatively rare, it is an increasing threat and can have significant consequences to our kennel staff given their close handling of our hounds and the constant exposure to their environment.

Care should be taken to protect our hounds knowing that at the same time, we are protecting our hunt staff. Most hunts have children help or at least visit our kennels. Children remain the most susceptible to zoonotic diseases (any disease that can go from animal to man) because of their immature immune systems and poor hygiene. For example, putting hands to mouth and not washing their hands. Knowing what is at stake, we all should be vigilant in the task of keeping our hounds healthy and free of disease.

2.2 • Choosing a Veterinarian

You will note that much of the information in this section contains references to your veterinarian. We hope you already have a good relationship with your veterinarian as they can be a valuable source of information and aid to the hunt. If not, or you are unhappy with your current situation, we hope this will help.

First your veterinarian should be member of your team. If he or she is a member of the hunt, it is all the better, but not mandatory. Your veterinarian should be included and treated as a team member. Do not be afraid to ask questions of your potential new veterinarian. Previous work with other kennels is important but do not consider it essential. Your veterinarian should view this as a learning experience in the ever-changing world of medicine, and a welcomed challenge.

Large animal experience can help as your veterinarian needs to

look at your kennel through eyes concerned about the general herd health. The experience of caring for a large number of animals like cattle or swine herds can help your veterinarian see your hounds not only as individuals, but also as a group or herd, and make recommendations best for the entire kennel. Prevention of health problems can be a most rewarding and challenging endeavor. Your veterinarian must not only be able to think about the individual hound, but also how its health relates to the whole kennel.

We consider it mandatory that your veterinarian be willing to listen to you and your problems. A lot of practicing veterinarians are quite busy and strapped for time. If your veterinarian does not seem to have time for you, it is best to address this issue with them or consider choosing another veterinarian.

Get them interested in your problems, and most importantly your goals. Do not be afraid to discuss money as it is important to you both. Cost is always a factor and choosing the cheapest veterinarian may not be the wisest, just as choosing the cheapest ration for your kennel is most often foolish. Experienced veterinarians can help control cost. The cost of drugs today can be a major expense. The pharmaceutical industry is currently experiencing major changes that affect the pricing of our medications. Medications once used extensively by our kennels have increased in price in some cases over 1000% due to these changes. Experienced veterinarians can help choose alternative medications to solve the issues at hand without breaking the budget. Plus, many resistances are surfacing with our preventions as well as antibiotics. Your veterinarian's experience can help avoid these pitfalls with your hounds.

Make sure that your veterinarian has an emergency service available. As we all know, emergencies do happen, and at the most inopportune times and circumstances. Make sure that service is available to you, with telephone numbers posted at the kennel and in the hound truck.

Choosing and finding a caring and knowledgeable veterinarian can be a hard task, but very rewarding. It provides you with a talented partner with information and the ability to help your pack of hounds get and stay healthy. The healthier the hounds, the better they hunt – giving sport to all. For the veterinarian, it provides them with interesting challenges, exposure to unique situations, and experience with large numbers of hounds that cannot easily be attained elsewhere. It can and should be rewarding to all.

2.3 • Anatomy of the Hound

Dr. Roger I. Scullin, MFH

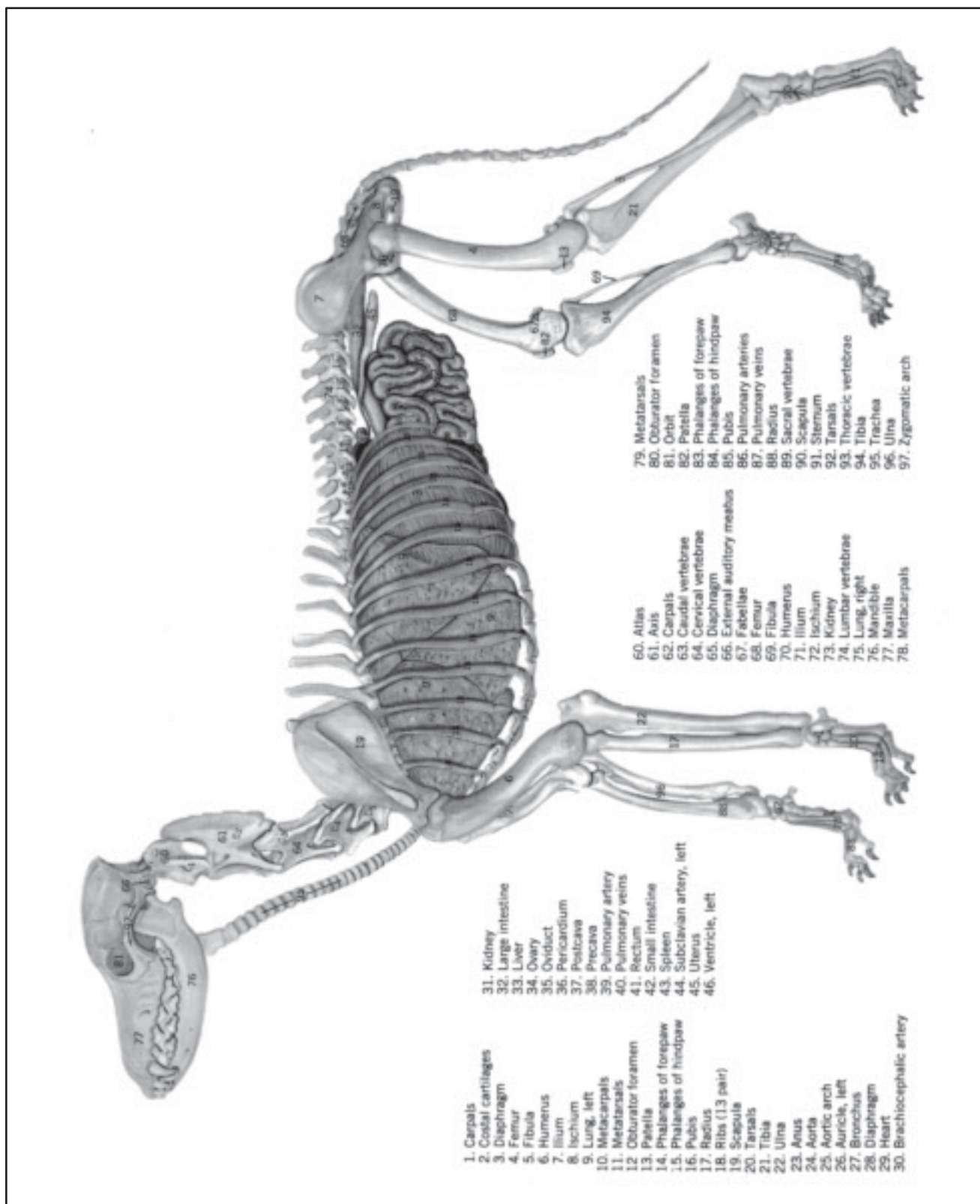


Figure 2.3-1, The Canine, Skeletal

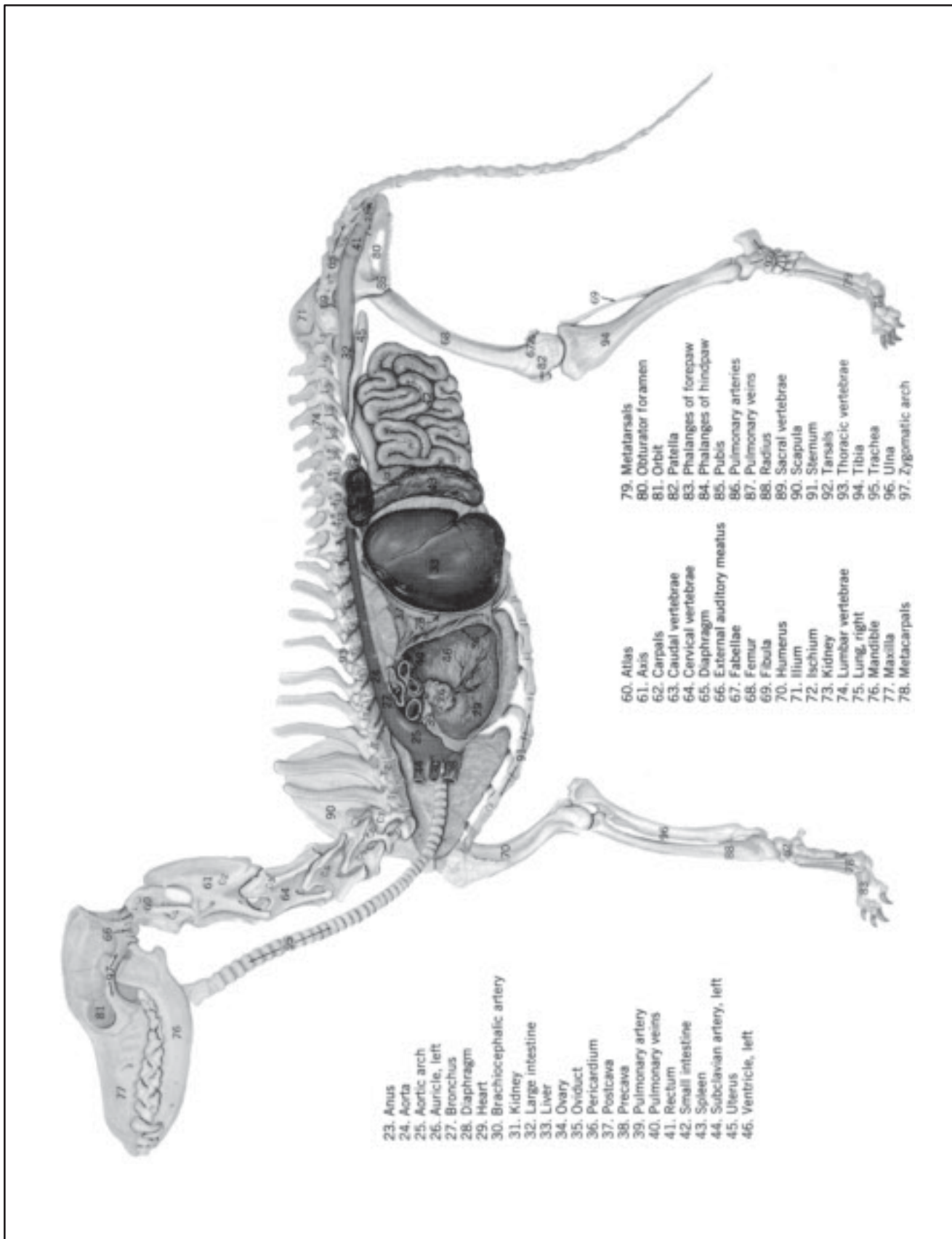


Figure 2.3-2, The Canine, Skeletal

2.4 • CARE DURING BREEDING

2.4.1 • Prenatal Care

■ 2.4.1.1 • Before Breeding

The bitch and dog are selected for breeding. Both hounds should be healthy and sound. Avoid choosing hounds with any inherited conditions or characteristics that should not be passed on in your hounds. Both hounds should exhibit the characteristics you want promulgated or disseminated in your kennel. This should include both physical and mental characteristics. Remember an overly shy or aggressive hound should be avoided just as a hound with bad feet or hips. Each should be checked for infections, making sure both are healthy. Any new dog and/or bitch introduced into the kennel should be tested and proven negative. Also make sure all outside hounds used to cover a bitch have been tested. Specific breeding diseases are to be discussed in detail later in the notebook.

Hounds should be in good physical condition, not too fat or skinny with the rib cage easily felt. They should be on parasite preventatives (both internal and external) and current on their immunizations PRIOR to breeding. Performing these vaccinations a minimum of 2 weeks (best 4 – 6 weeks) prior to breeding will improve health of your puppies by transferring immunity from the bitch to the puppies through the first milk or colostrum. The health and immune status of the bitch is very important as 95% of all immunity in a puppy is derived from this colostrum. If a bitch scheduled to be bred comes into heat early and is due for vaccinations at any time in the next few months, we recommend vaccinating when the bitch first comes into heat. This helps boost immunity at the time of whelping, thus transferring immunity to the pups.

It is important to note here that vaccination protocols have changed so we will discuss recommendations later in the notebook

■ 2.4.1.2 • The Heat Cycle

Careful record keeping helps to predict the bitch's next heat cycle, but is not foolproof. Spending time with the hounds and careful monitoring and examination of bitches will help determine when her cycle is beginning. Immediately separate her into a heat pen away from the main kennel. The heat pen should be completely enclosed even with a wire over the top. Do anything to help reduce the chance of a visiting canine entering the area.

The average heat cycle lasts 21 days in the bitch and she will only be receptive in the later part of the cycle. The first signs of the heat cycle can vary but include swelling of the vulva, spotting of blood and of course interest from surrounding hounds. On the 7th to 9th

2.4 • Care During Breeding continued

day from the first day of swelling or spotting, the bleeding should decrease. Ovulation generally follows the reduction of bleeding or spotting; at the same time the bitch starts flagging or acting receptive to the male. After ovulation, the egg matures in 48 hours and is ready for fertilization. Variations do occur in individuals so vaginal smears by your veterinarian plus serial blood testing for progesterone, and luteinizing hormones (LH) levels can assist in timing of breeding, especially if the bitch is being bred elsewhere. If the bitch is to be covered live, and no testing of the cycle is to be done, then at least two breeding should be done 48 hours apart. A good rule of thumb if the male is available – introduce the male 1 day after bleeding or spotting stops. If the bitch does not accept the male, reintroduce daily until she does breed. Rebreed every 48 to 72 hours until she no longer accepts the male. This will cover all normal and most all aberrant ovulations which do occur! Progesterone testing is best when done on bitches with any abnormal reproductive history. This will help also if the male has fertility issues and multiple breeding may degrade the semen quality. Progesterone testing and timing will be discussed later in the notebook.

Care should be taken during the breeding process. The bitch can be left with the dog, but injury can occur if the bitch is not ready to accept the male. We recommend taking the male to the female's kennel or heat pen for a specific time once or twice daily until the bitch accepts the male. Individual situations may require you to take the female to the male for more familiar surroundings for the male, but she must be with only the one male. After a successful breeding, separate the two again and rebreed 48 to 72 hours later depending on the day of the heat cycle. Be sure to keep the female kenneled away from any other males, as puppies from multiple sires can occur from different breedings. Shy breeders are always a challenge, and one should do what it takes to get the job done. If this particular breeding is a must for your program, artificial insemination is a simple and very effective way of ensuring the bitch is covered. Multiple methods of insemination are available from vaginal insemination to surgical implantation.

Vaginal insemination can be done easily by hunt staff with simple equipment, training, and some help to hold the bitch. Your veterinarian can help in training staff for this type of insemination.

Other types of insemination are more costly and complicated, requiring specialized equipment and training:

- Transcervical insemination (TCI) using endoscopes is an effective way of making sure the semen sample gets into the uterus and gives your veterinarian some visualization of the vagina and cervix.

2.4 • Care During Breeding continued

- Surgical implantation is the surest way to know the semen sample reaches the ovaries of the bitch. It gives the veterinarian a good view of the uterus making sure all is healthy, and can help in

identifying ovarian cysts that can be dealt with at the time of the surgery. Timing is critical, especially with frozen or chilled semen, so Progesterone / Luteinizing Hormone (LH) testing is a must.

■ 2.4.1.3 • Before Whelping during Gestation

While pregnant, the bitch needs individual care to ensure she is ready to whelp and can give the pups the best start in life. Gestation is a stress on the bitch but not near as much as lactation, so we use these 60+ days to prepare the bitch for the coming stress of lactation.

The bitch should be removed from the heat pen after all signs of heat have dissipated. She certainly should be walked out daily in an effort to keep her fit, and can be hunted, but one should use caution. A hard hunt in hot weather could be harmful to the bitch and negatively affect the pregnancy. Use caution and good judgment in keeping the bitch fit.

Diet is critical, not only in what to feed but how much. The best quality performance food with the highest fat and protein you can afford should be given to the bitch during gestation. Quantity should be limited and given at 1.0 to 1.5 times maintenance volumes until whelping to help prevent large weight gains. The time to increase quantities is after the pups are born, always using the maintenance volume levels as comparison. Diets are measured and compared by the amount of energy available to the dog in kilocalories (k/cal per cup of food. Maintenance diets have approximately 360 k/cal/cup. Performance and lactating diets should have approximately 430 k/cal/cup with 30% protein, 20% fat, 22% carbs, calcium phosphorus ratio close to 1:1 and Omega 3 fatty acid ratio of 5:1 - 10:1.

Performance or lactation diets should be SLOWLY started at the time of breeding and kept up until weaning. Any diet change should be done over a few days if at all possible. Optimal nutrition such as this will not only increase birth weights, but also ensure maximum lactation in the bitch. If the breeding is not successful, then the bitch is returned **slowly** to maintenance diet when placed back into the kennel. **Be very careful with raw diets! Feeding raw diets pose a number of threats for the pregnant female and her pups.**

Current recommendations are to start worming the bitch while pregnant with Pyrantel (Strongid T®, Anthelban®, Nemex®) or Fen- bendazole (Panacur®, Safeguard®). This will HELP REDUCE BUT NOT ELIMINATE transmission of hookworm and roundworms to the puppies prior to and after they are born, through placental and milk transmission. Typically, the pregnant bitch is

2.4 • Care During Breeding continued

wormed every 2 weeks while pregnant to reduce the number of runt puppies so often seen in litters, and to increase the general health of the remaining puppies. Current practices and experience with kennels would lead me to the following recommendations. Most monthly parasite preventions are safe during pregnancy: Several products are not cleared for pregnancy so check with your veterinarian or the veterinary services customer service of the medication manufacturer

- Pyrantel: Given orally at 2 weeks and 4 weeks after breeding
- Fenbendazole: Given orally 6 weeks after breeding for 3 day regimen

Other deworming products can be used, but only use medication that is safe during pregnancy. Your veterinarian is a good source of information as to what medications are safe for the pregnant bitch and puppy.

You may consider additional management procedures prior to birth if you are having problems in your kennel raising healthy pups or have problems with sudden deaths. Cleaning the mammary glands by clipping the excessive hair or washing the glands with mild soapy water are good management techniques prior to whelping.

The bred bitch should be separated from the pack and put in a whelping pen when she begins to show signs of her pregnancy. By 2 weeks prior to her due date at a minimum, she should be in her own whelping box. (See Figure 3.2-1) The whelping area should be a clean, comfortable, and private area with good bedding which the bitch will use to make a nest.

The whelping pen is very important and should be erected to protect the health of the puppies. It, above all, helps regulate the warmth of the puppy. Puppies cannot regulate their own body temperature and need external heat to survive and thrive. This heat needs to be localized so they can get close to it during colder times or away if they get too hot. It is critical that the pups are able to move off the heated surface. Heat lamps and heated floors are all examples of methods to increase heat in the whelping box, but radiant heat is the best. Temperature of the heated surface should be 85 - 95 degrees, which is needed by the puppy in the first weeks of life.

2.4.2 • Care of the Bitch and Puppies

■ 2.4.2.1 • Whelping and care of the puppy

The first signs of labor may be restlessness of the bitch as she may even go off her food. Generally, her body temperature will drop 24 hours prior to whelping to below 100 degrees, often at 97° - 98°.

The drop in temperature is secondary to the progesterone hormone drop as the body prepares for whelping. Whelping is 62 days on the average but can vary up to several days depending on a number of

2.4 • Care During Breeding continued

factors. Ovulation date and breeding dates are often not the same, so be careful about predicting the whelping from the breeding dates. Often the bitch will accept a male well before or after ovulation making the breeding date(s) confusing when predicting whelping date(s). One other factor includes the number of pups in the litter. Whelping four or fewer pups has proven to have longer gestation rates than larger litters. Inheritance can influence whelping dates as well. Lines of females often follow a pattern of early or late whelping dates.

She should have her first puppy within 2 hours of starting hard labor. Puppies can be normally delivered as much as 2 hours apart until she has had her full litter. Should she be in hard labor for more than 2 hours without delivery of a pup, or more than 2 hours between pups, your veterinarian should be alerted.

Oxytocin® or P.O.P (20 USP units per cc can be injected into the bitch. One (1 cc intramuscularly is the maximum dosage on an average size foxhound bitch, but be careful as it is painful at the time of injection. It will help stimulate contractions of her uterus and help in milk letdown. This medication can be repeated in 30 minutes, but should be used with the advice of your veterinarian and limited to three injections. Overdosage can result in increased contractions over the pup, restricting circulation which threatens viability of the pups and may even cause uterine rupture. Oxytocin intranasal spray is now available, but recommendations are not available for whelping at this time.

Each puppy may be presented head or rear limbs first. Each is normal but abnormal positions do occur and can be a source of difficulty. This is where timing is important and if the puppy is in the birth canal in an abnormal position, it is an emergency so contact your veterinarian immediately.

You can help in whelping very easily if the puppy is in normal position and is exposed enough to reach. The pup may not be able to come out completely by itself for several reasons. Dilation may not be complete; the puppy may be too large or the bitch may have gone into uterine inertia from fatigue or calcium depletion. This is particularly true for the first puppy, which has to dilate the birth canal for the rest of the litter. Using your index and middle finger to go around the head or hips of the puppy, you can gently but firmly pull the pup. Be sure to move the pup in all different directions (up, down, left and right at the same time you are pulling to help the pup squeeze through the small opening in the pelvic canal. Do not use forceps or other utensils or tools – **use your fingers only**. Remember, once the pup is in the birth canal, the umbilical cord is often pinched off making time a critical factor.

If you help with delivery, the placenta is often still in the bitch.

2.4 • Care During Breeding continued

Separate the puppy from the placenta by breaking the umbilical cord with your fingers on inch or more from the abdominal wall of the puppy. Normally the umbilical cord will break on its own or the bitch will chew it to separate the puppy from the placenta, but do not be afraid to help.

Make sure the pups have a clear airway, using a bulb syringe if needed to clear fluid from the nostrils and mouth of the pup. Do not clean the pup too well, but rough toweling is good to stimulate respirations and circulation. Allowing the bitch to lick and clean the pups will help the nurturing instincts of the bitch. This is especially true for bitches pregnant for the first time.

After each pup is born or as soon as practical, the umbilical cords should be tied off and coated with strong tincture of iodine. This helps prevent introduction of bacteria directly into the puppy leading to septicemia and early death. The cords can be tied off with small fishing line or surgical suture from your veterinarian.

Unfortunately, on occasions, surgical intervention is needed during whelping. Although your veterinarian will be in charge of the Cesarean Section, aftercare is often up to you. This aftercare is critical as good nursing care can mean the difference between success and failure in raising the pups to weaning age.

This good nursing care involves most of the things we have discussed previously to include proper temperature, nutrition, bedding, and medications. It is only just carried to a new level with pups' dependent on a bitch that is often still sedated when she arrives back at the kennel.

Bedding can be clean towels or bedding sheets in a small plastic children's swimming pool with a heating pad between the floor and the bottom of the pool. This prevents the bitch from exposure to the electric cord yet providing adequate localized heat for her and the pups. The plastic pool can be washed and sterilized easily keeping the environment clean for the newborn pups and stressed bitch after surgery.

Forced feeding of the bitch with oral fluids and electrolytes can be accomplished with human infant electrolyte formulas such as Pedialyte® and Infalite®. Warmed and diluted human chicken and rice soup in small, but frequent quantities is great for stimulating the appetite of the bitch. Slowly switch back to the more balanced performance diet as soon as her appetite permits by mixing small amounts of her normal diet with the soup and with each meal, increasing the amount of dog food and decreasing the soup.

Follow the dosage of any medications prescribed, but always monitor both bitch and pups for any abnormalities of appetite, respirations, activity, bloating, etc. Often the bitch will have some delay in caring for the pups, so you must make sure they nurse, and that she does not injure the pups while in recovery from anesthesia.

2.4 • Care During Breeding continued

If the bitch is not cleaning up the pups by licking, it is important to use a warm, wet wash cloth to wipe the anus and genitals of the puppies after every feeding. This mimics the bitch's tongue to stimulate both defecation and urination. Keep the bitch and pups close to you until she is fully recovered from anesthesia, even if means bringing her into the house with you!

■ 2.4.2.2 • Care of the Puppy and Bitch after Whelping

After you think whelping is finished, you should make a good effort to make sure all the pups are born, and the whelping is indeed finished. Observing the bitch and even palpating or feeling the abdomen for more puppies is a good idea. If more puppies are felt, then previously discussed directives should be followed to help the bitch finish completely. At the same time you check for more puppies, always check the mammary glands to make sure they are not dry, but hopefully full of milk as the milk is being let down for the puppies to nurse. ALWAYS WASH YOUR HANDS PRIOR TO CHECKING THE MAMMARY GLANDS!

Remember we can be a source of infection for both the bitch and the pups. Make sure the puppies nurse as the nursing process in the bitch stimulates hormonal release to stimulate the flow of milk. During the first hours after whelping, she will produce colostrum which will be replaced by normal milk within 24 hours. Colostrum is more brownish in color than milk and is critical for the health of each pup as discussed earlier in this notebook. It is very important for the puppies to get colostrum within 8 hours of birth. After that time, colostrum cannot be absorbed by the intestines of the puppy, and even if given to the pup, the pup will not receive the critical immune boost from the bitch's milk necessary for early puppy vitality. The bitch's milk should be checked for infection. Indications of bad milk include lumps in the milk, hard swollen and painful mammary glands, restless pups that cannot be satisfied, and redness of the anus of puppies. At this point in time, the pups should eat, then sleep and have minimal whining or restlessness. The bitch's breasts should be firm and warm, but not hot or painful to touch which could indicate mastitis. It is considered normal for the bitch to have some vaginal discharge for 7 days post whelping. This discharge is small in volume and either bloody or blood tinged. Abnormal discharge with larger amounts of blood that does not decrease after whelping with pus or an offensive odor would indicate an infection.

Should the bitch not provide enough milk, you can stimulate milk let-down with Oxytocin given intranasally. Oxytocin intranasal spray or one drop of Oxytocin injection to each nostril of the bitch three times daily will help in milk flow but will not produce milk – only allow it to be let down - making it available for the

2.4 • Care During Breeding continued

pups. Oxytocin should be obtained from a veterinarian and on hand at the time of whelping. You still may need to supplement the pups with milk formula. Supplemental feeding of the puppies is covered later in this Notebook. If the bitch has mastitis or another infection, it is likely she will have it in successive litters, so preventive measures should be taken with subsequent breedings. Amoxicillin and Cephalexin are good early choices for treatment of either, but check with your veterinarian. Weaning of the pups early may be the only solution to save the litter, as mother cannot care for them as needed.

Temperature is critical for the pups. Make sure they are warm and comfortable. Observing the pups helps determine just how they are doing. If they are piled on top of one another, odds are they are chilled. They should be able to get away from the heat as well, so they can actually choose where they are the most comfortable. If the temperature is optimal, the pups should be close to one another but spread out in a comfortable manner when sleeping.

Feeding of the bitch is critical for proper care of the puppies. The bitch should already be on the best performance or lactation diet you can afford during pregnancy. They are balanced correctly so to provide the best nutrition for the bitch and her pups. The total amount of food is increased gradually over the first 3 weeks after whelping. Total volume of food should be slowly but steadily increased to three (3) times normal maintenance volume of food given in divided meals. Puppies should be fed at least two (2) meals daily but three (3) is better if practical. Maximum milk production occurs at 3 weeks post whelping so maximum food intake should match that time frame.

If one can get through the first few days after birthing, we all feel good, but the work is not done. Monitoring the pups and bitch is critical. Obviously watch feed intake of the bitch and monitor the vaginal discharge to make sure it is slowly subsiding. The puppies should be monitored to make sure they are nursing and getting milk. Weighing each pup daily on a postal scale and recording each is time consuming but can be rewarding. It is devastating to find the puppies nursing, but no milk is available. Pups that weigh 20% less than other pups need supplemental feeding. Early diagnosis can also be made generally by observing the pups and bitch. In the early days of life, the pups should nurse, then sleep and nurse again, with little or no whining. Any continued whining means there is a problem, and it is our job to determine what it is the cause. Think temperature (chilled and cannot get warm), nutrition (not enough or infected milk), or infection (of puppies from umbilicus), but get help!

Supplemental feeding can be a life saver when done correctly. Powdered bitch's milk is commercially available and is balanced for proper supplemental feeding. Care should be taken not to give

2.4 • Care During Breeding continued

too much or too concentrated milk as you should remember this is a change in diet for the puppies. Change in diets can be devastating to the pups so make the transition as smoothly as possible.

The most common method of supplemental feeding is with the nursing bottle, but that does not make it the best. Bottle feeding can lead to some puppies getting more than other pups, leading to over-feeding. This is probably the worst thing that can be done as it automatically stresses the pup which can lead to digestive tract infections and septicemia which is most often fatal to a pup. Also, bottle feeding can lead to weak puppies inhaling milk if they have a limited swallow reflex. The best, most accurate and least time consuming is tube feeding. Although it requires some training and special feeding tubes, tube feeding can be easily mastered with training and practice so even the most reluctant kennelman can become an expert. The feeding schedule can be altered to some degree depending on your schedule. Feeding every 4 hours of the waking day is a good option for both kennel staff and puppies. Starting at 6am and then every 4 hours until the last feeding at 10pm will allow staff to sleep at night yet do a good job in rearing the pups. The milk replacement products for the canine can be found in liquid or powdered forms. Both are good, but the powdered form is recommended as you can mix it up fresh for every day feeding and control the concentrations easily. It is best to dilute the concentration to one-half strength when first starting supplemental feeding. This can be accomplished by using one-half the recommended powdered formula with the recommended amount of warm water. Slowly increase the volume and concentrations as the pups gain strength.

The amount to feed is determined by the size and weight of your pups. The average fox hound puppy has a stomach capacity of 18 ml (cc) per pound of body weight. A pup weighing 8 to 12 ounces should receive 9 to 12 ml (cc) at each feeding, but start low and slowly increase to capacity. Weigh and record the weights of your pups. Your veterinarian is a wonderful source of information on training and equipment.

Observation of the puppies is a must for the first few weeks of life and any problems should be dealt with quickly. If the bitch does not clean the pups, we need to do it for them. Licking of the anus and vaginal or prepuce areas of the pups by the mother stimulates defecation and urination respectively. If mother is shirking her duties, we need to do it for them with warm wet towels mimicking the tongue and licking of the bitch.

Weighing and recording the weights for each pups helps in monitoring the pups during the first few days of life to make sure all is progressing normally. If the dewclaws are to be removed, it is done by the 3rd day of life. It is much simpler and much more

cost effective doing it at this age rather than doing it later in life. Removing the dewclaws prevents the dewclaws from being a source of injury later in life during hunting.

Puppies should start to eat on their own at 3 weeks of age. Using the bitch's performance food is great as it is already available, and just needs a little help to gain interest of the pups. We recommend taking a small amount of dry puppy food, soaking it with warm water for it to swell and soften, then adding a very small amount of milk for flavor. This can be divided up in small pie pans with small sides so each puppy has access to the softened food. The milk should be quickly replaced by water as the puppies gain interest in eating. **Do not leave the food down between feedings.** By 6 weeks of age, the pups should be eating dry puppy food a minimum of (2) times per day, but three is better if practical. Remember, their stomachs are small and small meals frequently allow for better digestion and absorption of nutrients. It is important to note that as the puppies eat on their own, it is wise to start reducing the volume of Performance diet given to the bitch. This will help in the transition at weaning.

Pups should be wormed every 2 weeks starting at 2 weeks of age with Pyrantel at recommended dosages until weaning.

■ 2.4.2.3 • Early Death

Many problems tend to repeat themselves; therefore, it becomes important to have all early deaths in pups receive a necropsy by a qualified veterinarian or lab to determine the cause of death.

One of the most avoidable causes of early death in puppies continues to be parasites, especially hookworms and coccidia. Worming at 2 weeks of age and repeating every 2 weeks with Pyrantel will help. The dosage varies with the different trade names of Pyrantel depending on the concentration. At 50 mg/ml concentration, one-tenth (0.10) of an ml (cc) for each pound of body weight. New drugs are now available for coccidia – see section on Coccidiosis Section 2.6.9.12. Please check with your veterinarian.

Another common cause of early death is chilling. Puppies cannot hold their own body temperature steady at over 100 degrees and depend on the environment and the bitch. Heated whelping areas are important for keeping the pups warm. Be sure they can crawl off the area if they get too hot and back again when chilled.

Early deaths can also be related to infections that enter the pup through the broken navel cord. At birth, this is a direct entry for bacterial and viruses into the body where they serve as a source of infection. These relatively small numbers of bacteria can quickly overwhelm the delicate defense mechanisms of the puppy. For this reason, we recommend treating and tying off the umbilical cord immediately after whelping.

The use of a form similar to Figure 2.4-1, Midland Litter Record Form, is recommended.

Year of Whelp _____ Litter No. _____

By _____

Out of _____

Date of Whelp _____

Sex		Name of Whelp	Description	Tattoo No.	Walked By
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				

First Shot DA2MP & Parvo Other Shots DHLPP	Date
6 Weeks Old	
9 Weeks Old	
12 Weeks Old	
16 Weeks Old	
Bordetella Due (16 Weeks Old)	
Bordetella Due (20 Weeks Old)	
Rabies Due (20 Weeks Old)	

Worming	Date
3 Weeks Old	
5 Weeks Old	
7 Weeks Old	
9 Weeks Old	
11 Weeks Old	
Ivomec After 12 Weeks Old	

Figure 2.4-1, Midland Litter Record Form

2.5 • CARE OF THE PUPPY

2.5.1 • Care of the Bitch and Puppy after Weaning

Puppies are weaned from the bitch after 6 weeks. The bitch can be placed back in work to prepare for hunting. She should be allowed to regain her fitness prior to hunting. Additional details of feeding the puppies and raising them is presented later in this notebook.

Often, the mammary glands will swell and be painful just because they are full of milk as the pups are no longer nursing. This is normal and can be managed with hot compresses if severe, but reduction to normal volumes of maintenance diet is critical to controlling milk production. Milking the glands only prolongs the process, as the body thinks the puppies are still nursing, and will only replace whatever you remove. Antibiotics and anti-inflammatory medication from your veterinarian may be needed in severe cases, but time and hot compresses (2) times per day will relieve most cases of swollen mammary glands.

2.5.2 • Diet

Puppy diets should be the same as before weaning. Again, 30% protein and 20% fat is optimal. It is suggested that the first ingredient of the diet be some form of meat. Ingredients are listed according to quantity in the diet, and this assures a meat-based diet. Remember to offer multiple meals, as their stomach is still relatively small.

2.5.3 • Internal Parasites

Puppies should be wormed starting at 2 weeks of age, then every 2 weeks until they are 16 weeks old.

■ 2.5.3.1 • Pyrantel Pamoate

Pyrantel pamoate is also a generic name and is sold for several species in different concentrations. STRONGID T® is the most common Pyrantel trade name referred to in the notebook. Other Pyrantel trade names used were ANTHELBAN® and NEMEX®.

The Pyrantels are commonly used in puppies for treatment of hookworms and roundworm. Pyrantel should be used @ 5 mg (milligram) per kg (2.2 lbs.) of body weight. Be careful as different brands of Pyrantel have significantly different concentrations of medication per ml (cc).

Recent experience with kennels shows resistance developing against Pyrantel. Increased dosages or other wormers may be needed if your hounds show signs of any resistance.

2.5 • Care of the Puppy continued

■ 2.5.3.2 • Internal Parasite Prevention

Parasites (both internal and external) are a constant threat to our hounds and can be a source of several serious health issues for our hounds and our hunt staff. Prevention is much preferred to treatment and will result in much healthier hounds. Parasite prevention (both internal and external) should begin at weaning and continue monthly for the life of the hound.

2.5.3.2.1 • Ivermectin

Ivermectin is a generic name and made for many species in various forms and dosages and is sold under many trade names for the prevention of many parasites and treatment of other parasites. Many wormers marketed for large animals (Ivermectin included) are used in hounds for economic reasons. It is very important to know which form is being referred to when calculating dosages to avoid mistakes. (For example, Ivermectin concentrations can vary with manufacturers, and for species. Cattle, swine and equine Ivermectin can each vary).

Also, the dosage required to prevent various other parasites with Ivermectin is different. (For example, it takes a higher dose of Ivermectin to control whipworms than it does heartworms.) The heartworm dosage is 6 micrograms (0.006 milligram) per kg (2.2 lb.) of body weight once monthly. This would calculate to 0.01 ml (cc) of 1% Ivermectin per 16 lbs. of body weight. For heartworms and other intestinal parasites including whipworms, the dosage is 200 micrograms (.2 mg) per kg. This would calculate to 0.1 ml (cc) of 1% Ivermectin per 11 lbs. of body weight.

Lower dosages of Ivermectin can be used in combination with other medications monthly such as Panacur® (Fenbendazole) or Strongid® (Pyrantel).

Any medication used in this manner, which is not recommended by the manufacturer but used by the kennel or veterinarian, is considered off-label use. Legally we cannot recommend this medication, but your veterinarian can help with such decisions for off-label use in your kennel. Your veterinarian will caution you regarding Ivermectin as certain breeds, notably the collie types, including shelties, and some lines of Walker hounds are acutely sensitive to Ivermectin, and the administration of Ivermectin to these breeds in normal doses by weight for foxhounds may be dangerous, cause seizures and even death.

2.5.3.2.2 • Trifexis®, Sentinel®, Progard®, and Revolution® Preventions

All are commercially available preventions that work to control and prevent internal and even some external parasites. See your veterinarian for any advice as to which is the best for your kennel.

2.5.3.2.3 • Evaluation of Preventative Measures

2.5 • Care of the Puppy continued

Just because we follow directions and use a preventative correctly, it does not guarantee success. We are currently seeing resistances develop to Ivermectin products especially in the Mississippi River sections. The cause is of speculation, but nonetheless real. Other medications show the same as mentioned with personal experience with Pyrantel.

So the question begs – is your kennel affected? The answer is simple but requires some investigation. First, work with your veterinarian to evaluate your preventative program and then have some of your hounds, including puppies, tested for parasites with fecal and blood sample. Fecal flotation for parasites is inexpensive and can easily identify problem parasites. Random sampling of poor doing hounds or puppies would be reasonable and very informative.

2.5.4 • External Parasite Treatment and Prevention

Prevention of fleas, ticks, ear mites, scabies and other mange is an ongoing process in our kennels. The reason: continued exposure – from both the game we hunt, and from the environment where we hunt our hounds. These problems are brought back to the kennel, where (1) or (2) contaminated hounds can expose the entire kennel. This makes regular treatment and prevention a *must* for good management of our hounds.

Baths and dips: although a long standard for treatment of external parasites, they are no longer recommended as the sole means of parasite prevention and treatment. If the hound is dirty or has infected skin, baths can be beneficial. Pour-on insecticides (dips) can help with some forms of mange, but unfortunately, they provide only short-term help for fleas and ticks.

■ 2.5.4.1 • Products recommended for fleas and ticks:

Fipronil has long been recommended to control ticks and fleas. It is available in a commercial form called Frontline®, or in a more economical form from your exterminator called Termidor CS®. Be sure to use chemical-resistant sprayer bottles when using Termidor CS®. It is not absorbed in the body, but is stored in the oil glands of the hair follicles, so it is important to spray evenly over the entire body of the hound, avoiding the eyes. It is very safe and when used properly, will last for one (1) month. The formula for the hound is two parts Termidor CS®, two parts water and one part alcohol.

Oral products recently introduced into the veterinary market with excellent results. Simparica (Sarolaner) by Zoetis, NexGard® (Afoxolaner) by Merial and Bravecto® (Fluralaner) by Merck will work on multiple species of ticks and fleas for one (1) to three (3) months. They treat various forms of mange caused by mites.

2.5 • Care of the Puppy continued

2.5.5 • Vaccination Guidelines for Puppies

Most kennels wean puppies at 6 weeks and begin vaccinating at this time. It is very important to choose the right vaccine as some vaccines, although approved for sale, will not produce quality immunity. Your veterinarian should be a guide to help you choose a good vaccine at a competitive price, but remember, if it is cheap, there is a reason. Nothing is worse than vaccinating and still getting the disease, so do your homework and choose carefully! Administer as directed by your veterinarian and store at proper temperature in the refrigerator. If your vaccines are ordered and delivered to your kennel, make sure they arrive in proper order. No broken vials and cool. If not, return the vaccines for a refund.

■ 2.5.5.1 • 6 Weeks of age

The following diseases are vaccinated against at 6 weeks of age:

- Distemper
- Adenovirus (Type II)
- Parainfluenza (CP I)
- Parvo

■ 2.5.5.2 • 9 Weeks of age

Vaccinate for the second time at 9 weeks with:

- Distemper
- Adenovirus (Type II)
- Parainfluenza
- Parvovirus

■ 2.5.5.3 • 12 Weeks of age

Vaccinate for the third time at 12 weeks with:

- Distemper
- Adenovirus (Type II)
- Parainfluenza
- Parvo
- Leptospira – make sure it contains new strains of Lepto

2.5 • Care of the Puppy continued

- Rabies (Check your local law).
- Bordetella – injectable or intranasal

■ 2.5.5.4 • 16 Weeks of age

Vaccinate for the fourth time at 16 weeks of age with:

- Bordetella – injectable or intranasal
- Leptospira 2nd
- Parvo 5th

* Any hunt with a history of Kennel Cough (Bordetella) exposure should include Bordetella vaccine in their vaccine schedule. If recent exposure is a problem or quick immunity is the aim, then use the intranasal form of Bordetella vaccines-

■ 2.5.5.5 • 20-24 Weeks of age

If Parvovirus is an issue in your kennel, vaccinate at 20-24 weeks of age with:

- Parvo 6th - recent studies have shown that maternal immunity can block the efficacy of Parvovirus vaccine out to 24 weeks of age in some puppies.

■ 2.5.5.6 • Additional Comments

The following comments for your consideration:

- In all areas (even in areas where heartworms are not a problem), heartworm and intestinal parasite prevention should begin at 6 weeks of age. These medications also prevent other parasites besides heartworms so regular administration is paramount.
- A discussion of option vaccines will be addressed in Care of the Adult Hound.
- Other good management ideas which reduce stress and exposure are:
 - Keep pups on concrete (off dirt, etc.) for at least 12 weeks.
 - Deal with fleas and ticks immediately as they can really stress pups and are a source of infections
 - Do not forget about rodent control. It can be an important source of disease control, especially in puppies.
 - If other diseases are prevalent in the kennel after weaning, such as coccidia, start medication at the time of weaning.

2.5 • Care of the Puppy continued

2.5.6 • Adolescence

In an effort to familiarize the puppy with the world, many packs place their puppies with rural families to be raised from the age of 6 to 24 weeks. The process is called “Walking a Puppy Out” and has been a long-standing tradition in some kennels. These pups learn about people, animals, farms, and most of all, hunting as they explore

If puppies are kept at the kennel, they need to learn the basics. Time and energy are needed to teach these hounds how to lead, and stand, as well as learn their names.

Puppies are tattooed for identification as they change a great deal during this period of their life. Puppies should be tattooed by 6 to 8 weeks of age. Microchips can be implanted at this time if needed for identification.

Remember to continue parasite prevention and vaccinations if your pups are sent out to other families for “walking out”.

2.6 • Care of the Adult Hound

2.6.1 • Puppies Returning from Walk

This section starts with the puppy at 6 months of age. They pup has been taught to lead and walk out and has been made aware of the exciting animals and things that exist in our world. They have been introduced and reprimanded if unruly. Puppies at this age may be placed in with the pack if they have the size and strength to thrive in the main kennel. This is a big part of their training as they can then assume the life of the adult hound.

Just as with puppies, observing these young hounds is critical to make sure they are acclimating well. Watch for bullying and make sure they can get to their proper share of ration.

2.6.2 • Daily Check and Feeding

The first task each morning is to inspect the pack and all the runs. Especially observe the stools from the hounds for consistency, color, and any evidence of internal parasites. These rituals will help to find any illness or wounds that may have occurred over the evening.

Isolate and treat any sick or injured hounds as needed.

Medication should be dispensed as needed at this time. This is followed up by feeding the hounds. Special care must be taken to ensure that the thin or skinny hounds are allowed to eat. Either the heavier hounds can be taken away from the food early or let in to eat after the thin hounds have gotten their share. This is probably one of the most important activities, as an underweight or overweight hound cannot perform to their potential.

2.6.3 • Diet

The diet of the working hound should be closely monitored as it must be adjusted for his workload. As a general rule, you should feed the very best feed that you can afford. By maximizing nutrition, you can significantly influence the stamina of your hounds. Quality of the protein is important - not just the percent of protein - but remember good quality protein is expensive. Percentage of fat is important as that is where hounds get much of their energy. Fat has

2.6 • Care of the Adult Hound continued

the most profound effect on increasing stamina in hounds. As the distance and duration of the hunt increases, our hounds need more calories with fat being an excellent source of concentrated energy. Dietary fat has double the calories per gram of protein and carbohydrates.

Diets are measured and compared by the amount of energy available to the hound by the number of kilocalories (k/cal) in a specific measurement of food. All dog food companies are required to calculate and label the calorie content on the bag. Usually, it is done in the format of k/cal (kilocalories) per cup (measured 8-ounce cup), but maybe in k/cal per kg (kilogram) of their diet. Maintenance diets have approximately 360 k/cal/cup. Performance diets should have approximately 430 k/cal/cup with 30% protein and 20% fat, 22% carbs, and a calcium phosphorus ratio close to 1:1. Hunt season diets should be 30% protein and 27% fat. This will require some supplementation of fat. We suggest corn oil at the rate of 1 ounce (2 tablespoons) per hound per day.

It is advisable to figure a gross weight or volume of food fed per hound and use that as a reference point for the amount of feed you should be feeding daily. Visual inspection or evaluation of each hound's condition is a good guide as to their nutritional well-being, plus observation of the level of exhaustion after a day's hunt. Dietary modification for our hounds should be based on distance hunted and not on the perceived intensity of the hunt along with general condition and level of exhaustion after a hunt. As a general rule, our hounds require 0.8 k/cal (kilocalories) per pound of body weight per mile traveled while hunting. This will vary, as heavy-muscled hounds need different calorie levels than long-legged thin hounds as their metabolism differs. It is relatively easy to determine the distance traveled by the average hound on your hunt with use of GPS collars available today. When calculating the calories, do not forget to add any supplementation such as corn oil. Two (2) tablespoons of corn oil to each hound as recommended will add about 200 calories (0.2 kilocalories) to each feeding.

An example for your review:

Given: Fifty-pound hound hunted two (2) times per week (average 25 miles traveled per hunt) and exercised daily (average one (1) mile traveled daily per exercise) for an average of 8 miles per day fed a performance diet of 430 k/cal per cup of food with 2 ounces of corn oil added per day.

Calculations: 50 lbs. X 0.8 k/cal X 8 miles per day average equals 320 k/cal required. Corn oil adds only 0.2 k/cal. If you use a diet with analysis of 430 k/cal/cup, you will need to feed 5.9 ounces of food or almost three quarters (3/4) cup per hound per day. Your

2.6 • Care of the Adult Hound continued

hunt, your schedule, and your hounds will vary from this so feed volumes will need adjusting regularly during the year.

The summer months are hot, and the workload of the hound is far less. Off season diets of 23-24% protein and 10-15% fat can be used to help save cost, but we should make any diet change gradual over several days. But remember, it can take up to 12 weeks for our hounds to adapt to a new diet when hunt season starts. So make your changes well in advance of hunt season. Current recommendations and my experience have shown that reducing the quantity of feed fed in the summer is best and not changing the diet – just lower the volume to adjust to their work schedule. Remember, the distance hunted or exercised is the most important factor in determining the volume of food needed. Less hunting requires fewer calories as their calorie requirements are directly related to distance hunted.

Some hunts use biscuits, chicken necks, or other food supplements to keep the appetite sharpened. With the quality of commercial diets today, we cannot prepare a food that is as balanced as a good quality commercial diet. In fact, we need to be very careful about any supplements added, as we may create an imbalance of nutrients and in our effort to help, actually hurt. Corn oil can be added safely as mentioned earlier, but meats can create an imbalance. Our best advice – LET THE FOOD COMPANY BALANCE THE PROTEIN IN YOUR HOUNDS DIET!

One supplement that we need to mention is glucose. Addition of a glucose supplement to your regimen just prior to and just after hunting will enhance performance and help prevent fatigue, especially in multi-day hunts. This can be accomplished by adding commercial maltodextrins in the form of biscuits or in the form of simple sugar water. The formula for the sugar water is 4 ounces of sugar to 1 gallon of water with 15 ml (cc) given to each hound by mouth. For full effect, the sugar water needs to be done at a time when the hounds are excited prior to exercise, as they anticipate the day's hunt.

Water does not need to be overlooked as a nutritional requirement. Hydration is critical for safe and maximum performance. Free water is needed at all times and frequent watering while hunting is critical.

Electrolyte supplementation is a major consideration by human athletes, but not so with the canine athlete. Hounds have the ability to develop natriuresis (excess excretion of sodium through the kidneys) during exercise. This prevents dangerous changes in plasma electrolytes despite dehydration. Dehydration is rapidly corrected by free water consumption in the hound after exercise. Performance diets as we have recommended provide adequate levels of electrolytes even for the most stressed and hunted hounds.

2.6 • Care of the Adult Hound continued**2.6.4 • Check for Bitches in Heat**

Spending time with the hounds and observing just what is going on in the kennel is a must. Each day, the bitches should be checked for the first sign of the heat cycle or estrus.

There are many methods that work. Most packs will use a number of dog hounds on a daily basis to review the bitches, but it is highly recommended that dogs and bitches be kept separate.

2.6.5 • Exercise and Handling

The exercise programs of packs vary widely, but it can be said with assurance that walking out daily is the best for all. The walks are not to be overly restrictive, as this is the time for these fit animals to relax and play. This is not to say they should be allowed to riot, but it is to say that they should be allowed to fail and then be immediately corrected. This gets into training and is not covered in the Kennel Notebook. We are primarily concerned with hounds getting exercise so that they will be fit when it is time to run. This is also a good time to ensure their bond with the pack, the horn, and the whips.

The hounds are addressed by name so that they will know their names and so will persons who assist in the kennel. Some hunts call each hound by name as they are put back into the kennel to ensure their presence and to reinforce that hound's name and his willingness to be handled. This reinforcement makes the days out hunting easier. First, you can catch them, and second, they know when you are addressing them.

2.6.6 • Worming and Internal Parasite Prevention

Once a month hounds should be given a preventative for internal and external parasites. This would include heartworms, intestinal parasites as well as fleas and ticks. Preventatives such as ivermectin and Sentinel® are recommended to prevent both heartworms and intestinal parasites. Because of economics, ivermectin is used most often. The dosage rate varies according to the parasite so refer to the dosage rate in the Puppy Section 2.5.

Flea and Tick prevention should also be continued. Several products are available. See the Puppy Section 2.5.

■ 2.6.6.1 • Heartworm: Disease, Cure and Prevention

This following is information obtained from several sources including the American Kennel Club and American Heartworm Society. Its purpose is to describe the mechanics of heartworm parasitism.

At the present time there are several recommended medications to

2.6 • Care of the Adult Hound *continued*

prevent heartworms: Sentinel®, Proheart®, Heartgard®, Revolution®, and Trifexis® to name a few. All are administered monthly, and are excellent, but expensive. Ivermectin, administered once a month in a concentration required for controlling heartworm, is a method used by many hunts. The recommended level of dosing is found in Puppy Parasite Section 2.5.3.2.1. Please consult your own veterinarian, as this is an off-label use of the product.

It is most important that there be no interruptions in the use of prevention. The reason is that the medication will not only prevent heartworms, but also other parasites as well. In areas where heartworm is uncommon, periodic testing may be sufficient, but other methods of prevention should be used. We should remember that heartworms have spread in the last few decades and is now found in quite cold climates. The test and treat method of heartworm control is not recommended. It can lead to fatal or debilitating health conditions prior to being discovered.

Remember, PREVENTION is the key to keeping hounds healthy and performing well, and it far less expensive than treatment. Plus, prevention of heartworms will help prevent other parasites which can be contagious to other hounds and even kennel personnel.

Canine heartworm, caused by the parasite *dirofilaria immitis*, affects not only the dog, but has been found throughout the world in various species of cats, coyote, wolf, ferret, fox, bear, raccoon, jackal, and muskrat. It has also been found in man rarely and principally in the southern climates.

The carrier in the passage of one mammal to another is the mosquito. There are many varieties of mosquitoes, and nearly all of them can act as intermediate hosts of the heartworm larvae.

The infected mosquito bites a dog, or other animal, inoculating one or more larvae into the hound. These larvae migrate and mature in 4 to 6 months reaching their final destination – the right side of the heart. These adult worms are then capable of reproduction, and they produce microfilaria which enter the bloodstream.

Microfilariae are not infective to the dog, and cannot mature in the hound. They must be picked up by a mosquito in which they develop into the infective larvae stage. Infective larvae are injected into the dog through the mouth parts of the mosquito, and the cycle begins all over again. Female adult heartworms reach 12 inches in length, but the male worm is much shorter. Both live in the host for several years, causing heart muscle damage and impaired blood flow and lung capacity.

Clinical signs of heartworm disease may not occur until the hound has harbored the parasite for several years, depending on the number and sex of the worms with female worms being much larger

2.6 • Care of the Adult Hound continued

than male worms. The first sign of the presence of heartworms is often a non-productive cough which is made worse by exercise. As the disease progresses, tiring and fatigue with increased difficulty in breathing are often seen. As the infection advances, momentary lapses of consciousness, swelling of the legs and body, and emaciation are frequent signs.

Diagnosis

The most common method of diagnosing heartworms is by testing the blood. Occult heartworm Snap® blood tests are the most accurate and can diagnose heartworms much earlier than previous methods. Hounds which are suspected of harboring heartworms can also be checked by other means. These include chest x-ray, ultrasonography and/or electrocardiogram. These additional tests will help determine the severity of heartworm disease, amount of damage done and chances of full recovery.

Treatment

Once the dog has been diagnosed positively to have heartworm disease, the treatment must be undertaken in two (2) stages. The first stage is to eradicate all the adult worms in the dog. At this point, a decision must be made whether the dog is in good enough condition to withstand the treatment. A dog which has been severely weakened, and whose pulmonary system has been damaged by the presence of heartworms over a long period of time, is a poor risk. In such cases it is best to try to strengthen the condition of the dog with heart-supportive drugs before attempting to eliminate the heartworms. In simple terms, the treatment is to kill the adult worms which are living in the dog's heart with a controlled dose of a medication. —

Immiticide® is one such treatment. Although much safer and more effective than older treatments of Caparsolate®, it still has problems. The dog must remain kenneled following treatment for several weeks. Death of the worms usually occurs within ten (10) days, at which time occasional signs of pulmonary embolism may occur. This is evidenced by coughing and fever. Dogs with long standing disease caused by major infestations of adult worms run a severe risk of pulmonary embolism, due to the masses of dead worms clogging the blood vessels leading from the heart. This is the reason that a veterinarian's counsel is necessary on whether a dog is a good candidate for treatment.

Another treatment option is MOX-DOX (aka Doximectin, aka Moxxy-Doxy, aka MOXY), a protocol that involves administering topical moxidectin (Advantage Multi) monthly and doxycycline PO at 5 mg/kg q12hrs (or 10 mg/kg q24hrs) for 1 month. Efficacy is 89% and the protocol is as safe and effective as Immiticide treatment. It can also be accomplished in house. Kennelmen should be instructed not to allow their hound to exercise strenuously (e.g., no hunting). When to start doing repeat heartworm antigen tests is debatable but it

2.6 • Care of the Adult Hound continued

makes no sense to repeat one prior to 6 months and probably makes the most sense to start at 9 months and then every 3 months after that until the test is negative.

If the test is still positive at 15 months, the dog likely still has 1-2 live adult heartworms remaining. Options if that occurs include 1) doing nothing other than monitoring the dog radiographically every 6-12 months for 1-2 years if the dog has no radiographic heartworm disease at that time; 2) administering melarsomine to try to kill the remaining worms; or 3) administering another course of doxycycline and continuing the topical moxidectin.

Microfilaria circulating in the blood of an infected animal will not by themselves be detrimental to the dog, since they must pass through a mosquito to become infective. However, they may be picked up by a mosquito which will then infect the same dog or another within range of the mosquito's bite. Therefore, treatment for microfilaria should be administered during treatment for the adult heartworm.

Prevention

The third stage in the control of heartworm in the dog is prevention. This has been covered in other sections of the notebook.

With heartworm disease, the adage, "An ounce of prevention is worth a pound of cure," was never more appropriate

■ 2.6.6.2 • Intestinal Parasites

Good management in your kennel is the key to parasite control. Three main guidelines are as follows:

1. Isolate any new hounds added to the kennel to prevent contamination of the environment. Also, it is a good idea to isolate any hound(s) that look unthrifty, or you suspect may harbor parasites.
2. Immediately have fecal exams done on any hounds losing weight, with blood in their stool, or that just look unthrifty.
3. Perform microscopic fecal exams on any new hounds. Be sure fecal examination are done by the centrifuge method, as it will be approximately 50 percent more accurate than conventional methods of stool examinations.

The bottom line is that parasite prevention is much better than treatment. Do not try to "shotgun" a problem. Get professional advice with a problem and eliminate the source in your kennel. Then go for prevention.

2.6 • Care of the Adult Hound continued

There are several common types of worms that can infect our hounds. They present a significant health threat not only to our dogs but to our kennel staff and any children that visit the kennel. They are the whipworm, tapeworm, hookworm, and roundworms.

2.6.6.2.1 • Whipworms

Whipworms have a white or gray-colored whiplike body and are two to three inches long at maturity. They are usually found in the cecum (a blind pouch located between the large and small intestines) of the dog, similar to the appendix in humans.

Whipworm eggs pass in the droppings from the hound and contaminate the soil. Infestation occurs when the dog swallows embryonated eggs picked up in contaminated water or food, or by licking feet after exposure to contaminated soil.

Symptoms of severe infestation are periodic diarrhea and unthriftiness. Animals with severe cases of whipworms may die if left un- treated.

Veterinarians can identify infestation through microscopic examination of feces for whipworm eggs. Centrifuge method fecal examinations for worm eggs by your veterinarian are recommended.

Treatment of choice is Fenbendazole (Panacur® and Safeguard®) given orally for three (3) consecutive days. It is both economical and effective for whipworms. Dosage rates are 50 mg / kg per day for 3 days. Good kennel sanitation and management practices and placing the hound on effective prevention is a must to help reduce the occurrence of internal parasites.

2.6.6.2.2 • Hookworms

Hookworms cannot only cause serious internal injury in puppies, but also be of serious concern in the adult hound. They are grayish white in color, 1/2 inch in length, and can be found in dogs in most sections of the country.

The adult female worms attach to the small intestine and deposit a large number of eggs which pass in the hound's droppings. Eggs develop in the soil just as in whipworm, but these parasites enter the hound in different manners. The infective larvae in the soil can enter the hound by swallowing contaminated soil and also by penetrating the skin of the hound.

Puppies are especially susceptible to hookworms. The migrating larvae may pass from the mother through the uterus even before they are born and through the colostrum (mother's milk) to the nursing puppies. Consequently, pups are sometimes heavily infested shortly after birth.

2.7 • Care of the Adult Hound continued

The anemia that results from failure to treat heavy hookworm infestation will usually be fatal to newborn pups. In older dogs, symptoms include general unthriftiness, poor stamina, and general poor growth of the dog.

Diagnosis and treatment for hookworms should be done by a veterinarian by centrifuge method of fecal examination. The medication for treatment is Pyrantel. Dosages are found in other areas of the notebook.

As with other types of intestinal parasites, the combination of good kennel sanitation and management practices, plus placing the hound on effective prevention, is a must!

2.6.6.2.3 • Tapeworms

There are several different species of tapeworms that can affect our hounds. Tapeworms are spread through intermediate hosts such as fleas, lice, rodents, fish, and snakes. These intermediate hosts are necessary in order for each species of worm to complete its life cycle. Fleas remain the most common carrier or intermediate host of tapeworms.

Symptoms of tapeworm infestation in dogs include digestive disturbances and unthrifty appearance. Tapeworms may pass in the droppings and can, through the intermediate host, infest other livestock and our kennel staff.

A dog infested with tapeworms may occasionally be seen sitting down and dragging its hindquarters over the floor or ground. This is due partly to the irritation that worm segments cause when they pass.

The owner can usually determine tapeworm infestation by recognizing rice-like segments of the worms in the droppings. Treatment for tapeworms is to give the dog a dewormer designed for use against the particular species. In addition, it is important to rid the dog and the dog's living area of the intermediate host, such as fleas, so that re-infestation does not occur.

Treatment can include several different choices of medication, depending on the species of tapeworms present. Fenbendazole, given over 3 days, or Praziquantel (Droncit®), given by oral or injection form. Always follow specific worming instructions and consult your veterinarian.

2.6 • Care of the Adult Hound continued

2.6.6.2.4 • Roundworms

One of the most common internal parasites in dogs is the large intestinal roundworm (ascarids). These white or yellowish-colored parasites measure 2 to 8 inches at maturity.

Roundworm larvae can migrate through the blood system of the pregnant bitch to her developing pups, and even infect the mammary glands, contaminating the bitch's milk. This emphasizes the importance of an effective deworming program for breeding females before breeding, during pregnancy and after whelping.

The presence of roundworms in young dogs is characterized by marked enlargement of the abdomen, unthriftiness, listlessness and possible digestive upsets. If the infestation is severe, worms may be visible in the dog's droppings or in their vomitus.

Many times, adult dogs may develop immunity against roundworms; therefore, it is a less serious problem in mature dogs, but they serve as a source of infection to other hounds and to humans. Remember, roundworms are the most common and serious infection to our hunt staff. The roundworm larvae can cause catastrophic damage to humans including, but not limited to, blindness in children.

2.6.6.2.5 • Resistances Developing

In several parts of the US, traditional medications used for prevention of heartworms (and possibly other parasites) are no longer effective. This is due in part by the long-term and low-dose use of the product(s).

So how do you know if the medications you are giving are actually working? You may suspect it by closely observing your hounds to evaluate their condition and exercise intolerance; however, the best practice is to have your veterinarian test several of your poorer dog hounds periodically for both intestinal parasite and heartworms. It can pay off big dividends for your

2.6.6.2.6 • Conclusion

The best methods for controlling internal parasites are to follow strict kennel sanitation and management practices, collect fecal samples for microscopic centrifuge examination on a regular basis, establish a routine prevention and treatment program for all dogs, and follow your veterinarian's advice and package instructions on the use of deworming medications.

2.6.7 • Vaccinations

■ 2.6.7.1 • Rabies

Hounds must be vaccinated for rabies in accordance with state laws.

■ 2.6.7.2 • Vaccination Program for the Adult Canine

- Canine Distemper
- Bordetella
- Parainfluenza
- Leptospirosis
- Parvovirus
- Optional Include
 - Lyme
 - Rattle snake vaccine

CURRENT RECOMMENDATION FOR ADULT HOUNDS:

One year of age after full series of vaccinations as puppy

- Rabies
- DHPPV – Distemper, Hepatitis, Parainfluenza, Parvo
- Leptospirosis – 4 way
- Bordetella - injectable

Annually thereafter:

- Leptospirosis – 4 way
- Bordetella - injectable or oral

Every 3 years thereafter:

- Distemper
- Hepatitis
- Parainfluenza
- Parvovirus
- Rabies * - when state law and exposure levels dictate

2.6 • Care of the Adult Hound continued

Economics and geographical location may dictate many of the choices for our health programs. Some considerations include:

- Kennel Cough (Bordetella): The ideal is to vaccinate twice a year with the intranasal form or annually with the injection or oral form of vaccine. If this is not possible, Bordetella vaccines are given 2–4 weeks before a performance trial and hound show season with the intranasal form of vaccine. This will increase your protection during peak exposure at decreased expense.
- Lyme Disease: Success with vaccines for Lyme disease is still a very debated subject. If you are in an area with this problem, contact your veterinarian for advice. Do not forget good tick prevention!
- Rattle Snake vaccine (Crotalus Atrox Toxoid): Although developed for rattlesnakes in California, it has proven through practical experience to have cross reactions to rattlesnakes in other parts of the country. Your veterinarian should be consulted.
- Influenza remains an emerging disease. Two strains are now affecting canines. The first strain evolved in Florida from equine influenza and the second, H3N2, ~~new~~ Asian strain seems to have evolved from avian influenza. Vaccine is available for both strains.

2.6.8 • External Parasites-Prevention

A wide variety of external parasites possess the ability to attach to the skin and cause problems that range widely in severity. These parasites can live on the skin (example is Cheyletiella mites or walking dandruff) and subsist on the debris which is present on the surface of the skin. Others survive on the skin but will penetrate the surface to draw nourishment from blood and tissue fluids (fleas, ticks & sucking lice). There are still others that live in or under the skin for at least part of their existence, producing more severe effects as observed in mange mites.

Fleas and ticks for centuries have been sources of infection for our hounds and humans. Recently, even more diseases have been tied to tick bites, especially in man. It seems these diseases have been present for some time, but now are more ~~prevalent~~. In part, our transient society is the cause of the spread of these diseases today.

Whatever the reason, we must pay closer attention to prevention of these diseases and the external parasites that spread them. New medications and preventions have made this possible, but prevention of fleas, ticks, ear mites, scabies and other parasites is an ongoing process in our kennels. The reason: continued exposure from both the game we hunt and from the environment in which we hunt our hounds. These

2.6 • Care of the Adult Hound continued

parasites and subsequent diseases they spread are brought back to the kennel where one or two contaminated hounds can expose the entire kennel. This makes regular treatment and prevention a must for good management of our hounds.

■ 2.6.8.1 • Fleas

The flea is the most common and widespread of all external parasites. Flea bites can be irritating, and many animals eventually develop a sensitivity which results in a nonspecific skin infection. Fleas also suck blood, which can lead to anemia in poorly conditioned dogs and young puppies. Fleas are also capable of transmitting bacterial and viral diseases as well as tapeworms. Most owners can recognize fleas and flea dirt which are found anywhere on the animal's body. Flea dirt is actually flea excrement and is mostly made up of blood sucked from the dog, passed through the flea's digestive system and finally eliminated as dried blood. It is important to remember that the adult flea can live off the dog for as long as ten (10) days without a blood meal, but the flea egg can live in the nymph stage for over one (1) year, only to hatch in favorable environmental conditions.

Elimination of fleas on an animal is best accomplished by regular preventative medications. Combinations of both shampoos and insecticide pour-on products (dips) are no longer recommended as preventions because of their short duration of effectiveness. Baths are still advised to remove debris and dirt from the skin if needed. Flea collars are ineffective and impractical for our hounds.

The best products for tick and flea prevention were discussed in the Puppy Section 2.5.4.1.

Fleas spend over 90% of their life cycle off the hound. Therefore, control measures should include cleaning the environment: simple vacuuming or washing will remove large number of eggs, larvae or nymphs, but is only part of control. One major point to remember is that the treatment of the dog and cleaning of his environment should coincide. One should always make sure you control external parasites on any dog that may enter the kennel area, which may be a source of flea infestation.

■ 2.6.8.2 • Ticks

Ticks are hardy and active parasites which attach to the skin and suck blood until engorging to the size of a pea or even larger. They may be found anywhere on the body, but especially around the head, neck, and shoulders. Ticks often attach to both sides of the ear flaps and on the posterior margins of the ear. Ticks injure an animal by the irritation of their bites, by serving as carriers for bacterial diseases, viral diseases, Spirochete diseases such as Lyme (Borreliosis), Protozoal diseases such as Babesia and Rickettsial diseases (Ehrlichiosis, Rocky Mtn Spotted Fever and others),

2.6 • Care of the Adult Hound continued

protozoal diseases such as Babesia, viral diseases, as well as by producing tick paralysis through their poisonous secretions. These infections are not only a source of infection to our hounds, but pose the exact same risks to any humans in touch with the hounds. These diseases will in most cases not transfer to our kennel staff directly from the dog, but the ticks will certainly spread any of these diseases to us if we are bitten by the tick. Therefore, if our hounds are affected, a tick bites an infected hound, then is transferred to us, the potential exists – so be vigilant! **When ticks are first noted, it is time to take action.** Better yet, if you know ticks are a probability, then keep your hounds on prevention.

Never remove ticks with bare hands, but use tweezers, forceps or gloves. Grasp the head parts at the surface of the skin gently with a pair of tweezers and apply firm traction.

It is best to use preventions such as oral or topical medication. Tick collars (Preventic® Collars, Seresto® Collars) are very effective for up to eight months of continuous protection, however, the way hounds are kenneled ~~does~~ would not allow control of chewing off the collars and the possibility of swallowing parts of the collar, which is very toxic if consumed. Proceed with caution.

Several oral products are available that are also very effective. NexGard® (Afoxolaner) by Merial, Simparica® (Sarolaner) by Zoetis and Bravecto® (Fluralaner) by Merck will work on multiple species of ticks and fleas for one to three months. They also treat various forms of mange caused by mites. Cost is a major factor at this point.

■ 2.6.8.3 • Ear Mites

Ear mite infestation of dogs is a common problem throughout the country. The life cycle occurs entirely in the dog usually within one month. Their presence is relatively easy to detect and is indicated by frequent scratching of the ears or head shaking by the infected dog along with an obvious coating of black debris inside the ear. This debris is a mixture of dried blood, inflammatory exudate, ear mites and natural excrements of the ear itself. If the ear mite infection is ignored, it will almost inevitably be followed by a bacterial infection that spreads deep into various part of the ear.

It is essential that irritating substances such as alcohol be avoided as well as some of the commercial miticides. Medications to treat and prevent ear mites are available from your veterinarian. The most common is Tresaderm®, but Ivermectin given at 2 week intervals for two treatments is also a good treatment. The simplest option is Bravecto®, (Fluralaner) which will kill ear mites in one oral dose. If the ear condition fails to respond or becomes worse during the initial treatment, re-evaluation is necessary.. Secondary bacterial infection may require topical antibiotic therapy

2.6 • Care of the Adult Hound continued

■ 2.6.8.4 • Mange

Mange is a term encompassing several forms of skin infections caused by small mites that live in and on the skin of our hounds. Mange can be very contagious to other hounds and even to the kennel staff. Most forms cause very intense itching, but all cause hair loss and some type of skin infection. One form of mange (demodectic or Demodex) is inherited, and control requires close evaluation of your breeding stock.

Demodex: Demodex is not a contagious disease. These mites do not transmit to other hounds. There are two types of demodectic mange: localized and generalized.

Localized Demodex is identified as no more than two body regions and no more than four lesions or “spots”. Lesions are areas of hair loss with or without redness that are generally not itchy. Most commonly a puppy problem, 90% of these cases are self-limiting. Monitoring rather than treatment is recommended because treatment makes diagnosing Generalized Demodex more difficult. In these cases, antibiotics are sometimes indicated for secondary bacterial skin infections. Generalized Demodex needs to be identified and noted as soon as possible for future breeding purposes as affected hounds are not good candidates.

The generalized form begins as a localized patch, but instead of improving it rapidly spreads to the legs and trunk. Each small area involved increases in size until the entire animal is covered. Usually, the generalized form is further complicated by the presence of skin bacteria. This complication develops the typical crusty, bleeding, exudative type sores that are encountered in most chronic cases of mange.

Once generalized Demodex is diagnosed, treatment with Bravecto or Simparica combined with antibiotics is very effective. Treatment results in 97% live mite reduction in 14 days and no live mites in 30 days. Treat on Day 0, 30 and 60. Advantage Multi topical and oral ivermectin are also options. Mitaban (Amitraz) dip is typically not used anymore because of the development of less toxic and more efficacious treatments.

Again, with Demodex, one should evaluate their breeding stock, as it is much better to prevent than treat demodectic mange. Previously positive bitches can transmit the demodex mites to their litter. We should be very hesitant to breed any bitch that has tested positive at any time in her life, even if she is clear at present.

Sarcoptic Mange or Scabies: Mites of the *Sarcoptes* family can affect hounds, foxes, coyotes and even humans. This mite is highly contagious, therefore all animals in proximity to the affected hound will need to be treated. Intense itching and hair loss are the most significant findings, but it may take skin scraping from your veterinarian to differentiate from other forms of mite (Demodex) or skin infections such as pyoderma, skin allergies, etc.

2.6 • Care of the Adult Hound continued

Fortunately, scabies is easily treated with common oral flea and tick medications in one dose. These include Nexgard, Simparica, and Bravecto. Oral ivermectin is also effective but requires a longer course of treatment.

Cheyteliellosis: Cheyteliella or Walking Dandruff is a form of skin infection caused by small mites that you can actually see with your naked eye – hence the name. Like other forms of skin disease caused by mites, these mites can infect foxes, coyotes, and our hounds as well as kennel staff. On close exam, you will see small flakes of white dandruff looking material that actually move on the coat of the hound. It is contagious but is easily treated with flea and tick products, specific dosages of ivermectin and cleaning up the environment

■ 2.6.8.5 • Fungal and Yeast Infections of skin

Ringworm: Young animals are more commonly affected than older ones with *Microsporum Canis*, the agent most responsible for ringworm infections of hair and skin. Generally, the infection progresses through the hair shaft and down to the base of the hair follicle. The typical lesion encountered in ringworm is a circular hairless spot with dirty grey or brownish-yellow scabs usually around the head and the fore and hind legs. As the infection progresses, the small lesions may increase in size and cover a large area of the body.

This condition is contagious to other animals and man. It can last from a few weeks to months or even years. Consequently, it is essential that proper treatment and management programs be initiated promptly. Treatments include topical and systemic medications and treating the environment. It is necessary to sterilize or destroy beddings, leashes or other contaminated equipment with dilute 10% Clorox (one part Clorox to 9 parts water).

2.7 • Other Medical Aspects for Treatment of the Hound

■ 2.6.9.1 • Ears

Ears can be a source of constant irritation to both the hound and staff. Infections should be obvious and treated appropriately.

Cuts can be very slow to heal, and trauma can lead to hematomas of the ear pinna (blood clot under the skin of the ear). For first aid, fold the injured ear pinna or flap over the head and secure against the top of the head by wrapping a bandage around the entire head of the hound. This prevents further damage or trauma until appropriate therapy can be initiated.

Commercial ear canal flushes such as Vet Solutions®, EpiOtic® and Cerumene® can be good methods of cleaning the ear canal. They can help prevent both infections and wax buildup.

2.6 • Care of the Adult Hound continued

■ 2.6.9.2 • Moist Dermatitis (Hot Spots)

This condition is characterized by redness and formation of blisters on the skin which rupture and discharge pus or a watery substance. The discharge causes the hair to mat, which in turn causes additional irritation to the skin. The areas initially involved are the tail, back and shoulder areas. The condition can be the result of scratching at impacted anal glands, licking, infestation of external parasites (fleas) or some type of local skin irritant.

Some animals are more sensitive than others and may experience periodic or seasonal reoccurrences of this condition.

The condition is managed by clipping the hair from the involved area. The area is then washed with a medicated shampoo and dried. Small areas can be handled with recommended localized medications but more serious cases will have to be treated systemically with oral antibiotics and anti-inflammatory medication.

■ 2.6.9.3 • Lick Dermatitis (Lick Granuloma)

This is a lesion that occurs as a thickened, red, denuded type sore located on the lower fore or hind legs. It is a result of constant licking of the area. Generally, it is observed in dogs that are bored and left alone all day.

The lesions are progressive in nature, with a loss of hair being the first indication. As the licking continues, the top layer of the skin is eroded and an ulcer develops. The skin becomes thickened as a result of increased cellular growth in the immediate area. In most cases, the lesion is singular but multiple areas can be possible.

Treatment includes:

1. Stopping the itch-lick cycle with an Elizabethan collar or bandage. Topical steroids with DMSO may help reduce the inflammation and itch.
2. Treat the underlying cause such as allergies or environmental stress.
3. Treat secondary infections with antibiotics.
4. Supportive therapy. CO2 laser therapy by your veterinarian has proven successful in cases of lick granuloma. Acupuncture is also an option.

■ 2.6.9.4 • Eyes

Sterile Eyewash (normal saline or dilute salt solutions) are a must for eye injuries. Use it liberally to clean the eye and surrounding

2.6 • Care of the Adult Hound continued

tissues until appropriate treatment can be initiated. An excellent eyewash for emergency situations when sterile solutions are not available is dilute salt water. This can be prepared by adding one teaspoon of table salt to one pint of water. Evaluation of an injured eye for foreign objects, ulcers or infection is equally important. Do not use an eye ointment with a corticosteroid without first staining the eye with fluorescein to identify potential ulcers or scratches. Steroids delay healing in the eye and can be detrimental to a corneal injury.

■ 2.6.9.5 • Pads and Feet

By far the most common foot injury is from cuts, lacerations, and of course foreign bodies such as thorns and grass seed head. Both should be dealt with immediately to prevent further damage. Your veterinarian can be a wonderful source of information.

■ 2.6.9.6 • Cuts and Wounds

Wounds and cuts should be cleaned liberally with saline solutions (mild salt solution prepared the same as eyewash described above), and cleaned with a mild or antimicrobial soap. The hair should be clipped around the wound with a good pair of scissors or clippers with sharp blades. Appropriate antibiotic therapy should be started. Topical and systemic (oral or injectable) antibiotics should be used as deemed necessary.

Suturing or stapling helps most wounds and will always shorten the healing time of open wounds. Although time consuming and expensive, it can help bring a hound back to work much faster. Just be sure not to trap debris, foreign material, or infection in the wound when it is closed by sutures or staples. Drain tubes are available to help with any tissue discharge.

■ 2.6.9.7 • Pneumonia

Pneumonia or other respiratory infections can be a serious problem in some kennels. There is usually some underlying cause, from tick borne infections to foreign bodies such as inhaled grass seeds, kennel cough exposure, influenza or distemper, etc. Finding the cause and using the appropriate treatment is the key to success. Your veterinarian is a wonderful source of information and help.

■ 2.6.9.8 • Lyme Disease

Lyme disease is a spirochete bacterial infection spread by ticks from dog to dog and even to humans. Lack of tick control is a major factor in the spread of the disease and vaccines are available as detailed earlier in the notebook – see Vaccination for the Adult Canine Section 2.6.7.2. Lyme vaccine use and efficacy is the subject of debate among veterinary specialists. Do not vaccinate Lyme positive hounds. Consult your veterinarian when considering its use.

Diagnosis is made through laboratory testing, and treatment includes tetracyclines or other cycline derivatives such as doxycycline and minocycline.

2.6 • Care of the Adult Hound *continued*

Prevention is the MOST effective method of avoiding tick borne disease.

■ 2.6.9.9 • Blastomycosis

Blastomycosis (Blasto) is a fungal infection that originates in the lungs and then spreads to other parts of the body, including skin, eyes, lymph nodes and bone. It can affect our hounds and humans alike, but is only spread through the soil. Endemic areas are the Ohio and Mississippi River valleys and the majority of bordering states, including southern Canada.

Signs of Blasto can be varied, as the organism can affect so many parts of the body. Any unthrifty hound in an endemic area should be tested for Blasto.

Diagnosis is made through X-rays, needle biopsies of affected lymph nodes or skin nodules, transtracheal washes and of course blood tests.

Treatments can be long-term and expensive. Antifungal agents such as Itraconazole and Ketoconazole are used most often. With aggressive therapy, recovery rates are between 50-75%

■ 2.6.9.10 • Canine Brucellosis

This is an infectious disease that has long been recognized as a breeding disease in our hounds. It can affect both male and female hounds and can spread through body secretions especially vaginal discharge after an aborted pregnancy or heat cycle. The bacteria *Brucella canis* (*B.canis*) has been recognized as the main cause of Brucellosis in our hounds, but new threats have arisen.

With feral swine inhabiting the hunt county of quite a few areas of the United States, it is common for our hounds to inadvertently come into close contact with these infected pigs. The swine form of Brucellosis caused by the bacteria *Brucella suis* (*B.suis*) has become common or endemic in these feral pigs. These infected pigs, through bites and transfer of blood and other body secretions, can expose our hounds to this new form of Brucellosis.

B.suis can affect our hounds much the same as *B.canis* but much more seriously. Infertility in both the male and female, abortions, swollen or atrophied testicles, and/or spinal pain can all be signs presented in the hound with Brucellosis.

But *B.suis* is not only a threat to our hounds, but is a threat to our hunt staff. *B.suis* can be a serious disease in humans – much more so than other forms of Brucellosis, and is a reportable disease to the federal and state authorities in a growing number of states for both hound and humans.

Most veterinarians are aware of Brucellosis caused by *B.canis* but not *B.suis*. Standard blood tests for *B.canis*, will NOT diagnose *B.suis*. Diagnosis is made through blood testing with in-clinic screening tests available for both strains of *Brucella*. Standard Canine Brucellosis in-clinic tests can screen for *B.canis* but the cattle

2.6 • Care of the Adult Hound continued

Brucella card tests for *B. abortus* are needed to diagnose swine Brucellosis in the hound. *B. suis* will cross react with *B. abortus* but NOT *B. canis*. Other more accurate laboratory tests are advisable if Brucellosis is suspected and even blood cultures can be very useful. Your veterinarian can be a great source of information in diagnosis, controlling and even the wisdom of treatment of this emerging threat.

Treatments can be expensive and ineffective in the kennel situation, so prevention is the key. Limit exposure to feral swine, NEVER take a bitch in heat or with vaginal discharge to a hound show, and ALWAYS test for Brucellosis (*B. canis*) before breeding a hound. If any exposure to feral swine, testing for *B. suis* is a must.

■ 2.6.9.11 • Canine Ehrlichiosis

This tick-born disease has had a recent increase in certain regions of the US. There are two phases: acute and chronic. Some strains of hounds are genetically more susceptible.

The acute phase, characterized by serious from eyes and nose, may be mild enough not to be a concern. The hounds temperature will commonly be mildly elevated, and when the abdomen is palpated, the spleen is enlarged.

The chronic phase may be characterized by a slow weight loss. You may also notice that these hounds tire easily when hunting. Blood tests are required for diagnosis such as the Snap® test but other blood tests often show altered white cell and red blood cell counts.

The treatment for Ehrlichiosis is Doxycycline given daily for 21 to 28 days by mouth. Recently cost has been a major factor in using Doxycycline and it has been replaced effectively with Minocycline with good response at a reduced cost.

■ 2.6.9.12 • Coccidiosis

Coccidiosis is an intestinal protozoal parasite of dog, and it is found worldwide. It attacks the intestines causing severe diarrhea, fluid loss, dehydration and death in severe cases without treatment.

This is a disease that may be in most kennels in adult hounds. These hounds may have developed immunity and show no clinical problems. However, young hounds or especially pups do not have the immunity and it can cause serious problems.

Treatment is with sulfonamides (Albon®) or Amprolium (Corid®) orally along with supportive therapy have long been the standard. However, recent evidence from antidotal use shows off-label treatment with Marquis® (Ponazuril) to be an effective treatment of coccidiosis. Marquis® by Bayer is an equine medication for EPM. Formulated correctly, it has shown to be effective with two treatments.

Mix 50 ml of the paste with 25 ml of water. Shake well to create a

2.6 • Care of the Adult Hound continued

suspension of 100 mg of Ponazuril per ml. The dosage is 50 mg or one half (1/2) ml of the mixture per kg of body weight given by mouth on days 1 and 7. Refrigerate any unused portion, but shake well prior to using, as it is a suspension and will settle out when stored in the refrigerator. Treat all animals in contact with the affected pups, but the safety in pregnant bitches has not been established.

Control is done by preventative measures discussed earlier. Removing stool, steam cleaning floors, and making sure floors are sealed or painted as disinfectants are ineffective.

■ 2.6.9.13 • Giardia

Giardia is also a protozoal disease that affects the digestive tract of hounds and humans. Clinical signs like coccidia include diarrhea and other gastrointestinal signs. In the veterinary diagnostic laboratories, it is the number one organism isolated in the dog, with coccidia being number two.

It can be spread through contaminated water or puddles and is seen worldwide. Diagnosis is done by fecal examinations of fresh stool both by direct and flotation methods. Snap Tests® of the stool are effective also in diagnosis.

Treatment should include Fenbendazole (50 mg /kg once daily for 5 days) and metronidazole (25 mg/kg twice daily for 5 days) given concurrently. If treatment fails, use same dosage and regimen but for 10 days.

Vaccines were developed but failed to stop the shedding of the giardia. For that reason, the production of the vaccine has been suspended.

Other preventative measures should include:

- Treat all in contact animals
 - Bathe animals after last treatment
 - Treat the environment with Quaternary Ammonia disinfectant
 - Snap Test treated animals after 14 days

■ 2.6.9.14 • Leishmania

Leishmaniasis in the US is a chronic wasting disease caused by protozoa, *Leishmania infantum*.

First reported in the foxhound years ago, it was thought to be sporadic. Recent issues in US foxhound kennels have proved that false with up to 20% of kennels affected. More common in southern Europe, eastern Asia, and northern Africa, it is transmitted by the sand fly to dogs and human alike in these endemic areas of the world.

However, no transmission has ever been found from hound or humans in the US from any intermediate host such as the sand fly. Sand flies capable of transmitting the protozoa are found in the

2.6 • Care of the Adult Hound continued

US, but it has never been proven as a source of transmission in the US. Vertical or trans-placental transmission has proven to be the source of disease here in the US. Breeding dogs with the disease can spread the disease to its offspring. Transmission of the protozoa may also occur through breeding from male to female or vice versa. Other probable modes of transmission are through fighting and any blood transfer in the kennel. This would certainly include dirty needles, so once again this is a reason to NEVER reuse a needle during treatment of any hound.

Clinical signs can be varied depending on the stage of the disease! If early in the disease process, no clinical signs will be evident. If the internal organs of the hound are affected (visceral form), the hound will show signs of weight loss, poor hair coat, and general unthriftiness as seen with many other chronic wasting diseases such as parasites, kidney disease, tickborne infections, etc. In the US, the chronic wasting form of the disease (visceral) seems most prevalent, but the possibilities of other forms (cutaneous) are a reality.

Diagnosis. Accurately diagnosing Leishmaniasis has proven to be challenging. Cross reactions with other diseases and false negatives have wreaked havoc with multiple kennels. Many methods (biopsies, cultures, etc.) have been used to diagnose the disease, but blood sampling still remains the best for our kennels. Only two blood sample methods have proven to be reliable and can detect both the carrier state where the disease is not yet clinically evident and the clinically ill dog. Both have shown no cross reactions and can be done by your local veterinarian. They are:

- kELISA Test – submitted to Animal Health Diagnostic Center at Cornell University 607/253-3900
- RT-qPCR Test – submitted to Petersen Laboratory at University of Iowa 319/335-4148

The kELISA test provides good detection in the presence of clinical disease, but limited early detection. The RT-qPCR detects the parasite and affords us much earlier detection when decisions are needed for breeding or admitting to the kennel.

Tests require multiple samples from each hound (2 ml each) of red top, green or purple top blood vials accurately labeled numerically with the hound and hunt name. Samples must be sent overnight and handled correctly for accurate results. Call the lab PRIOR to shipping.

Any positive diagnosis can be confirmed by bone marrow aspirates, but the treatments are of questionable value. The subject should be discussed thoroughly with your veterinarian. At present, because no effective treatment exists, all confirmed clinical cases should be euthanized.

2.6 • Care of the Adult Hound continued

Prevention.

Data from more than a decade of research in foxhounds demonstrates that leishmaniosis takes a large and expensive toll on our hounds. Prevention of leishmaniosis is therefore a priority. The keys to prevention are:

Maintain good general health of the hounds in the kennel.

Good nutrition, housing, preventative medication, and medical care all help support the immune system of our hounds which provides protection against other parasites such as *Leishmania*. There is growing evidence that this particularly means investing in good routine prevention of ticks and tick-borne diseases, like Lyme disease, *Ehrlichia* and others.

Recent clinical research has demonstrated that in hounds with subclinical *Leishmania* (hounds that test positive but have no symptoms), the added pressure to the immune system of another illness - in this case a tick-borne disease - will increase the likelihood of that hound becoming severely ill or dying of *Leishmania* by three times. Therefore, treat hounds monthly with a good flea and tick preventative not only keeps them free of debilitating tick disease, it is also a key factor in controlling *Leishmania*. In addition, because we also know that sand flies can transmit *Leishmania*, the use of monthly flea and tick prevention is very effective against repelling these biting flies as well

Minimize hound movement. It is so easy to bring in a disease or parasite into our kennel by accommodating a fellow hound man or huntsman. If needed, be sure to have an isolation area to segregate their hound(s) from your hounds and main kennel. Good quarantine practices should be a key part of every kennel each time a dog is drafted in. These hounds should be tested for *Leishmania* as well as *Brucella canis* and observed for respiratory disease or any other breaks in health.

Blood Testing. Annual or semi-annual testing of hounds has been recommended, but **pre-breeding testing is a must** to control the spread of the disease. This requires ELISA and/or RT-qPCR testing to diagnose a carrier and remove the possibility of introduction into the kennel. Testing any hound you acquire or ship is needed to help control the disease.

It's Up to Us

The prevalence of *Leishmania* in a 2020 clinical study showed that of all hounds tested for the study, 15% were positive for the disease. By simply testing before breeding and only breeding negative hounds, we have the means to eradicate this disease from our population.

■ 2.6.9.15 • Pseudorabies

Pseudorabies is a fatal disease caused by infection with the pseudorabies virus (PRV, also known as suid herpesvirus-1) The main reservoir host for the virus is the pig. Though domestic swine herds in the U.S. are considered PRV free, the virus is still

2.6 • Care of the Adult Hound continued

present in feral or wild swine. It has been estimated that 30-60% of the 500,000 feral pigs in Florida are seropositive for PRV.

Infection in pigs is usually subclinical and does not cause symptoms, however, dogs are very susceptible to illness from PRV and death invariably occurs quickly.

Transmission.

Hounds typically acquire infection from ingestion of infected pig tissues or secretions such as nasal discharge or blood. Pseudorabies has also been reported in hounds that were bitten by an infected pig or after biting an infected pig.

Diagnosis.

The incubation period for PRV is 3-6 days. Tentative diagnosis can be made from history and clinical signs. After death, definitive diagnosis is achieved by identifying the virus in tissue such as brain or tonsils.

Physical Exam Findings.

Clinical signs are severe and develop rapidly usually within 48 hours. Lethargy, anorexia, vocalization, aimless wandering, and aggression may be noted first. Staggering, incoordination, muscle stiffness, muscle spasms, difficulty breathing, vomiting, and diarrhea may occur. The most common symptom is ptyalism or excessive salivation.

Intense facial itch may occur that causes the animal to violently scratch at its face and ears. Skin swelling, excoriations (skin rubbed raw), ulceration, and redness may be present. Most patients die within 48 hours of onset of clinical signs.

Treatment/Management.

No effective treatment exists for pseudorabies. Pseudorabies is a rapidly fatal disease with death occurring within 48 hours.

Prevention.

Do not feed hounds raw or undercooked pork products. Because a high percentage of feral pigs carry PRV, direct contact greatly increases the possibility of infection.

■ 2.6.9.16 • Shock

Shock is caused by a catastrophic event to the hound's system. It can be caused by a trauma with blood loss, heat stroke, snake bite, allergic reactions and many other events.

The major cause is a redistribution of the blood within the hound to preserve life. The blood is directed to the major organs and brain away from the extremities and non-vital organs. Whatever the cause, the treatment is the same:

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- Stop or slow up the cause if known, i.e., stop the blood loss from a laceration, ice and/or cool water applied after heat stroke, etc.
- Contain the hound and kennel as quickly as possible. Try to get the hound into a road whip vehicle, or take back to kennel ASAP, or to your veterinarian depending on severity.
- Treat with dexamethasone iv, if possible, ASAP. This steroid can help by dilating the peripheral blood vessels and improving tissue blood supply, and much more.
- Injectable antibiotics to avoid bacteria increase associated with the stress of shock.
- IV Fluids to improve blood volume and tissue blood supply.
 - Get to your veterinarian
 - Although the loss of a hound can be devastating to a hunt, it can also

2.7 • Death of a Hound

Although the loss of a hound can be devastating to a hunt, it can also be an opportunity. Not only will a thorough exam and necropsy help us understand the exact cause of death in this one hound, but a necropsy also can help us keep the rest of the pack healthy. All aspects of hound care can be evaluated with a good necropsy. Evaluations of general organ health and even nutrition should be made, as well as looking for evidence of any internal parasites or infectious disease. It is a tool we should use more as of an indicator of just how good of a job we are doing caring for our hounds, and just possibly give us clues how we can do even a better job.

2.8 • Medical Supplies

Emergency kits and a well-stocked treatment room can be time saving and lifesaving. Supplies that need to be on hand should be reviewed by your veterinarian, but should include at a minimum:

- 2 X 2 Gauze Sponges
- Cotton Balls
- Cotton Padding
- Alcohol
- Sterile Saline Solution
- 50% dextrose – IV solution can be used for oral administration
- Bandaging / Adhesive tape and elastic adhesive tape such as Elastikon®

2.6 • Care of the Adult Hound continued

- Vet Wrap bandaging – 2 inch and 4 inches
- Tissue glue
- Dexamethasone injectable (with approval of your veterinarian)
- Rimadyl
- Oral Antibiotics
- Oral Marquis®
- Acepromazine sedative (with approval of your veterinarian)
- Variety of Splints
- Thermometer
- Skin Stapler
- Record Book or Calendar
- Injectable Penicillin (with approval of your veterinarian)
- Betadine Scrubs or Nolvasan® solution
- New Needles and New Syringes – never reuse
- Clippers (in working condition) with sharp, clean blades
- Dose Syringe (disposable)
- Nail Clippers (heavy duty)
- Antibiotic Ointment
- Ophthalmic Ointment (with and without hydrocortisone with approval of veterinarian)
- Clean Stainless Steel Bucket

3.1 • Digest of Advice and Experience

*Jerry Miller, MFH
Dennis Foster, ex-MFH*

The art of building a kennel is very different from building most other standing structures. For instance, where a house allows for unused space, such as a dining room or the formal living room, a kennel must be designed in such a way that every square foot is used and contributes to the overall efficiency of the kennel's operation. If not, those tasks that are already difficult to perform by humans will become all the more challenging, either being done less frequently or not at all.

The result of a well-constructed kennel is not only efficiency for the hounds, but for the humans as well. The sure sign of a good kennel is that even when the hunt staff is having a difficult day, the quality of the kennel's operation does not suffer: The kennel is more than adequately cleaned, and the hounds more than adequately cared for.

A construction questionnaire was sent to eight different kennels and their huntsmen:

Long Run Hounds, Simpsonville, Kentucky

Shakerag Hounds, Hull, Georgia

Mr. Stewart's Cheshire Foxhounds, Unionville, Pennsylvania

Live Oak Hounds, Monticello, Florida

Gully Ridge Hounds, Peninsula, Ohio

Owen Country Hounds, Prospect, Kentucky

Blue Ridge Hunt, Boyce, Virginia

Iroquois Hunt, Lexington, Kentucky

With their firsthand experience as a resource, the following is a summary of their advice on not only how to build a kennel, but what worked, what didn't and how they might have done things differently if they could start over. The goal of this compilation is simple: We hope to provide useful information and ideas about kennel construction. While these kennels vary in size and scope, the people who designed them share some common principles:

- Care and comfort of animals come first
- Quality construction pays for itself
- A kennel cannot be too clean (disinfect, disinfect, disinfect)
- Plan ahead (where will you be in 5 years?)

By keeping these principles in mind, you're off to a very promising start. It's worth mentioning that before building a kennel—or

3.1 • Digest of Advice and Experience continued

expanding or modifying an existing one—you should check with federal, state, county and local officials regarding ordinances, restrictions, or other zoning requirements. Finally, this is not an attempt to construct a kennel, and it's not the last word in kennel construction.

3.1.1 • The Beginning Basics

The first rule of kennel construction is cleanliness and ease of cleaning. Odor control and sanitation is attainable only with proper, timely cleaning; sufficient drainage and flow; and an adequate septic tank system or lagoon system. The kennel design should facilitate easy access for staff as well as emphasize sanitation and disease prevention. It should be built to maximize space and minimize unnecessary steps. One should also keep in mind their long-term goals or expectations: planning for the future is a common thread in all kennel construction. Without these essential basics, the rest of the kennel is subject to developing health problems for the hounds that could prove almost impossible to solve without reconstructing the kennel.

3.1.2 • The Foundation

There are various materials used for the base construction of a kennel. All of the kennels surveyed use a sealed concrete for their kennel floor. This is highly recommended for efficiency in cleaning and maintenance. When it comes to the walls, most of the kennels use cement blocks, or reinforced poured cement walls. This makes for a durable and economical kennel. However, one kennel's walls have a metal exterior with poplar-lined interiors. Using wood can present problems. Dogs will usually chew on wood, which provides hiding places for bacteria and parasites. Wood also absorbs urine odors, and wet wood deteriorates rapidly. For the beds, most kennels use a smooth concrete.

Specifications for the cement used for floors in most kennels ranged between 2,500 P.S.I. to 3,500 P.S.I. The concrete should have 5 percent to 6 percent air entrainment: a catalyst is put into the concrete to create air bubbles, which in turn, prevents damage from heat and cold contractions. When the temperature fluctuates dramatically, the density in the concrete changes, which can cause spider-web cracks on the concrete's surface. Air entrainment prevents this type of damage from happening. Concrete should also be sealed with an acrylic sealer: seal the concrete while it is still uncured (just after it is hard enough to walk on). The sealer is Meadow's product (SC 309) and it will stop caustic and urine absorption into the concrete. Do not use a steel trowel; it will take the air out of the concrete. Finish the concrete with magnesium trowels and floats. The kennel floor should be no more than 4 inches thick. Proper expansion joints and saw cutting will prevent cracking as well. Base preparations should provide for both drainage and compaction. Depending on the slabs,

3.1 • Digest of Advice and Experience continued

you can use wire, steel rods or sometimes nothing at all.

All of this detailed information may seem confusing, which brings us to a vital reminder when laying the foundation: you only have one stab at it. Working with concrete is much different than working with a piece of wood; once it is set, it is extremely hard to replace without tearing the concrete up. Hire a professional whom you feel you can trust. If a contractor is not familiar with the above information, that's a clue to move on to another. The contractor should be able to add to this information, customizing your kennel floor to your particular climate, soil and building construction.

Most doors are made of metal. Several kennels reported added features, such as roll-up aluminum garage doors to allow preset openings for air-flow control, and dutch doors, used to retain heat in the winter for the hounds.

The amount of slant used for drainage on runs also tends to vary. It seems the most uniform ratio to drain water was 1/2 to 1 inch per foot, with a drainage gutter located outside the area at the end of the run. Outside runs require slopes of 5 inches at 10 feet. Inside, just a slight slope is needed; one that is slanted just enough to get the water out of the building and onto the outside runs. However, one kennel responded that slants should be at least 2 inches every 10 feet, while another responded 6 inches every 4 feet. It is recommended also to use a 3-foot-high concrete barrier between runs, which prevents urine contamination. Septic systems, as mentioned earlier, are an integral part of the kennel's stable operation. The septic systems vary from one kennel to another. Each system is quite different, but seem to be quite sufficient. One kennel has three tanks, placed in a line. Two of the tanks receive solid wastes and the other receives water. They are then sent out into a drain field. Another kennel has two 1,000-gallon tanks that are pumped every 2 to 3 weeks. Still other kennels have alternative systems. One kennel responded that the drainage from hosing flowed into the woods; manure is then picked up and placed in a low-ground manure spreader, covered with lime and spread throughout the surrounding farm. Yet another kennel has a natural filtration area, which drainage also goes into the woods. This particular kennel reports that this system has worked wonderfully for them for years. As for zoning laws or specifications for waste disposal, only one kennel reported having one.

3.1.1 • Most Common Mistakes Made in Construction

Inside Kennel Noise: With the emphasis on the use of construction materials that make it easy to clean and sanitary you must consider the noise factor within the kennel. Some of the most expensive, best made kennels in America neglected that to their detriment, at worst the loss of hearing of kennel personal and hounds, to best you can't hear anything inside the kennel when hounds open. Most materials that are easy to

3.1 • Digest of Advice and Experience continued

clean such as cement, steel, brick, mortar, plastic, concrete blocks, and acrylic paints used on wood, cement, brick or other materials do not absorb sound. The sound bounces off the walls, floors, and ceilings. They still are the materials of choice for good reasons already cited, but consider the following: higher ceilings, use of treated, not painted, wood on ceilings and on areas hounds can't reach that don't require constant cleaning. Use absorbent materials in high noise areas, like cork or outdoor carpet, or materials that will absorb noise and still not make it too difficult to keep clean. In hot to mild climates year-round, the more open space and airflow, the less noise problems, and cheaper construction.

Septic systems: You must do your homework when planning one to ensure you adhere to all local construction ordinances. Keep in mind a hound kennel is akin to a hotel with lots of occupants.

Cement flooring surfaces that are too slick are dangerous for your help; too rough are difficult to keep sanitary. Too steep is also dangerous depending on weather, wet or ice conditions. Too level, water and waste are hard to remove and become a health hazard. Doors and door latches should be easy to open or close quickly but impossible for hounds to open. There are many unique door latches available for stables, kennels and animal facilities. Consider the type of door and what affect it has on the number of hounds using it in a rush. Take into account the amount of airflow the door allows in or out for different times of the year, and the extent of various positions to stay open.

Water is everything: If you don't have good pressure for cleaning, you'll need power assistance. Hoses should be easily available and easy to administer and to recover. Automatic waters must be checked and cleaned daily.

Stationary waters are easy to check and give you an idea on how much water hounds are using. Large water troughs for hounds to play in during summer can be handy and keep hounds from playing in their buckets, but are hard to keep clean, can be messy and unhealthy.

3.1.2 • Roof

The roofs for the kennels surveyed tend to vary. The majority use a simple, shingle roofing. However, some reported having a steel-insulated roof and using 4 inches of blow-in insulation.

3.1.3 • Amenities

A properly constructed kennel roof with sufficient insulation and ventilation helps control the effects of adverse weather. Cooling and heating features for the kennel depend on air circulation systems. The overall consensus was large fans, often strategically placed to generate the most comfortable temperature for the hounds. One kennel

3.1 • Digest of Advice and Experience *continued*

uses an air conditioner in one area of their main kennel. When it comes to heating, kennels responded differently. Some use forced air, as in a central heater; others use kerosene and electric space heaters; some use heat lamps; and there were some that do not have any heating device at all. They simply keep the windows closed, reporting that the insulation and the hound heat was sufficient. Heating pads placed in whelping boxes provide supplemental warmth for puppies.

There are several different ways to insulate the beds and other areas of a kennel. Many of the kennels reported using two to six inches of foam, rolled insulation or sand, which are covered with several inches of concrete for bed insulation.

Not all kennels use materials to block disturbing or loud noises; however, those who do, report that landscaping was usually sufficient in absorbing sound. Either a row of trees in the front of the kennel or a heavy, landscaped area in the back of the kennel can serve as a buffer zone, used to muffle hound noise.

Most kennels reported using fluorescent lights for their main kennel areas. These lights should be installed in the ceiling. Waterproof plugs should be high enough to avoid the danger of dogs' chewing or urinating on electrical sockets and to prevent contact with water.

3.1.4 • The Cleaning Process

All of the kennels surveyed clean in a similar fashion. Most kennels use a water pressure device and hose down their floor, accompanied with a disinfectant of some kind, usually Clorox. This cleaning process is performed often, usually twice a day. One kennel reported that they clean one area when the hounds are in another part of the kennel. When the hounds return to the cleaned area of the kennel, cleaning would be done to the section the hounds just left.

3.1.5 • Cleaning Supplies

Some type of storage area is necessary for any size kennel, to maintain kennel cleaning apparatus and to store items used in the operation of the kennel. Cleaning supplies should always be kept in a separate workroom, storage, or supply room, away from the feed and away from the hounds.

3.1.6 • Benches

Benches inside and outside of the kennels consist mainly of concrete blocks or wood, with a varying array of materials used for the hounds' comfort. One kennel uses L-shaped cement blocks, designed in two levels, just like a bunk bed; tile is laid from one end to another and then covered with sand for insulation reasons. On top of the sand, 3 inches of concrete is laid and rounded over the edges of the block so that the entire surface is smooth. These particular beds are sloped at a slight angle for drainage purposes. Another kennel

3.1 • Digest of Advice and Experience continued

reported a double-decked bed with 1 inch poplar wood supported by 4 x 4 posts, with one bench 4 inches off the ground and the other, 27 inches off the floor. (Benches, when constructed neither too high off the floor nor too low to the floor, serve another important function; they provide a space underneath where a hound may seek refuge if a kennel fight erupts and protect themselves when being picked on by kennel mates.) One kennel simply uses rubber mats on top of their cement blocks for bedding. Another kennel uses fresh straw on their inside benches, which they change three times a week.

3.1.7 • Whelping and Feeding Areas

Most whelping areas are located in separate buildings near the main kennel. Other whelping areas might be within the main kennel, but separated off in an isolated place. The whelping areas include a heat lamp of some sort and an electric whelping dish. For those kennels with no whelping areas, they send the hounds to a nearby member's or huntsman's home or barn. Sick dogs are usually placed in a separate lodge as well, with one kennel having a separate sick kennel altogether, with 4 feet x 16 feet run to the huntsman's house.

Most kennels reported their feeding areas to be located in a central or frontal section of the entire kennel. One kennel has a feed room with an outside yard trough made of pressure-treated wood in the center for actual feeding. Another kennel reported having a common feed room into which all the other rooms within the main kennel opened. Another kennel uses a simple feeding trough and reports that they have had 9 years of great success with this form of feeding and have never had any fighting among the dogs. Most feeding pans are metal hog troughs, while a few kennels reported using rubber pans or 6 feet long aluminum pans.

A large kennel population benefits by a special area to store and mix food and prepare food pans. Feed is usually kept in a storage room of some kind, with one kennel having a separate concrete and cinder-block house altogether. Raw meat and prebagged ground chicken necks are kept in a freezer or refrigerator, while dry food is kept in 55-gallon plastic garbage cans or containers. It is important

to store all opened food with sealed lids. For obvious reasons, it is important to keep the food rodent-free. Kennels accomplish this by doing several different things. One kennel keeps the food on a raised metal platform, assembled with 10-inch metal legs. Most kennels reported using a deterrent of some kind, such as D-Con, tomcat blocks or rat traps; however, the rat traps eventually became a problem for one kennel. One kennel reported that they don't have any problems with rodents; they have a cat that lives in their feed supply room.

3.1.8 • Yards

Kennels will often have grass yards for the hounds. Several kennels report that it is really beneficial to have the yards if you have the room. Concrete can be hard on dogs' feet. Therefore, it's a good idea to alternate them between concrete and grass. Though it is nice to have large yards, one kennelman warns against overusing them. He reports that it is a terrible crutch to turn out a hunting pack instead of walking them regularly. One kennel lined the paddock off with electric wire to keep the dogs from getting through the fence. Another kennel uses buried fencing to prevent the hounds from digging their way out. Fence wire can be laid on the ground at the base of the fence. It is attached to the bottom of the fence to prevent digging out.

3.1.9 • Kennel Sanitation

A kennel facility should be easy to clean and minimize areas for entry and eliminate possible hiding places for both insects and rodents. Floors should be free of cracks, depressions and rough areas where water, insects, rodents and/or eggs from internal parasites can lodge. Walls and ceilings also should be in good condition for easy cleaning and to prevent rodent and insect entry. Disease prevention and control of bacteria parasites can be augmented by sealing and caulking cracks or areas where water or waste could accumulate.

3.1.10 • Sanitation Procedures

Food and water bowls should be washed daily in a detergent solution, rinsed in a disinfectant, and allowed to dry before reusing. Concrete runs should be hosed daily and should be pressure-cleaned and disinfected regularly.

3.1.11 • Safety Features

It is also important that the kennel exceeds all fire and building code ordinances. Placing smoke detectors throughout the kennel ensures added safety as well.

3.1.13 • The Voice of Experience: Advice to Future Huntsmen

When asked what really worked well for each kennel, from a construction standpoint, the answers were fairly concise. All kennels communicated, in one way or another, that a good kennel is a functional kennel. If the kennel is warm in the winter, cool in the summer and easy to clean, then it is, essentially, a success. Other answers included additional points which were deemed important: economy of operation and good kennel design.

When asked what, in spite of their best efforts, didn't work from

3.1 • Digest of Advice and Experience continued

a construction standpoint, each kennel contributed a feature that could use some improvement. One kennel reported that they found the self-watering spouts unnecessary and removed them. Another kennel felt that the drain in their feed room needs more of a slope for adequate drainage. Another kennel reported that they should have installed steel doors instead of the particle board with plexiglass doors they presently have. One other kennel also reported that they needed better drainage. They felt that they should have watched or supervised their contractor more closely.

What makes a kennel efficient? Most kennels felt that easy maintenance, easy cleaning, good drainage, and the ability to move the hounds around easily were significant factors that make a kennel efficient. Another kennel design feature that was pointed out was that if each room in the lodge can open into the common room, this helps to maintain good traffic flow. The huntsmen advised that if you are going to build a kennel, do research, plan details and talk to others for ideas before building. Don't be in a hurry. It's a lot easier to build it right the first time than to go back and change something after construction is completed. They stressed that it was important to visit other kennels that you know to be good, and simply model after them. A final word to the wise is to always build the kennel larger than you think is necessary. Many of the kennels advised that you should think about the size you believe will be adequate, and then build your kennel twice that size. When it comes to using a general contractor, the huntsmen's opinions tended to lean toward hiring one for the construction of your kennel. It is important to hire a professional; they can complete the job quickly and efficiently, and the quality of the workmanship is worth it. However, you need to be on the job every day to collaborate with the contractor. Most contractors are not houndsmen. This means that you should be available to help with decisions that will ultimately and directly affect your kennel, and indirectly, your hunt staff and hounds. This is such an important issue, the collaboration between huntsman and contractor, that one kennel felt it was not smart to hire a contractor for this very reason.

They responded that a contractor cannot anticipate the impact of the many small decisions they make. The goal is to make the kennel user-friendly.

When a kennel is going to be built, many hunt clubs consider using a committee. The kennels that were surveyed advised against this. They advised that you should appoint two people, the huntsman and a contractor, or someone with construction knowledge, give them a budget and the authority to build a kennel to the best of their ability. Even the few kennels that reported using a Hunt Club Committee discovered that it wasn't effective and ended up having one person oversee the kennel construction.

Above all else, one should always consider the following advice when

3.1 • Digest of Advice and Experience continued

building or remodeling a kennel: build the kennel the way you would like to keep your own dog. If you keep this in mind, you should have a quality kennel and a good reputation.

Note: Kennel construction plans were submitted, along with photos, from the various hunts listed in the beginning of this report. They are on file at the MFHA office. Please feel free to contact the Executive Director for additional information relating to your construction plans.

3.2 • Gloria Seller's Puppy House for Whelping

Gloria Sellar, MFH

With reference to Figure 3.2-1, note the following features:

Hinged Lid

To fold back when heat lamp is in use and to monitor birthing. Heat lamp is gradually moved higher as puppies develop through the first few weeks. Hook and ring secures up position.

Thermostat on Side

Metal-covered power cord passes **under** floor of box to saucer. No wires in box.

Saucer

Set in almost flush with floor of box but slightly pressed in itself. This allows puppies to keep warm and ends constant scramble to get near mother for warmth. The bitch has just room to lie on the circumference but off the saucer. Puppies may nurse, then sleep quietly on the saucer. Very useful for large litters and no danger of chilling.

Heat Lamp

Guard on bottom so that bitch won't burn herself if she bumps it. Tie securely or collar, so heat lamp cannot slip or fall into box.

3.1 • Gloria Sellar's Wonderful Puppy House for Whelping Bitches continued

Door

Large enough for bitch to get in or out. Raised lip from floor—about 6 inches—to prevent puppies from getting out. Gentle ramp to allow puppies to get out and in when they can manage. Getting out seems easier until they work it out. Lip helps prevent drafts on puppies.

Construction

Plywood painted 2 coats with nontoxic paint. Completely washable inside with no danger of electric shock. Saucer is hard black composition, rather like Teflon. No bedding needed.

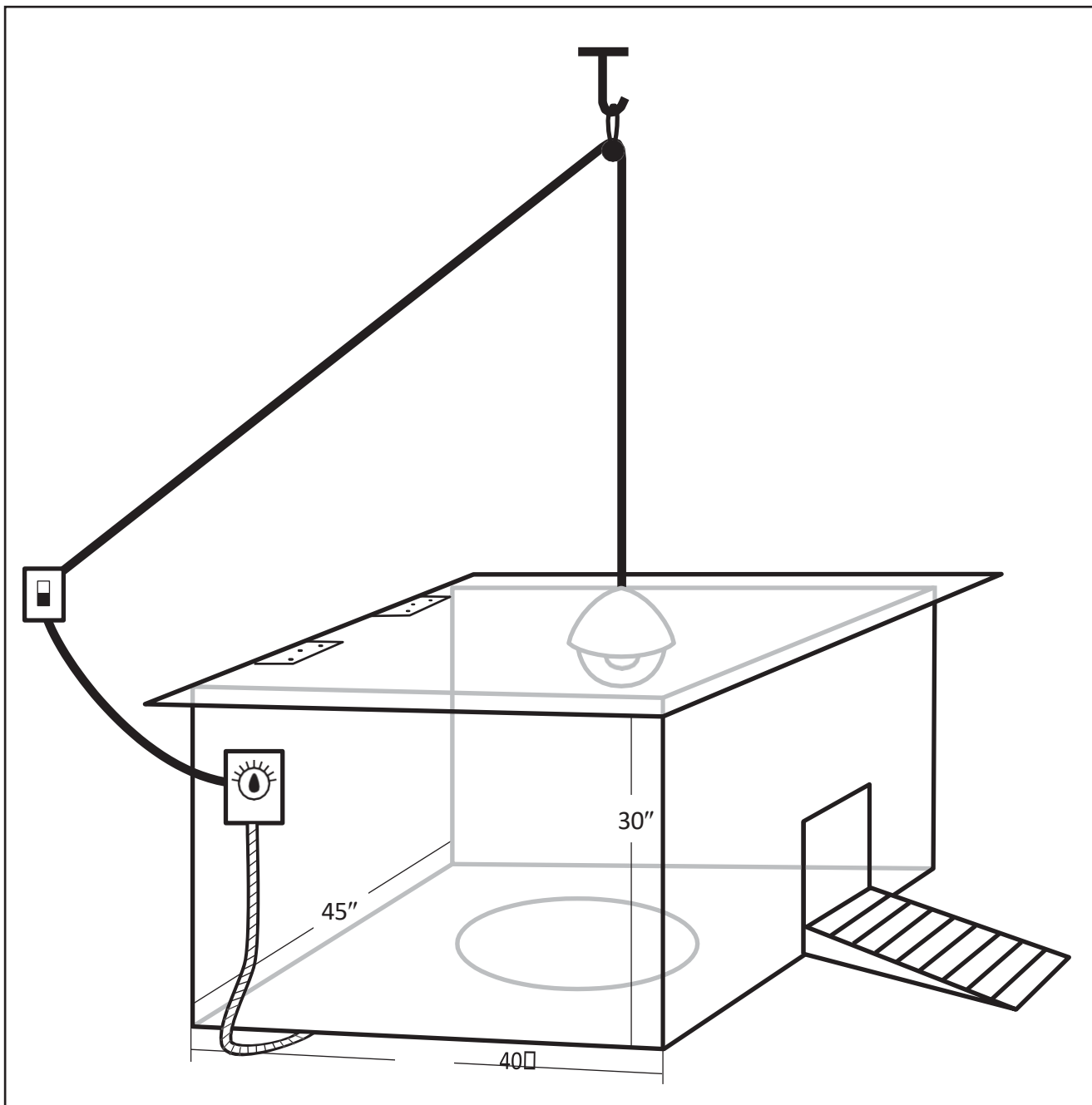


Figure 3.2-1, Gloria Sellar's Wonderful Puppy House for Whelping Bitches

3.3 • Captain Charles Barclay's (Hunt, GB) Portable Puppy House for Weaned Puppies

Gloria Sellar, MFH

With reference to Figure 3.3-1, note the following features:

- Hinged roof for easy cleaning and bedding
- Hinged ramp becomes door to secure puppies
- Metal wheels and undercarriage (no chewing)
- Handle hooks onto undercarriage so puppies and house may be moved to a fresh pen or new location
- Construction designed to fit in normal gates or doorways

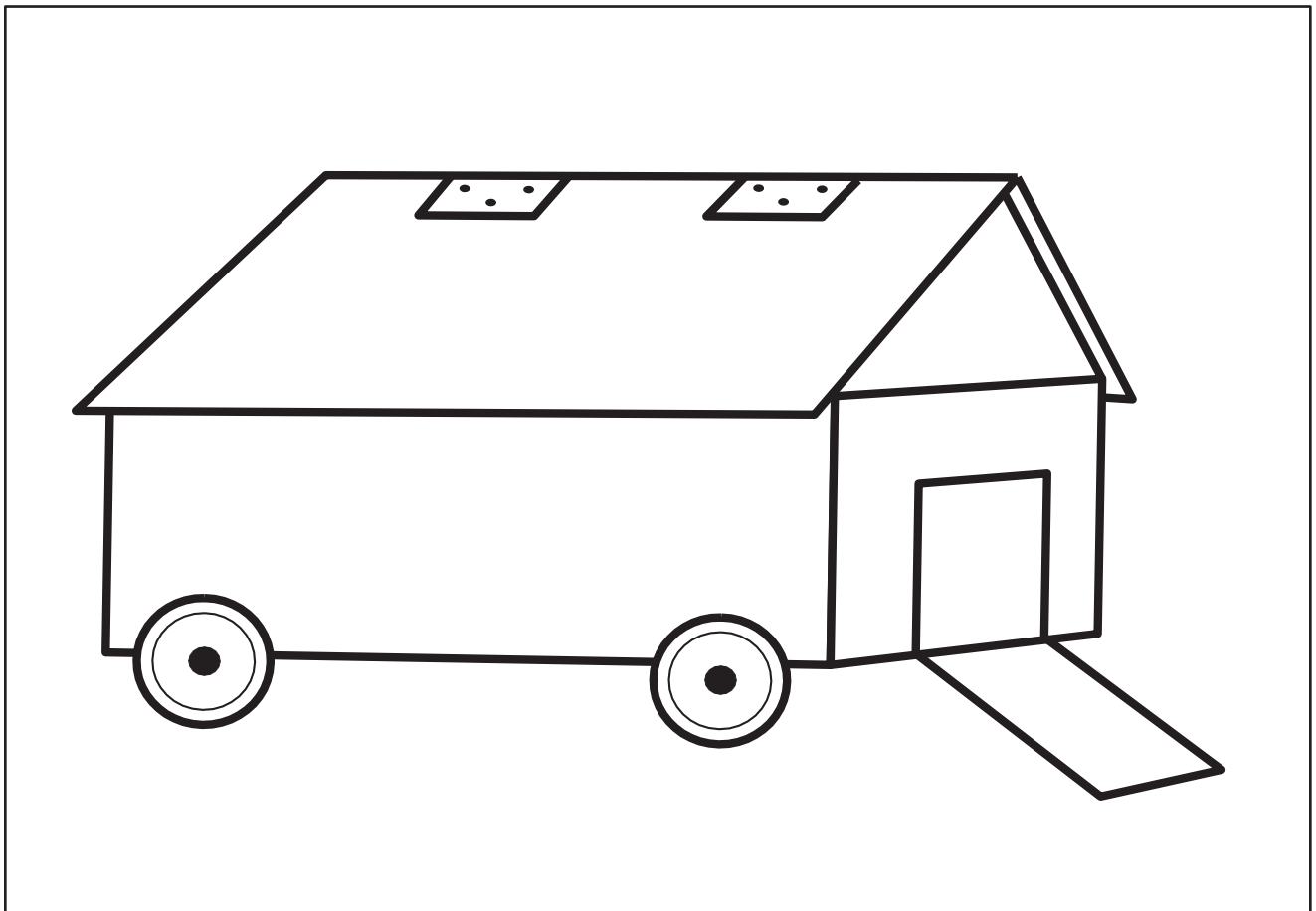


Figure 3.3-1, Captain Charles Barclay's (Hunt, GB) Portable Puppy House for Weaned Puppies

4.1 • Introduction

This section contains some new and exciting information on new breeding techniques including the advances in frozen semen, heat cycle timing and breeding techniques. It will hopefully give some hunts more choices in their breeding selection. Its purpose is to expose you to the advances in breeding and is in no way intended to be a directive. All of us have seen certain lines of hounds disappear, and this is intended to help you preserve your favorite lines of hounds, plus increase your chances of having a successful breeding.

Covered first is the MFHA's Stud Book registration program and online pedigree searches. The Basic and Enhanced online pedigree searches are a source of more than 80,000 registered hounds.

In the chapters that follow, breeding advice covering each specific breed—American, Penn-Marydel, English and Crossbred—is presented by experienced breeders.

The section concludes with several chapters on breeding and breeding principles selected for their information content, clarity of presentation and relevance.

4.2 • MFHA Stud Book Program and Pedigree Searches

MFHA Stud Book Registration Program is a program used by the MFHA to register new entry. Each year, a list of all hounds in the kennel along with pedigree forms for any new entries must be submitted to the MFHA by December 31st.

This program:

- Verifies accuracy of hound information provided by hunts
- Determines breed of new entries
- Registers new entries

The online studbook can be found on the MFHA website at www.search.mfha.com. This online database contains more than 80,000 hound registrations from 1956 to current.

- Look up hounds in the Stud Book
- Retrieve 3 or more generation pedigrees for registered hounds
- Create trial pedigrees for potential breedings
- List registered descendants of a given sire or dam
- Find all registered hounds from a particular breeding
- View tail male and female lines

4.3 • Breeding the American Foxhound

Tommy Lee Jones and Larry Pitts



Figure 4.3-1 Orange County Melody 99, American Grand Champion, Virginia Hound Show 2003

4.2 • Breeding the American Foxhound continued

4.3.1 • Walker, Trigg and July

The American hound has developed in different ways throughout the country. The Walker and Trigg in Kentucky and the July in Georgia were bred to be hound racers. Their owners took great pride in venturing from the campfire to listen for their favorite leading the chase. Cry was important to the early developers of these breeds, and it is what separates the American hound from its English cousin today.

Unfortunately, most of the strengths of the modern field trial stars are also their weaknesses when you consider them for an organized pack. Their speed tends to string the pack out, and their hunting instinct often leads to independence and works against them when blending with an organized pack.

The Walker and July are known for their wonderful noses and great cry, although the Walker tends to have a little too much cry at times. Their stamina and speed are excellent as is their hunting instinct, but both breeds are extremely difficult to teach that hunting 3 days a week doesn't mean seventy-two hours straight.

The use of the July or Walker strains in an organized pack should be done with great prudence and in small doses. They should be crossed on mates of supreme intelligence and biddability and only when your pack is at a point of high civility. The Bywaters hound is closer to what we want in an organized pack today.

4.3.2 • The Bywaters Hound

The Bywaters family were not only breeders but great marketers of their hounds as well. Living near Amissville, Virginia, the Bywaters developed a hound type that would work as a part of a pack. They wanted hounds with good cry and excellent noses that would be able to adjust to the vagaries of weather and the terrain that they would encounter. Their hounds were of moderate speed, fast enough to push a fox while not running away from their packmates. They wanted a good galloping type of hound that would press a fox and give him no quarter.

Mr. Bywaters would often drive his buggy from Amissville to Hume, a distance of nearly 20 miles, to meet with the Chadwells, Kines and Ballards, other hound breeders of his day. His hounds would follow along behind, and then sometimes hunt for a week before following him home. They had to be both biddable and intelligent.

Through the Chadwell family, a number of whom became huntsmen, the blood of the Bywaters hounds was spread to many organized packs: to Millbrook and Essex in the North, and to Orange County, Piedmont, Warrenton and others in Virginia. The Bywaters

4.3 • Breeding the American Foxhound continued

bred for this market and were for many years the leading supplier of outside hounds to organized packs throughout the East and beyond.

4.3.3 • Breeding your Pack

Breeding a good working pack of hounds takes patience, perseverance, a high tolerance for frustration and having some idea of where you are headed. Keep in mind the country in which you are hunting and mold your pack to fit that country. The old saying of “Breeding the best to the best and hoping for the best” holds true in the fox-hound world, too. Like the Thoroughbred horse, quality most times follows bloodlines. Breed first of all for work in the field, but once you find a family that pleases you stick with it. Following certain bloodlines will make your pack more uniform and will enable it

to stay together better. If you breed outside your own pack study the pedigrees to make sure you are not too close. It is a good idea to hunt with as many packs as possible with an eye out for stallion hounds. This also gives you an opportunity to observe how the pack handles and if they will be compatible with yours.

At the Potomac Hunt, we have always had American hounds of the Bywaters type. They are a joy to work with and hunt like demons. They are bold but not too aggressive and try to please. Their best asset is their intelligence.

When choosing which dogs and bitches to breed there are several things to consider besides their hunting prowess. They should be at or as near to the standard, in height, as possible. They need to be well balanced, athletic and pliable to pursue their quarry through its natural domain. Breed to the most correct individual that you can. Slight conformation faults can be overlooked if the hound is exceptional in the field.

At the Potomac Hunt, we prefer hounds that are a bit on the lighter side. They seem to move across the ground in an easier manner, with less stress on their bodies. The lighter hound can get through thick underbrush and wire fences much more easily. Lighter hounds are not as adversely affected by hot, humid conditions as heavier hounds, which allows them to hunt longer.

Never breed two hounds with the same fault, and never breed to an individual with a performance limiting fault. Do not breed hounds that are too independent. They might be good hunters, but they will not help the pack if they refuse to hunt with the other hounds or you have to waste hours looking for them after a long day of hunting.

Hounds should be happy in their work. Breed the ones that show enthusiasm for the game. That doesn't mean that they are necessarily in front all the time, but that they are steady and always right there—busy with their work, setting the pack right at a loss, or

4.3 • Breeding the American Foxhound continued

finding the line down the other side of a stream. The dog and bitch both should be able to find a fox by themselves but should honor the rest of the pack immediately when they are running. If you observe your pack closely you may notice that when casting in an area in which

a fox was previously found, certain individuals head immediately for that spot. These are the ones you want to breed to; they possess “fox sense”; they know where to look for foxes. Those same hounds check the top of rock walls and round bales. You want an entire pack of these. Not a single strike dog but a whole pack of them. These individuals show great confidence in every aspect of his or her life; in the kennels, in the hunting field and in the show ring. Hounds with confidence will enter quickly and will not be afraid to make a cast to recover a line. Consider the size of the pack you need to maintain for hunting. This will determine the number of bitches you need to breed each year. I generally hunt between 17 and 21 couple with 19 couple being my ideal number. I feel anything less than 15 couple is not adequate. During the height of the hunting season, I try not to hunt hounds more than twice weekly. When hounds have to hunt many hours, especially in hot weather it can take 2-3 days for some to recover from the dehydration that occurs.

In order to keep the desired number of hounds you wish to hunt you need to enter one fifth of your pack each year. Don't ever skip a year, thinking you have enough hounds. If you don't breed for a year or two the gap in continuity will be evident in 2-3 years' time. All of a sudden you'll have old hounds and young hounds who don't hunt well together. Your middle-aged hounds are the meat and potatoes of your pack. Also, that great dog or bitch that you'll “wait and breed next year”, may not be here. Misfortunes do happen. I breed four or five bitches every year and usually enter about eight couple every year.

Bitches age 2-6 years are most ideal for breeding. They have fewer problems with conception and whelping and can nurse a large litter. I have bred bitches as old as nine because they were great bitches or I wanted to preserve the line, but unless you're prepared to pay a large vet bill for a C-section, shy away from breeding older bitches especially if they've never had a litter.

Don't be lazy in your breeding program. Take each breeding seriously. Research each bitch's pedigree carefully to determine which of your dogs is a most suitable match or will you have to take her out- side your pack. When I take a bitch out of our own kennel to breed, I choose one of my best hunting bitches with good conformation from a good proven Potomac line. If your bitch comes from a strong family tree that works well for you, you'll have a better chance that her produce will blend well with the rest of your pack and be just

as pleasing. Choose a dog that might improve her conformation and only consider dogs that are good hunting hounds. Ask the huntsman

4.3 • Breeding the American Foxhound continued

lots of questions about the dog and if possible, have a day of hunting with the pack and see firsthand how the dog hunts. Ask to see some of the dog's get if there are any.

If you have a great dog but he's too closely related to your best bitches, try to draft a nice bitch or if no one wants to give up a good bitch, perhaps they would loan one to you in exchange for a puppy or two.

Don't be afraid to draft away good older hounds or nice puppies. If for some reason you find yourself losing a good line due to some misfortune, you may be able to go to some of the packs you drafted hounds to and recover some of your breeding. Hopefully the packs you've drafted them to have used them in their breeding program. Don't give away useless hounds. It will do you no good.

Take breeding hounds as a privilege and treat that privilege with total respect. Strive always to improve the American foxhound breed. Never be satisfied with what you have. To stand still is to go backward.

Remember breeding alone never made a good pack of hounds. It also requires much more, including good management and careful handling.

■ Cry

When hounds are running, their voices should ring the woods. Cry is what links us to the action up front. It connects and pulls us forward. It sets the hair on our necks and leads us through the dark woods. To me cry is 75 percent of the excitement of hunting, with all the other elements making up the other half. The American hound has no equal in this department. A full bawl, a deep chop, or a high piercing squeal—blended together they form a symphony.

■ Nose

Nose is what connects the hound to the quarry. It has been said that a hound can only go as fast as his nose will carry him. The American hound has been bred for his nose for generations, for, unlike in England, the hound is expected to find and run the fox, not the huntsman. If you think about the wide variety of climate and terrain that America consists of, it is easy to see that mixing the finest noses from different regions would develop into a very sensitive device. I've seen hounds at the gallop turn completely over when their nose hangs on a trace of scent, reacting before their feet could follow.

■ Drive

Now that the coyote has entered the hunting circles, there may be more of an emphasis on speed. The fox generally stays close to cover

4.3 • Breeding the American Foxhound continued

and speed is required only in short spurts to make up ground when the fox sprints between coverts. Drive, the desire to get forward on the line, is really more important. I want hounds that cast themselves forward at a loss rather than circling backward. When hunting as a pack, the importance of speed is that all members have about the same amount of it. An old hunter once told me that **it's not how fast you make a fox put his feet down, it's how often** that determined whether you would catch him or not. Drive is what makes that constant pressure.

■ Intelligence

The most important quality a hound can have is intelligence. We require the pack hound to do so much more than jumping from the back of a truck and running through the woods until he bumps into something to chase. Intelligence is what makes a hound **biddable**. The intelligent hound wants to please you. He enters the pack more easily; he learns his name and answers to it; he is willing to take commands and is happy to carry them out; he learns quickly which game to run and which not to run. Breed only the most intelligent hounds. A hound that will not break off deer easily should not be bred, no matter how many good qualities it possesses.

An intelligent hound understands that he is part of a team and accepts his role without jealousy. Hounds need to be independently dependent; that is, they should enter a covert boldly and search for the quarry, but at the end of the covert they should be looking for the huntsman and not the next covert. Hounds that are a mile in front of you may just as well have been left in kennel.

The intelligent hound learns quickly what pleases you and tries his best to do just that.

■ Color

“A good hound is a good color.” Color is a matter of personal preference and is really only important if you hunt in a country where blending in with the scenery camouflages your hounds. However, if this is important to you then it makes culling a lot easier, and there are plenty of packs that could use an “off-color” good hound. Uniformity in size and type is far more important, as it will allow your pack to work together more efficiently. Your country should influence the size of your hounds and their type. For instance, hounds that are too big have difficulty getting through fences if the country has a lot of American wire across it. The closer the pack is in type, the easier it will be for them to stay together.

4.4 • Breeding the Penn-Marydel

Joseph T. Murtagh



Figure 4.4-1 Rose Tree Ready 02, Penn-Marydel Champion, Virginia Hound Show 2004

4.4.1 • The Penn-Marydel

The early settlers of Pennsylvania, Maryland, and Delaware imported from England the “Southern Hound” in great numbers. These hounds were known for their low scenting powers and patience in pursuit of the line of their quarry. These same colonials crossed their hounds with Gascon strains from France to increase their nose and voice and to gain the characteristic color of blue tick and black and tan. That cross was the genesis of the modern Penn-Marydel foxhound.

The qualities of a Penn-Marydel are their nose and voice, their ability to run the line of the fox and the ability to push a fox very hard on a good scenting day. They can also win a cold trailing contest. The average Penn-Marydel pack is extremely biddable. Another great quality is the fact that some lines have great longevity and should last at least 7 to 8 seasons.

4.4 • Breeding the Penn-Marydel Foxhound continued

4.4.2 • Conformation

When considering the conformation of a Penn-Marydel, look first at the head. The skull should be fairly long and slightly domed. The ears should be long and low set. The eyes are large and set well apart with a mellow, gentle, and pleading expression and will be brown or hazel in color. The muzzle should be fair in length, straight and square cut.

The neck should be of medium length with a slight fold of skin in the throat area. Shoulders should be sloping, clean and muscular, conveying the idea of freedom of action with activity and strength. The chest will be deep for heart and lung space, narrow in proportion to depth with well-sprung ribs and the back moderate in length. The Penn-Marydel's forelegs should be straight, with adequate bone and tissue, and have a neat, strong foot.

The hind end of the Penn-Marydel should be strong and muscular, giving an abundance of propelling power. Stifles are strong and well laid down, hocks firm, symmetrical and moderately sprung; feet close and firm. The tail set should be moderately high, well-developed, strong and with good carriage with a slight curve.

4.4.3 • Breeding Considerations

In breeding our pack of Penn-Marydel foxhounds, the first consideration I always give is: "Does this bitch and dog each have a great nose and a good voice?" It is the same old thought, and I think it is so important: the voice keeps your pack together and the nose gives you sport. Who wants to go out and worry about scenting conditions? I choose bitches to breed on a performance basis. I then consider what line they come from and whether they match the dog hounds I am currently using. I am breeding a pack of hounds, not just one litter, and so I consider how the new litter will help the pack.

Hounds must run together. The idea of running the line does not mean your hounds should run one in back of the other. The pack should be most interested in following the scent of the fox, not skirting about with their heads up, overrunning the path of the fox. You want them to carry a good head and have the drive they need to give you a nice gallop. We cut from both the front and back and would not consider breeding a hound that runs deer. If a hound runs deer at Andrews Bridge, it is drafted.

Ideally, we breed an older dog to a young bitch. We try to pick out the bitches that entered quickly, did not riot nor cause trouble. We use a few first-season bitches because sometimes you can really miss too many of your "tried and true" in your pack. Your best running bitches are not necessarily your best producers. If I have

4.4 • Breeding the Penn-Marydel Foxhound *continued*

an outstanding first-season dog, I will breed him once just so he has bred a bitch. These pups I view with a jaundiced eye. I just assume conformation is good, and the choice is always on performance, nose, and voice, and how the lines of dog and bitch fit together.

Another trait not to be overlooked is how does this dog or bitch hark to the rest of the pack? Independence in a hound is something that none of us needs when we have a pack of foxhounds. We don't need huntsman #2 leading half the pack off in an opposite direction or on another fox.

Another consideration I use when breeding: is the dog an easy keeper, and is the bitch an easy keeper? All my hounds are the same type, the same color, the same size. The Penn-Marydel dogs should be about 25 inches high, and the bitches should be about 24 inches with good bone. Color really isn't important. There are a lot of really good strains of all colors: tricolors, black and tan, blue ticks, red ticks. My favorite, when I was a boy, was hunting with Huntington Valley; they had beautiful red ticks and tricolors. The tricolor is an excellent color and the predominant color of the breed.

In summary, when choosing bitches, first evaluate to make sure they have a good nose, good voice and good conformation.

4.4.4 • Breeding Advantages

Today's demands of packs running coyotes, gray foxes, red foxes, and bobcats put a real strain on a hound's mental ability. Our Penn-Marydel's have shown themselves to be very adaptable during a day's sport. Easily settled on their quarry and very biddable.

One very important aspect that should be noted for the PMD hounds is that in today's world of running coyotes, more hunts are realizing that constant hard pleasure on the quarry doesn't necessarily make for great hunting. With today's shrinking countries and busier highways, I've found that more sport can be enjoyed with a biddable, cold nose, booming voice hound that runs together as a pack to let the quarry and members enjoy the sport.

4.5 • Breeding the English Foxhound

Benjamin H. Hardaway MFH, Daphne Wood MFH and William Bermingham

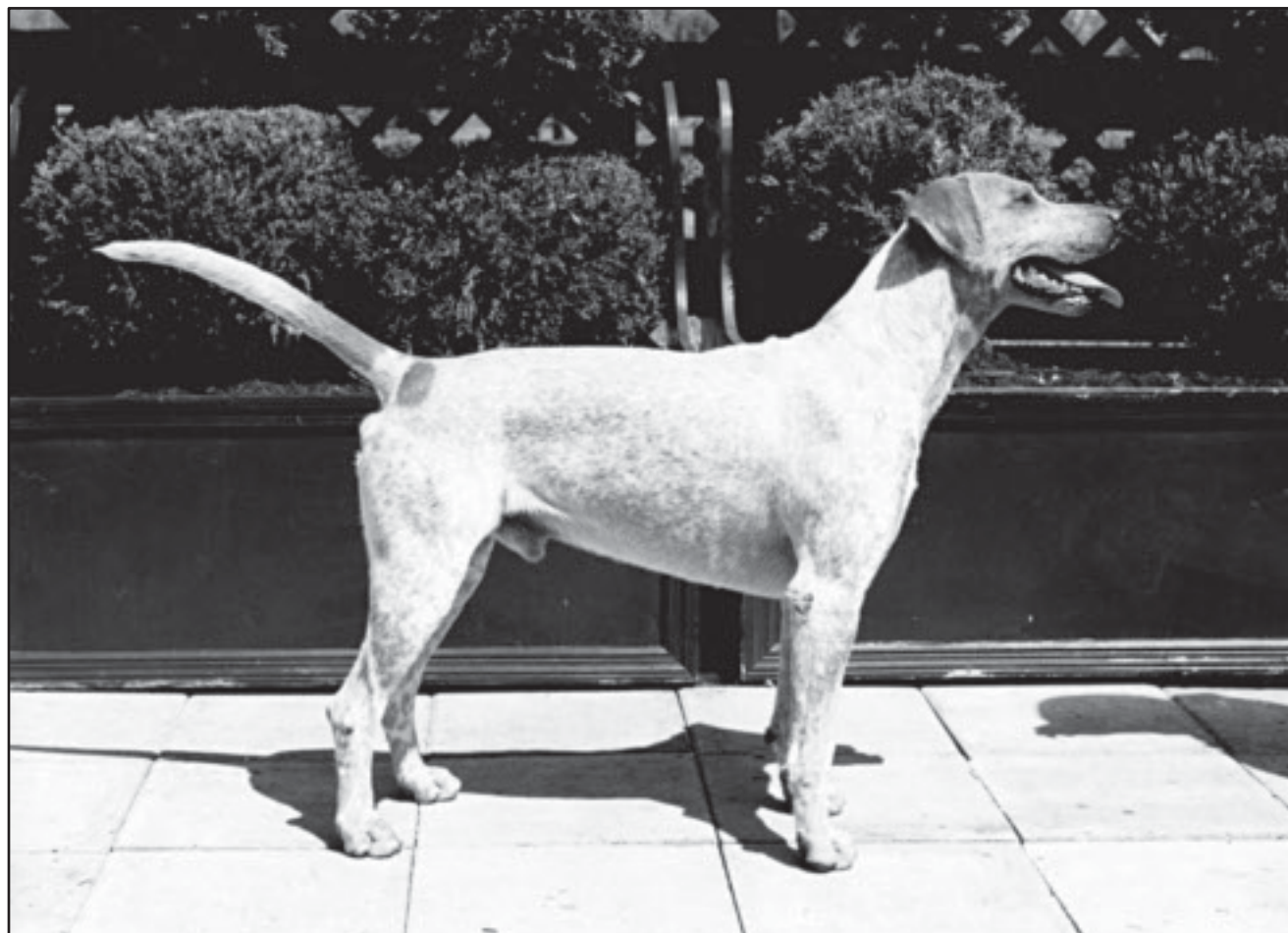


Figure 4.5.1 Live Oak Digger 02, English Champion, Mid America Hound Show 2004

4.5.1 • Breeding Considerations and Conformation

Captain Simon Clark said:

“Breeding hounds tends to be like walking a tight rope, if you get them too light and greyhound-like, they won’t last the hunt; but a bad shouldered, common hound will not go fast enough to put the necessary pressure on the fox or coyote.”

■ Conformation

The successful breeder will find that active, well-balanced, symmetrical, good-looking hounds will generally produce the best litters. Certainly hounds that have a serious conformation fault should not be used for breeding purposes. However, a hound that is a littermate, but does not have quite the appearance of quality as his brother or sister, but is just as good in his work, will often produce a high-quality litter.

The conformation of all types of foxhounds is becoming more similar each year. They all hunt the same quarry, and similarity of conformation makes a lot of sense. At the Virginia Hound Show, a grand champion is now chosen from all the breeds. Twenty-five years ago, this would not have been possible, as the breeds were too dissimilar.

From head to stern there are points to be observed in the conformation of the English foxhound.

■ Size

It is important to maintain the size in English foxhounds, as it is quite easy to breed them smaller and smaller. A good size for a dog hound measured at the shoulder is 24 to 25 inches. Bitches should measure 22 to 23 inches.

It is difficult to maintain the size of hounds when breeding, but all too easy to breed smaller hounds. Although small hounds would probably chase the fox just as well as larger ones, they are not able to gallop as fast through deep going as are larger hounds, nor can they as easily jump over obstacles such as fences and ditches.

The size of a pack of English foxhounds is usually maintained through the sire. Stallion hounds should be of the larger size, have excellent conformation and should stand proudly and boldly. The late Major Bob Hoare, Master of the Cottesmore, once said that when judging, he looked for a stallion hound that looked as though it might bite him!

■ Head and Neck

The head of a foxhound should be noble, with dark, expressive eyes, and velvety ears. Hounds with yellow eyes rarely produce good offspring, and are looked on with disfavor in the show ring. Some people favor the lean “punishing” type of head which was a feature of the old-time Warwickshire hounds, and this is fine so long as there is no suspicion of snipiness, which often denotes a mouth that is not quite level. Others favor the square type of head exemplified by the Fernie hounds. The pure Welsh hounds and Fell hounds often have a high occipital bone, which results in a pronounced, pointed dome. In some kennels one finds the strong, almost massive head, while in others one finds the intelligent, aristocratic, quality head. A brood bitch should never possess a dog hound head, any more than a stallion hound should have a bitchy type of head.

The head should be carried on a shapely neck which is often referred to as a swan neck. It adds immeasurably to the grace and elegance of a well-made foxhound and allows the hound to keep its nose to the ground while galloping.

4.5 • Breeding the English Foxhound continued

■ Shoulder

The shoulder is considered to be one of the most important parts of a hound's body. The shoulder blade, or scapula, is joined to the upper arm, or humerus, which fits into the elbow joint. The speed of the hound depends upon the relative angles of these bones. If the shoulder blade is quite upright and the humerus more horizontal, it is known as a "loaded" shoulder, and the hound will likely move with a short stride. On the other hand, if the shoulder blade is laid well back, and the humerus is comparatively upright, the hound moves with greater freedom and a longer stride. A prominent sternum or breast-bone, set up fairly high, is usually the sign of a good shoulder. This is because it is not hidden by a "loaded" shoulder. It also means that the upper line of the neck is much longer than the lower, and a hound with this combination will very seldom have a "loaded" shoulder.

■ Chest and Legs

Good conformation hounds should be deep through the heart, that is the depth between the forelegs, not the stomach. This provides plenty of room for the lungs to work, without spreading the forelegs. The distance between the forelegs should be one hand's breadth wide. The underline should slope upward from the chest with a gentle upward curve.

The foreleg should be slightly tapered when viewed from the side, as a straight leg lacks class. The pastern should be on the long side, sloping slightly backward, rather than forward, giving the hound the maximum spring and resilience. Elbows are very important. The elbow should be straight allowing the foreleg to swing freely like a pendulum. If the elbow is not straight, the hound which is out at the elbows will toe in. The opposite is known as "tied-in" elbows, which makes the feet turn out. The armpit, or elbow slash, should be a slightly bent long arc reaching well up the hound's body. This allows the hound a good reach when he is galloping.

■ Feet

A foxhound's foot is a vital part of his anatomy, because a good foot is the secret of endurance. A hound with a good foot is capable of doing hard work, day after day, chasing foxes over hill and dale without getting footsore. Most English hounds have what is called a "cat-foot," while American and Fell hounds tend to have more of a "hare-foot." However, the best type of forefoot is that which more resembles the foot of the wolf or coyote—a nice natural foot on which the hound stands firmly, with his weight on all four toes and his heel.

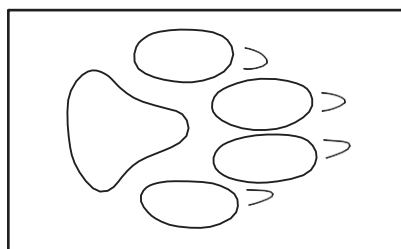


Figure 4.5-2 Pad Mark of a Wolf Foot

A hound's foot can best be judged with the hound standing broad-side on, not facing one. If the rear pad, or the heel, is not sharing the weight of the toes, then the toes are taking extra weight. This will weaken them, and the knees will feel the shock. Strong toes and

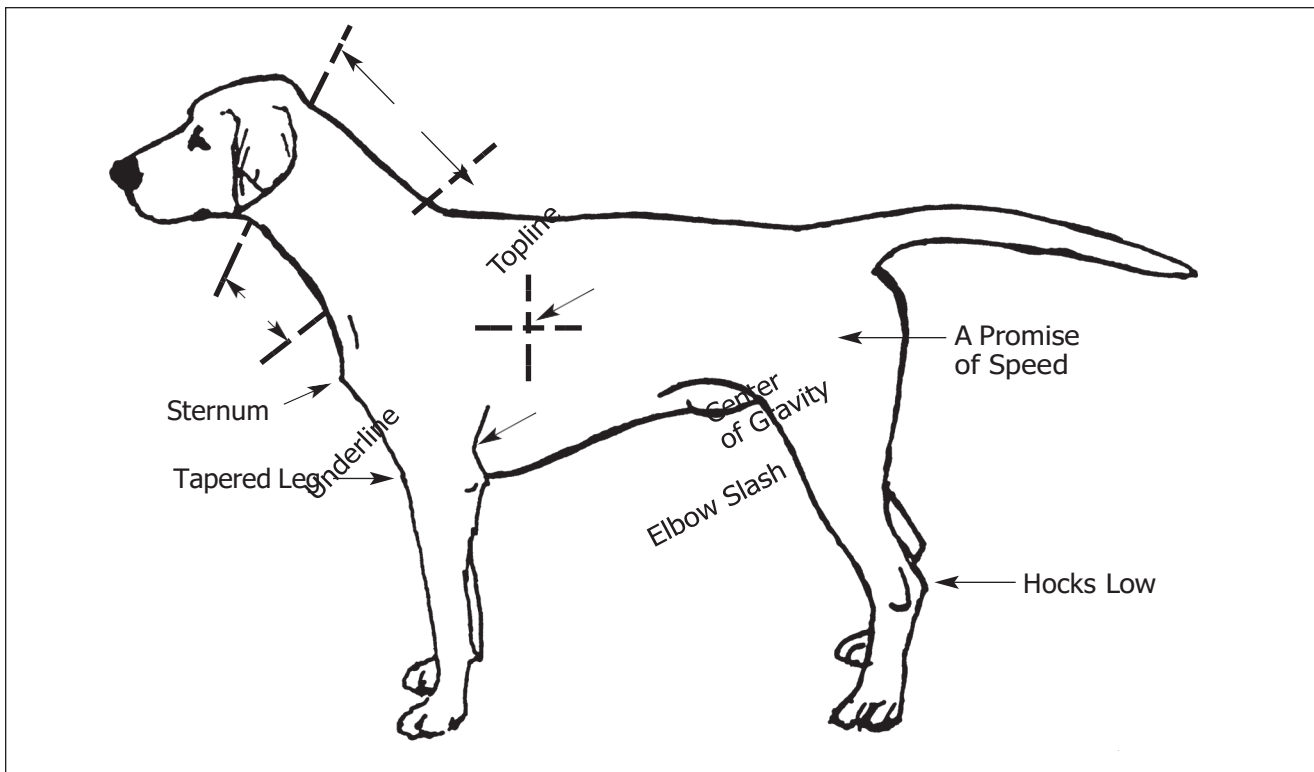


Figure 4.5-3 A Good Well-Balanced Hound

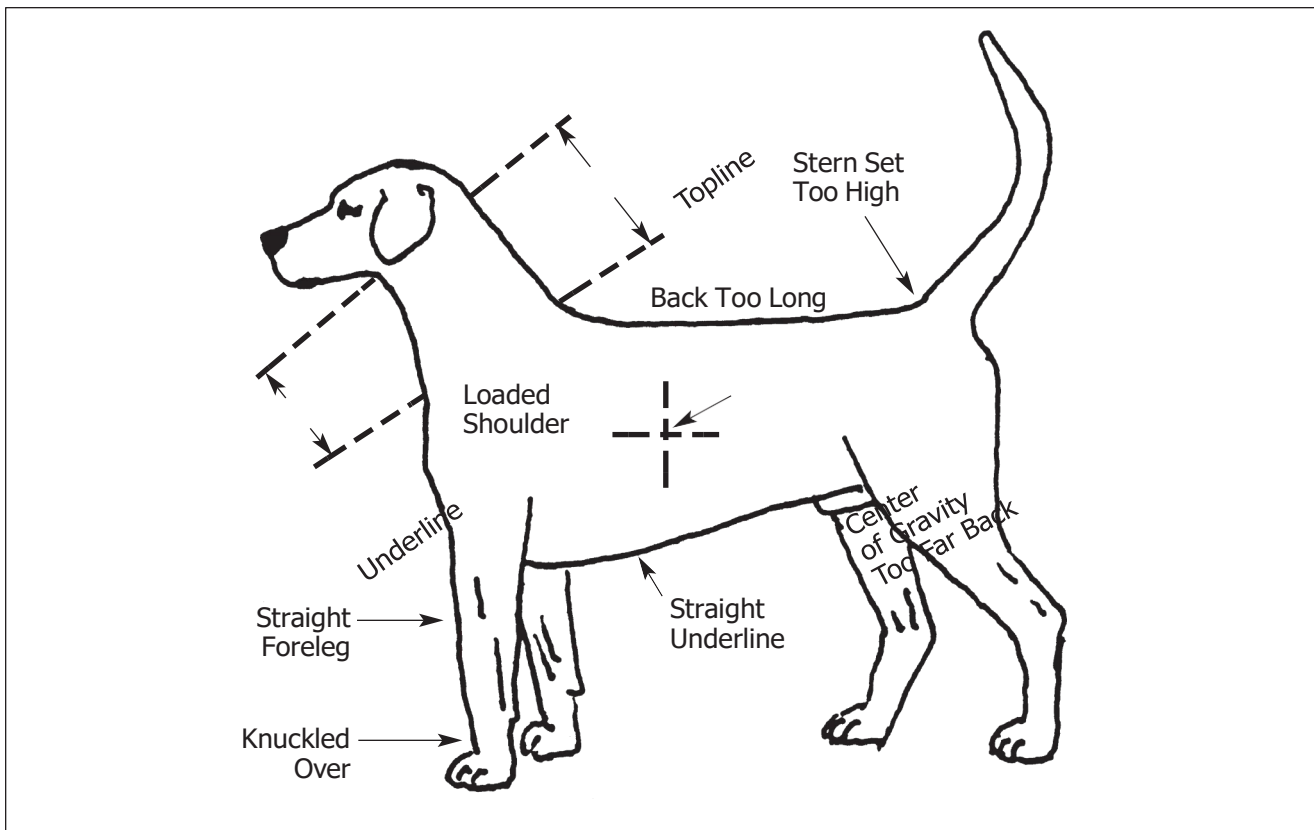


Figure 4.5-4 A Bad Unsymmetrical Hound

4.5 • Breeding the English Foxhound *continued*

sound toenails are essential to a good foot, and any hound with a toe down, for any other reason than an accident, should not be used for breeding. Ikey Bell once said, “I came to find that the first essential, before all else, was a perfect wearing foot and flexible knee. A hound whose feet are not hard wearing and springy is a menace.”

■ Back

Backs should be strong and muscular, with width between the pin bones. Occasionally a “cloven” back occurs—one in which the muscle runs up both sides of the spine—and this is not considered to be a fault. The length of the back is a matter of endless discussions between breeders. One will say that a hound with a longish back has great scope, while another will say the hound is too long, and use the expression “hounds by the yard.” Perhaps the best length of back is that found on the really well-balanced hound with a good big stride. A short-backed, square-box type hound will never really go top pace.

General balance is, of course, of vital importance. A hound should be so symmetrical that its weight is not on the forehand, so that one’s eye comes naturally to rest at the center of gravity, which is at a point about the center of the ribs. There is no doubt that a hound that is correctly balanced will wear longer than one that is not, and longevity is important to the huntsman.

■ Stern

Curly sterns, or the borderline cases which are known as “gay” sterns, are very hereditary. They do not appeal to serious breeders of English hounds, and although it may be argued that a hound does not hunt with that part of his anatomy, it is to most people an unsightly fault, and on this part of the hound, fashion rules.

■ Loin

The loins should be muscular, and not weak looking. The muscles of the loin are connected with those of the hind legs, so if the loins are weak, the hound is unable to use his leg muscles properly. The hound’s driving power and jumping ability are derived entirely from the hindquarters, and any weakness of the loins will slow the hound when he is galloping and jumping fences or fallen trees.

■ Hindquarter

The hocks should be neither “cow-hocked” (facing inwards) nor “sickle-hocked” (weak and bending beneath the body). The hock should be set on close to the ground so that the femur (or first thigh bone) is long. This is summed up well by the little verse:

“The nearer the hock is set to the ground,

The greater the speed of your flying foxhound.”

The muscle of the second thigh should be strong and outstanding, not flat and weak looking. One sometimes sees hounds whose hocks are so close together that the hound is narrower behind than in front, so that the hind legs cannot move freely past the front legs on the outside, when the hound is galloping. Hip dysplasia, which is common in some breeds of dogs, is very rare in foxhounds because this is a working breed. A hound which suffers from hip dysplasia would not be able to go the pace with the rest of the pack. This hound would probably not be kept in the pack, and would certainly not be bred from, so that hip dysplasia would be naturally eliminated.

Finally, dog hounds should be entire (having two testicles), and only these hounds should be used as stallion hounds.

■ Hunting Instinct

Working qualities must be a serious consideration when breeding hounds. These are:

- Nose
- Cry
- Stamina
- Stoutness
- Pace
- Drive
- Bravery
- Intelligence
- Biddability
- Steady to deer or riot

Thomas Smith writing in his book, *The Diary of a Huntsman*, said:

“The two great points to attend to in breeding are stoutness and nose; therefore, it is best to breed from those that are stout as wire, and that never get slack, and those that can hunt a cold scent. The two qualities often go together; for it is the stoutness that makes a hound willing to try to hunt, and make use of his nose, which a slack hound would not try to do. But much of this depends on the huntsman. If he is persevering, his pack will soon become hunters; but they must be born with good noses, and none ought to be allowed to be bred from which have not.”

Peter Beckford, that great hound man, in his book, *Thoughts on Hunting* wrote:

“Consider the size, shape, color, constitution, and natural disposition, of the dog you breed from, as well as the fineness of his

4.5 • Breeding the English Foxhound *continued*

nose, his stoutness, and his method of hunting. On no account breed from one that is not stout, that is not tender-nosed, or that is either a babbler or a skirter.”

This is still sound and wise advice for the breeder. However, Peter Beckford also warns the breeder that the kennels that breed the greatest number of hounds have a right to expect the best packs. Further, he warns the breeder not to be too prejudiced in favor of his own sort of hounds. His advice is to send “your best bitches to the best dogs, be they where they may.”

Cry is a very important element, and it is not just the deep cry that is wanted, as often under certain circumstances, the high-pitched hound voices can be heard more clearly. Some hounds will run mute, and as this is a hereditary trait, a mute hound should never be bred from. Normally a mute hound can run faster than hounds that are throwing their tongues, and thus using up energy, but as the object of the sport is to hunt a pack of hounds, not individual hounds, the fast hound running mute will only foil the line for the rest of the hounds.

Pace and drive are essential qualities, and this is especially important for packs that are hunting the coyote. A coyote is, of course, bigger than a fox, and he can run with a seemingly effortless lope, so it is important that the foxhound can run fast enough to give him a good race.

Most English foxhounds are incredibly brave, but avoid breeding from one that is very timid or shy. Similarly, the English foxhound is a very intelligent animal, but the odd one stands out for the ability to use its head. These very smart hounds are the best to use for breeding.

■ Pedigrees

The Arabs first developed pedigrees in order to keep a record of the offspring of the Arabian horses. This system was adopted first by breeders of the Thoroughbred racehorse, and then by foxhound breeders. The first volume of the Foxhound Kennel Stud Book covers the years from 1800 to 1844. This volume was published in 1866 by Cornelius Tongue, who wrote in his preface:

“The successful breeder of hounds should follow the principles of the successful breeder of race-horses, as it is invariably found that those animals are most to be depended upon for the perpetuation of their species, whose genealogy can be traced in the greatest number of direct lines to great celebrities of olden time.”

In order to do this, it is necessary to make a study of the pedigrees. The breeder will learn in the first 3 or 4 generations if there are any common ancestors, and so avoid breeding too closely. Inbreeding is generally considered to be when there are common ancestors in the

4.5 • Breeding the English Foxhound *continued*

first, second or third generations. Some breeders advocate occasionally going closer than this, but it is a dangerous policy, particularly for new Masters, because not only are the virtues multiplied, but often so are the vices.

Most English foxhound breeders agree that the female lines are most important. The famous Ikey Bell wrote:

“It is hard to say whether the male or female impresses most; it depends on so much. I certainly have found that the male impresses his stock, nine times out of ten, and outward appearance; also, in most cases, if a ‘good ‘un’ and bred to good hounds in work. But goodness and quality come so much from the dam, too. Where the ‘female’ comes in if you line breed, the excellence of quality and work become very visible when your ‘F’ lines become multiplied as time goes on. And it is the multiplication of two or three wonderful bitches which make a kennel’s type and style of hunting a fox, and a lasting type of looks and hunting ability. Hence the importance of selecting your foundation bitches only from super performers in the field.”

(The name of an outstanding hound which appears in both the top and bottom halves of a pedigree; twice, or three times in perhaps the first five generations, is going to double or treble the potency of that blood.)

“It will save you years, as you can breed closer, if your two or three super-performers are very differently related. The mere fact that they ‘do it’ better than anything else tells you that, whether you think them plain or not, they have the best skeleton structure in your pack, and nothing but good can come from your selection.”

In order to determine how many female lines there are in a kennel, it is necessary to consult the stud books and discover which hound is the mother of the one in which you are interested and write it down. Then discover the grandmother, and the great-grandmother, etc., and write them down. This is called the tail female line. The same procedure may be used with dog hounds to discover how many tail male lines there are. It is usual to find that there are only a few female lines in the first-rate kennels, and these strong female lines establish the type of hound that will be found in that kennel.

It is often assumed that the pedigrees of English hounds must be traced in the English Foxhound Kennel Stud Book. This is often not the case. Volume One of the Foxhound Kennel Stud Book of America contains the pedigrees of English hounds only, starting in the year 1884. The pedigrees of some English hounds alive in the packs today, can be traced back to this time, without any reference to the Stud Books published by the MFHA in England. Although the serious hound breeder will enjoy tracing pedigrees back to the last

4.5 • Breeding the English Foxhound *continued*

century, the bloodlines become pretty thin after a hundred years. It will be found that a tail female or tail male line which goes back about 50 years, and includes the last 14 or 15 generations, is usually quite long enough for all practical purposes.

Thomas Smith in his *Diary of a Huntsman*, explains his experiment to discover whether young hounds inherit most good qualities from the sire or the dam:

“Having selected a bitch of three seasons, who had never distinguished herself, either as good at drawing, in the chase, or in cold-hunting, although having no decided fault as to slackness, she was put to a dog who was considered to have most of the good qualities required in a foxhound, but the get inherited only some of them.

“Then the experiment was tried the other way, by selecting a dog of three or four seasons, who had not shown himself to be a good drawer, or good in the chase, or a good cold-hunter. This dog was put to an extraordinarily good bitch, who had most of the qualities required; and the produce was in every instance superior. This experiment was repeated several times and it always produced the same results.”

Many years ago, the old huntsman of the Fitzwilliam was asked how he consistently bred such good hounds. He replied, “Ah, my lad, the dam’s the secret!”

■ Age

The question of breeding from first season hounds is one that is discussed from time to time. Generally, breeders agree that this is not a good idea, particularly in the northern part of the continent where the short hunting season and the long winters sometimes require that a hound hunts two seasons before it is properly entered.

However, it sometimes happens that a particularly keen young hound, who seems to have all the right attributes, may be tragically killed on the road, or in some other way, in his first season without having sired a litter to inherit his hunting instincts. Or perhaps a very well-bred young hound that has been imported as a puppy from some famous kennel on either side of the Atlantic Ocean has been killed before it can be bred from. In these special circumstances it is wiser to use the young hound, and so maintain the breeding, while taking a chance on the litter.

It is a remarkable fact in breeding foxhounds that if a young hound inherits any peculiarity from the father, such as standing in a particular way in the kennel, or following close behind the huntsman’s horse, or any other trick of the sire, the hound will also generally inherit all the sire’s good qualities, so that the hound can be bred from in its first season without taking much of a chance. At the opposite

4.5 • Breeding the English Foxhound continued

end of the scale, the breeder is advised never to put an old dog to an old bitch, or the get will lack vitality.

■ Conformity of Pack

Many hunts develop their own type of hound, which is easily distinguishable from other packs. Many breeders prefer to disregard type, conformity, and appearance, and concentrate entirely on working qualities. Indifferent as these breeders are, even they must agree that a pack of foxhounds should look like a pack of foxhounds. When a pack of hounds are all of a certain type and size, they conform to a standard, and are said to be level. Some packs have a distinct color throughout the pack, such as the Belvoir Tans, but most packs of hounds are made up of a large variety of colors, such as white, black, tricolor, tan, blue or red mottled, and badger pied, and yet they all look the same type and size, and because of this they are called a level pack.

Although conformity is not nearly as important as giving a fox or coyote a good chase, it is very pleasing to the eye of the serious breeder. One of his greatest pleasures is the appearance of his pack, and because in the northern parts of North America, the breeder will spend more time looking at his hounds in kennels than in the hunting field, because of the winter weather, it is very important that he should like the look of the pack of hounds he sees!

4.5.2 • The Qualities and Faults of the English Foxhound

English foxhounds are generally obedient, manageable and biddable. They accept discipline, and they don't sulk after they have been disciplined. A good huntsman is made a part of the foxhunting team, and the hounds enjoy working with him and will look for and appreciate his help if they cannot find the line themselves.

The English hound is noted for drive, stamina, and stoutness, and for outstanding intelligence. The English hound is not as low scenting as the American hound, and perhaps does not have as much bass in its cry. Cry or tongue is necessary to let the huntsman, the field and the rest of the pack know where the hound is, and so to keep the pack together.

The American foxhound is more independent than the English hound and shows it in the way it hunts a fox or coyote. In the 1920s the fashion of the day dictated that foxhounds be very heavy boned, over at the knee, bad shouldered, and unbalanced. At the same time the American hound tended to be small, light boned, and almost weedy. This type of hound was much faster than the lumbering old English hound of the day, and this gives rise to the modern, and quite erroneous belief, that English hounds are slower than American hounds.

4.5 • Breeding the English Foxhound continued

Today much has changed. The two types look much more alike than they did many years ago. The American hound has gained substance, bone and size, while the English hound has lost these qualities, so that what emerges today is an animal that is bred to chase the fox and coyote, that runs at approximately the same speed as the quarry, and that maintains speed, drive, nose and cry, while doing its job. This is the opposite of breeding for fashion and is the ideal which serious breeders must aim for, no matter what type of fox-hound they are breeding.

4.6 • Breeding the Crossbred Foxhound

Benjamin H. Hardaway MFH

Why Crossbred hounds to hunt in America? Why not American? After all we are Americans and supposedly the American hound was bred for the specific demands of the American scenting condition and game. Nobody would rather be hunting a pack of pure American hounds of the July strain than me. The reason I'm not is the Virginia white-tailed deer, which ties back to the two main qualities



Figure 4.6.1 Midland Kill, Crossbrad Champion, Virginia Hound Show 2004

4.6 • Breeding the Crossbred Foxhound *continued*

demanding in a foxhound to meet modern foxhunting problems: 1) biddability and 2) intelligence.

I have yet to find any individual or any strain of American hounds that could touch the intelligence of the Fell crosses from the College Valley or West Waterford hounds.

Then why not just use the pure English hound for American fox and coyote hunting? Answer: nose and cry (or music). I have yet to find the English hound, individual or strain, that could touch the delicate fox nose or the exciting full cry of the American foxhound.

So, I say the best foxhound for our present-day needs is a judicious cross of the best of these two breeds, or crosses of the best strains of established Crossbred hounds.

For a person wanting to start a Crossbred pack of hounds, it's less frustrating and cheaper to start with a good draft from an established Crossbred pack, rather than start with pure American hounds and pure English hounds. The road to a good pack will be quicker and less expensive.

By far the largest number of hounds registered with the MFHA Stud Book each year are Crossbred. That ought to tell you something.

4.6.1 • American Breeds

For my American breed, I have predominately used the July strain. They have many good points. They are hard driving hounds, and on a good scent give tongue every breath. The notes are not musical but exciting. They have wonderfully fox sensitive noses, quick to wind a fox in big woodlands. The July likes to get up on his game and run as close to it as possible. They pack up as well as any hound can that runs at extreme speed and will hark to a running pack as far as they can hear it.

The disadvantage of the July is that he is a highly bred, high-mettled hound that won't take a lot of knocking around. He and his crossbred product need a sensitive approach in handling, both in kennel and in the field.

I also used a small percentage of Penn-Marydel hounds in my mixture. This breed has very good nose and cry and are, in most cases, easy to steady to deer.

There are many other strains of American foxhounds you can use. The Walker, Trigg, Goodman, etc. foxhounds are all too independent and extra difficult to make steady on deer. The Old Virginia or Bywaters foxhound is in the foundation bloodlines of American foxhound packs fielded by the Orange County, Warrenton, Old Dominion and Piedmont. There are more but I am not familiar with their bloodlines. Any crossbred breeder would do well to thoroughly

4.6 • Breeding the Crossbred Foxhound *continued*

investigate these packs as a good source of American foxhound bloodlines.

There is another American strain that I believe is worth trying—the Buckfield Hounds. Developed in the Northeast states, they are reported to be born deer proof. I would try some bred by Joseph J. Souza, 23 North Merrill Road, Harmony, ME 04942

4.6.2 English Breeds

On the English side, I have used some of most types of English foxhound—maybe some of all their types with the exception of the Old Pure English Foxhound as represented by the Belvoir and Limerick.

There are at least 6 types of English foxhound, all very different in their looks and characteristics:

1. The Pure Fell foxhound, hunted on foot in the mountainous part of England. Packs: Eskdale-Ennerdale, Uswater, Blencathra.

These Fell hounds are high-mettled hounds that require sensitive handling. They have more characteristics like American hounds than any other of the English strains. You lose less nose and cry when crossing on Fell hounds. You gain the intelligence but not as much biddability, and very good deer resistance.

2. The Hill Hound, a cross of Fell and Modern English foxhound. Packs: College Valley, N. Northumberland, Border, Bewcastle.

The best individuals of this hound should be ideal for crossing on American or Crossbred hounds. Good nose and cry, biddability and deer resistance.

3. Old English foxhound. Packs: Belvoir, Limerick, Waterford, Sir Watkin Williams-Wynn's, Brocklesby, York and Ainsty South.

When using on American hounds there is too big a loss in cry and nose. In most old English packs, the huntsman catches the fox with the help of the hounds. The preference in America is for the hounds to catch the fox with as little help from the huntsman as possible.

4. Pure Welsh. Packs: David Davies, Plas-Machynlleth, Vale of Clettwr.

These hounds have good noses and plenty of cry. They are very hard hunters. They are inclined to be independent and will dwell on the scent. Some individuals are inclined to run heel. All in all, a good bet as a cross.

5. West Coast Harriers. Packs: Taunton Vale Harriers, Cotley Harriers, South Pool Harriers, Axe Vale Harriers.

These are medium to small foxhounds. Very active with good nose and cry. They make excellent material for Crossbred foxhounds.

4.6 • Breeding the Crossbred Foxhound *continued*

6. Modern English foxhound. Packs: Cottesmore, Bicester Whaddon Chase, Duke of Beaufort, Heythrop, Exmoor, Cotswold, Meynell, Cattistock and most of the rest of English packs.

The Modern English foxhound was produced by crossing the Welsh foxhound on the Old English foxhound for the most part, but some packs have used Fell and Hill hound blood, some West Coast Harrier and lately some American bloodlines. So actually, the most popular hound in England today is a Crossbred.

The Modern English foxhound is the most used of the English strains for producing American Crossbred foxhounds. If you get your Modern English foxhound from a pack that habitually hunts the fox through deer-infested country and get individuals with good nose and cry, you can certainly produce a satisfactory pack of American Crossbred hounds. In picking whatever strain of English hound, make sure the pack comes from a hunt that hunts regularly in deer country and is steady to deer.

4.6.3 • Starting a Crossbred Pack

I started out by crossing my American strain, the July, on another American strain, the Penn-Marydel, then this cross on the English Hill Hound of College Valley bloodlines. All these outcrosses were made to gain biddability, intelligence and something I will call Deer Resistance—an inherited quality of not being interested in running deer. Having a deer proof pack is 60% breeding and 40% training. My early day formula was 5/8 Hill hound, 1/4 July and 1/8 Penn Marydel.

To breed a proper pack of Crossbred foxhounds from scratch it takes the adventurous spirit of a pirate, the tenacity of a bulldog, the imagination of an artist and a steady source of ready cash.

My advice is go investigate the Crossbred packs; go to their kennels and walk out with the hounds; if possible have a couple of hunts. If your country has deer, and what countries in the U.S. don't today, be sure the packs you visit hunt through plenty of deer and are steady. If you are going to hunt a large percentage of coyote, be sure these packs hunt coyote, as I can tell you that a very good foxhound may not be a coyote hound.

Do your best to get good individuals of whatever strain or breed. There are good and bad in all there is or ever was. Take old hounds or untried pups, as you are likely to get better hounds than if you take a draft of 2, 3, or 4-year-old hounds. Unless the Master is a special friend and very generous to boot, you will be getting slack hunters, self-hunters or those impossible to break off deer. You are much better off with fewer better hounds, and building your numbers up from good hounds, than getting 12 couple of rogues.

4.6 • Breeding the Crossbred Foxhound continued

4.6.4 • Breeding Considerations

If you are lucky and get a few individual hounds that suit, the next step is deciding which dog to use on which bitch. I have never been one to use one dog over all or most of the bitches for that season's matings. You are better off in establishing certain tail male and tail female lines and keep them going. In a pack of 20 to 30 couple of hounds you need at least 3 tail male lines and 4 tail female lines to keep enough diversity in your pack so you won't have to keep going to outside males. You will breed a better pack if you breed from hounds that you have trained or hunted and are thoroughly familiar with their strong points and their weaknesses.

Selecting the proper individuals to mate is no exact science, but the more thought and time spent in making the selection the better the chance of getting the desired product. It's advantageous to compare the pedigrees of the dog and bitch if for no other reason than to see if they are related. The average breeder will do well to stick to the rule of not having the same hound or a brother or sister of that hound closer than the third generation.

It's more important to thoroughly study the characteristics of both dog and bitch—their biddability, conformation, temperament, intelligence, speed and drive, nose, cry, fox sense and deer resistance. Few if any hound will rate perfectly in all categories, so it's important that the faults of the bitch be offset with strengths from the dog and vice versa; don't breed from two hounds that have the same glaring faults. We hope the offspring will inherit only the good points from each parent, but what keeps them from inheriting the worst points from each parent? There is no guarantee they won't, but one way to keep this to a minimum is by a judicial system of line breeding.

Inbreeding is using brother to sister, father to daughter, mother to son; line breeding is breeding first cousins, aunt to nephew and combinations where the sire and dam have ancestors common in both pedigrees. By using a judicious system of line breeding, you can better establish a pack that breeds uniformly the characteristics you want. A pack of hounds should be family.

The more you concentrate on one characteristic—color, nose, conformation or whatever—the more the overall excellence of the pack will suffer. The breeding of a superior pack of foxhounds is a compromise. All ingredients—biddability, conformation, temperament, intelligence, speed and drive, nose, cry, fox sense and deer resistance—must be given equal weight. You are a lucky man indeed if your best working hounds can also win at the hound shows.

Don't wait too long to breed a good bitch. There are certainly some great hounds that are out of old bitches. However, a bitch is in her prime at 3 to 4 years and usually will have an easier time and raise

4.6 • Breeding the Crossbred Foxhound *continued*

bigger, better whelps. I don't like to breed an old dog to an old bitch. If I am going to breed an old bitch, 7–8 years old, I will use a young dog.

If you find hounds that suit you and do the job, stick with that family or strain and be careful in crossing out on something different, unless you personally know the strain and the individual you are going to use. Once you have mounted the tiger it's hard to get off. As my old fox hunting buddy used to say, "Stick close to the root of the tree."

4.6.5 • Conformation

You hear a lot of conversation about correct conformation. I have seen tough, hard running hounds come in all shapes and sizes. There are a few faults that are worth pointing out. A hound that stands too wide between the front legs won't have the speed to stay with a fast pack. If, when you put your hand between the front legs of a hound, the inside of both front legs don't touch the side of an average man's hand, the hound is too wide in front. A prominent brisket can't have bad shoulders.

I prefer a good strong hare foot to the tight fleshy round foot, but I've seen both types stand up well.

The hind leg should not be too straight, but curving down to a short well let-down hock.

I like a hound that has an elastic look. One that stands over a lot of ground; long through the rib cage; short through the back; wide and strong across the loin; well developed, deep chest; not too high on the legs; but not dwarfish or basset looking—an all-around balanced animal.

A good hound can't be a bad color, but I like white hounds, as, except on snow, you can see them the best.

One last admonition: judge your hounds primarily on their work in the field and not in the show ring. Breed not for fashion, but for hounds that run the quarry with panache, excitement, and sheer exuberance.

4.7 • Line Breeding

C. Martin Wood, III, MFH

Hunting with hounds for sport is as old as recorded history. Fox-hunting is a relative newcomer to the pantheon of field sports having come to the fore only as the sport of deer hunting began to decline in England as more and more land was either turned to the plough or enclosed to confine a growing domestic livestock industry. Hounds themselves have been carefully bred for thousands of years; foxhounds as a specific breed of hound for a much shorter period of

4.7 • Line Breeding continued

roughly 400 years; and the modern foxhound as we know it today only since the beginning of the 20th Century.

In order to provide real sport, hounds must be hunted correctly while at the same time entertaining the mounted field. Many people today are as keenly interested in the performance of the pack as they are in the cross-country ride following them. Therefore, to my mind, the single most important ingredient in a successful hunt is a well-bred, obedient and high-quality pack of hounds.

4.7.1 • Choose Your Type

The question is what type should be used? The answer is the type that best suits you as a Master, your huntsman and his or her personality, the capability of your staff and, most importantly, your quarry and the country you will chase it in. As an example, it does you no good to hunt a seriously fast pack of hounds in a tightly enclosed country because they will soon run away from you. By the same token, it will disappoint many foxhunters to hunt a pack of slower, more deliberate but wonderfully capable hounds in wide open country chasing a coyote. Your breeding program should put this together into a type that is developed for your purposes.

Once you have selected a type, it is then your job to develop it. Right at the outset a cautionary note should be interjected here, which is that no Master who is not committed to a long-term mastership should ever attempt to materially change the breeding of a pack of hounds without a very fundamental reason. It takes a minimum of 7 and more likely 10 years to really affect a serious change. Therefore, indiscriminate breeding can ruin years of very careful work by your predecessors in a desperately short period of time.

Foxhounds in the United States fall into four fairly distinct types: American, Penn-Marydel, English and Crossbred. Each type has its own special characteristics that are the end result of years of selective breeding. These points of distinction can be developed in your own pack by the careful introduction of bloodlines into your pedigrees which carry the characteristics you are seeking. This is the very essence of linebreeding.

There is an old saying in the hound breeding community that if you want to be certain of the quality of a foxhound's pedigree, look at the pedigree of the Master who bred it in terms of his tenure in office, the quality of hounds he has produced and the sport his pack shows. Over many years of breeding for a type, a concentration of bloodlines will evolve in the kennels of serious hound breeders, and the results of using these bloodlines can be very predictable even when breeding Crossbreds, some of which carry very strong male and female lines. The real key here is knowing the tail male and tail female lines of your hounds as far back as you can. With a bit of diligent

4.7 • 4.7 • Linebreeding continued

work in the respective Foxhound Kennel Stud Books, this will be the early 19th Century for English hounds and the early 20th Century for American, Penn-Marydel and Crossbred hounds.

4.7.2 • Male and Female Tail Lines

What is meant by the tail male and tail female lines? Very simply put, tail male is the top line of a pedigree form (i.e., father, grandfather, great-grandfather and so on for the male side) (See Figure 4.7-1) and tail female is the very bottom line of the pedigree (i.e., mother, grandmother, great-grandmother and so on) (See Figure 4.7-2). It is easy to see on a pedigree form by simply taking a marker pen and drawing a line that represents tail male and tail female.

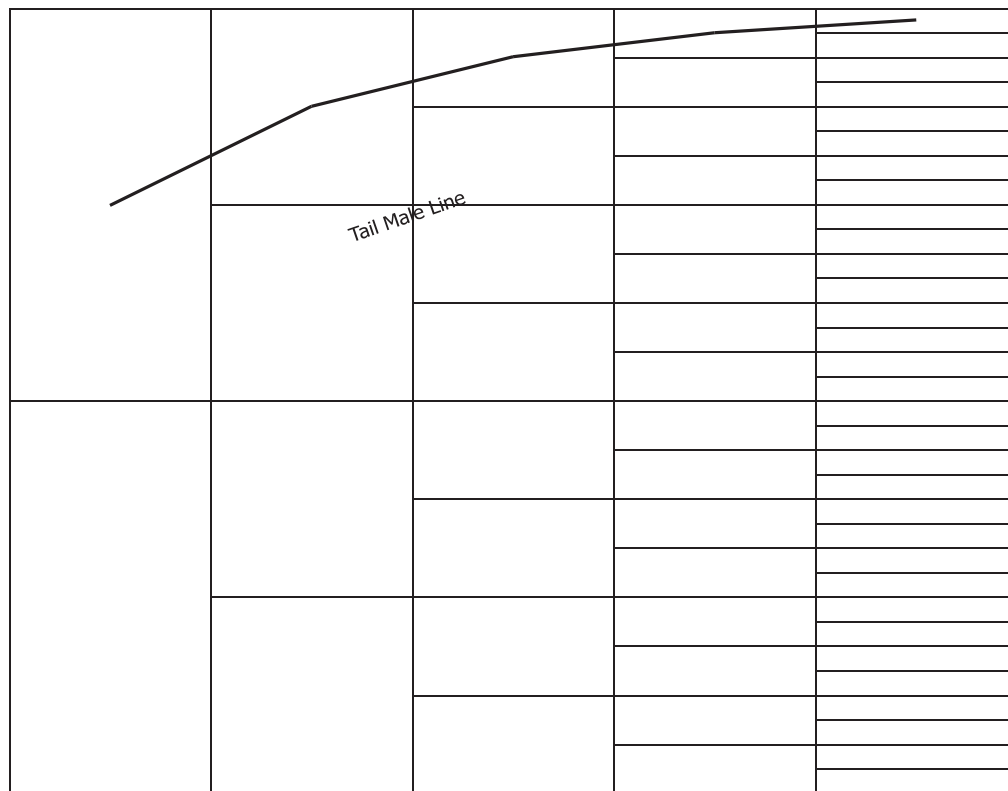
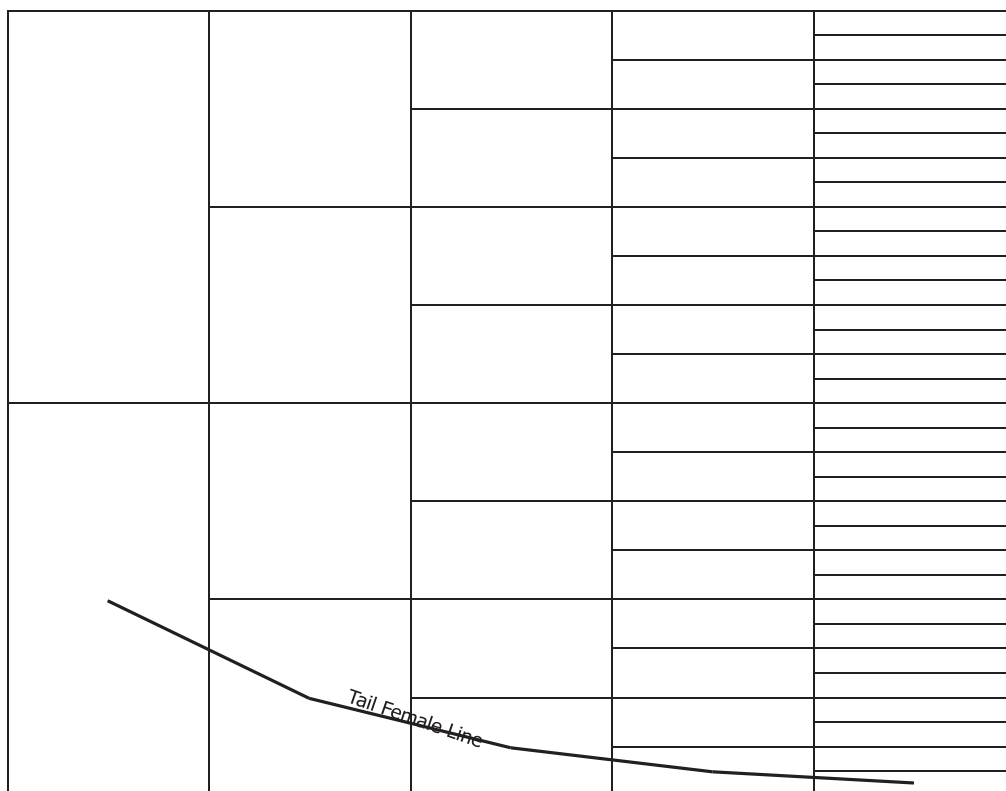
You probably need four or five strong female lines and three or four strong tail male lines in your pack. It is the use of these lines that will bring consistency to your breeding and a levelness to your pack over time. The strongest female line at Live Oak goes back through the Midland Crossbreds to the College Valley in Northumberland via a wonderful bitch given to me unentered by my great friend, Ben Hardaway, MFH. Over 40% of the Live Oak carry this one tail female line. The next strongest bitch lines come from the Exmoor and represent about 25% of the pack. In terms of tail male lines, the strongest influence is the line of Heythrop Craftsman '62 through Exmoor Daresbury '87, Exmoor Royalist '88, Exmoor Limecombe '91 with 40% of the pack carrying this very strong male line which descends from Heythrop Chorister '06.

Another excellent male line we have is to the famous Fell foxhound Blencathra Glider '76, who was by Blencathra Gallant '70 and out of Pennine Token '72. The single tail male American line goes back to old Virginia Bywaters blood through Farmington Ready '55. Using this line on Midland Crossbreds, which were then crossed to an Exmoor bitch whose tail female line goes back to Heythrop Secrecy 1888, has produced Live Oak Drummer '89. He was an outstanding hound in his work as well as in the show ring, and he has produced exceptional puppies.

4.7.3 • Why Linebreeding?

Why linebreeding rather than simply breeding the best to the best and hoping for the best? The reason is simply that linebreeding makes the most effective use of tail male and tail female lines to produce predictable offspring. It enhances the characteristics of the forebears. It produces a level pack more rapidly than any other breeding formula. When they are bred similarly, they run together well packed up and have basically the same performance characteristics. Finally, it makes maximum use of proven genetic pools by bringing forward those breeding lines that have carried all the best hunting and

4.7 • Line Breeding continued

*Figure 4.7-1. Tail Male Line**Figure 4.7-2. Tail Female Line*

4.7 • Line Breeding continued

conformation qualities that were highly prized by our predecessor hound breeders.

The proper use of proven lines from proven hound breeders can be used to improve not only conformation but nose, drive, cry and biddability. I have never seen it used to improve a given hound's "fox sense," but I have no doubt that it helps by supplying the basic mental and instinctual ingredients that are then developed in individual hounds. Ben Hardaway, MFH, Capt. Ronnie Wallace, MFH and I are all believers that a hound can be bred to be deer resistant, if not deer proof, and that at least 60% of that trait comes from breeding to foxhound lines that hunt through deer all the time, and the remaining 40% comes from the training that a young hound receives. The important ingredient here is that a hound be born with the mental capacity to take the training, i.e., biddability and the sagacity to use it.

Linebreeding is used to improve good bitches with outstanding stallion hounds. A good rule of thumb here is to breed the performance of the bitch to the conformation of the stallion hound. Also one should use large dogs on smaller bitches, not the reverse, because it is so easy to breed down in size in a kennel and very difficult to maintain size and quality. Remember always that you are breeding hounds for your own standards of performance based upon:

- your quarry
- your country
- your style of hunting
- your goals for your pack

4.7.4 • The "Rule of Five"

No two packs are ever exactly the same, which dictates slightly different breeding programs and not canned or prepackaged solutions. In general, you want to see the same names or bloodlines cropping up several times in the fourth or fifth generation (See Figure 4.7-3). This means you are getting a concentration of this good performing blood. On a cautionary note, one wants to remember the "rule of five," which means you never want to see the same name closer than the second and third generation (See Figure 4.7- 4). The "rule of five" says that if the total of the nearest generation lines in which the hound's name appears first on the stallion and then the dam side adds to 5 or more (See Figure 4.7-5) the breeding is all right; four or less is too close.

4.7 • Line Breeding continued

		Live Oak Drummer '89		
				Live Oak Drummer '89
Generation 1	Generation 2	Generation 3	Generation 4	Generation 5
			Live Oak Drummer '89	
				Live Oak Drummer '89

Figure 4.7-3. Same Bloodlines

	Live Oak Drummer '89			
Generation 1	Generation 2	Generation 3	Generation 4	Generation 5

Figure 4.7-4. Rule of Five: Minimum Limit

4.7 • Line Breeding continued

4.7.5 • Outcrossing: The Freshener

It must be remembered that while concentrating the best of performance and conformation characteristics, linebreeding, if done too closely or with inferior individuals, can bring forth genetic weaknesses such as deformities, timidity, viciousness and shortness of life due to organ disfunction. All of the above comes about as a result of having bred your pack so tightly that further crosses using your own hounds will result in falling into the inbreeding trap.

This brings us to the freshener. The freshener is a total outcross to a fresh or nearly fresh bloodline that suits you. In my case now, I would probably go to the Midland, Piedmont, or Green Spring Valley for a new bitch line. The freshener is used to introduce new blood into your kennel. The key is to go out for one generation and then come back to your type for the next two or three until you have what you want. The freshener is very effective to help you breed quality hounds without destroying your type or getting caught in the inbreeding trap.

The end result of your breeding efforts should be a biddable, well-built hound that performs well in the field. Such a hound will exude the quality, grace, fluidity of movement and dignity that are the characteristics of the breed and which set foxhounds apart from all other canine breeds. They are a pleasure to look at, a joy to work with and a wonder to hunt. What more could a Master and huntsman ask?

4.8 • Principles of Breeding

Lao J. Brosemer

Extracted from the story of “Financial Sensation”
By permission of The American Kennel Club

4.8.1 • Bakewell of Dishley

Say that we hark back 175 years. It is a pleasant day in 1774. We are in green meadows close to Dishley's Hall. Yonder, in knee breeches and high-cut waistcoat, stands Robert Bakewell watching his herds and flocks grazing on the velvety downs of old England. There he stands! Bakewell, the **first great master** breeder!

Bakewell formulated a set of secondary principles long years ago,

4.8 • Principals of Breeding continued

and no set of rules written since has been so influential in improving practically all kinds of livestock. The secondary principles are as follows:

1. The need of an imaginary **ideal** type.
2. Continued careful and **intelligent** selection toward that type.
3. The influence of **careful** linebreeding.
4. The value of **pedigree**.
5. The value of **good feeding**.

An ideal type is given by Bakewell as the first requisite. To formulate an ideal type, one must familiarize one's self with certain qualities of animal life, conformation and types so that the least variation from these may be quickly and accurately noted.

To formulate the correct ideal, the habit of close observation and thorough understanding of the underlying principles of breeding are vitally essential. These ideals molded together by observation and study, form themselves into a standard. Perfection—the Standard of Perfection—is thus established. Dog breeding history holds many classic examples in which those standards, as time went on, became mere whims—a fashion, a fad or perhaps a fancy in deformity that for the time dominated the whole by the particular or peculiar shape or coloring of its parts.

The reason is explained in the fact that sometimes breeders, fascinated by the hope of obtaining the type fancied at Fashion's court, blindly overlook the practical value of one's favorites. Beauty is beauty, we admit, but with it must go practical utility. From a practical viewpoint, improvement means the increased usefulness of those qualities having a definite value, i.e., hunting ability, trailing, etc.

4.8.2 • Inbreeding

Bakewell's second rule was this: Continued careful and intelligent selection toward this type (the ideal type)—which is only a hope that "like begets like," differently expressed. The third rule was one that Bakewell held as a secret within his heart of hearts, so we are told, until the time for the telling should come. It was this: The influence of careful inbreeding. At the time of Bakewell's breeding operations, let it be said, the idea of incestuous breeding, the coupling of males and females closely related in bloodlines, was held in abhorrence! The Church was against it. Daring to leave the beaten path, Bakewell adopted a theory diametrically opposed to the common practice of outcrossing.

Bakewell made marvelous improvements in the type and quality of

4.8 • Principals of Breeding continued

his breeding stock by concentrating the “blood” of animals possessing desired characteristics and demonstrated that by a scheme of in-and-in breeding, keeping always in mind “the survival of those fit,” and proved (perhaps for the first time) that uniformity of type could, to a large degree, be definitely and quickly attained.

Bakewell of Dishley, on the downs of Leicestershire, was the discoverer, the workman whose successes antedated the creation of all the leading breeds of the present day—the teacher, who, in truth, blazed the way for the great breed-builders of succeeding generations.

Bakewellian laws, and the superstructure built atop of them, have done more to influence the improvement of farm animals than any other power the breeding industry has ever known. A sweeping statement and true! All great improvers and breeders, from Colling Brothers down to Van Pelt, must be grouped around the name of Robert Bakewell, and from the lessons he and his disciples taught by example, if not by precept, every breeder learns the fundamentals of his art.

4.8.3 • Van Pelt of Iowa: Outcrossing, Inbreeding and Linebreeding

Knowing these facts, we journeyed to Van Pelt’s farm, the scene of his breeding operations out Iowa-way and found him among his cattle. In overalls, mind you, was Van Pelt, ex-college professor, lecturer of national prominence, editor, one of the biggest men at the time in one of the biggest industries in the United States. An interview?

“Well, maybe, what are you interested in!”

“Breeding!”

“Fine...so am I!”

He thought a moment and then started in—rather he plunged. Enthusiasm lent impetus. Like most men who do unusual things, he’d either talk lots or not at all.

“It is an indisputable fact that to improve animals requires the application of definite laws of breeding. That it is necessary to use great, proven sires is a well-established fact, but there is considerable floundering when it comes to determining what really constitutes a good sire.

“To determine this all-important question necessitates knowledge of outcrossing, inbreeding and linebreeding. I believe the reason animals do not ‘nick’ with each other is because their bloodlines are not congenial, or because the sire is not intensely enough bred to assert himself with certainty

4.8 • Principals of Breeding continued

And to transmit his characteristics and those of his ancestors with uniformity. “Outcrossing is usually the reason for the failure. Very often outcrossing is thought of only as ‘crossing two breeds.’ There are few who believe in the advisability of this, and none who do not recognize that crossing of breeds leads away from purity of breeding and into the channels of uncertainty.

“Outcrossing also means the mating of animals belonging to the same breed but representative of families not much more closely related than distinct breeds may be. This does not lead away from purity of breeding but does have the objection of producing uncertain results. Used for a distinct purpose, outcrossing has produced excellent results when employed by expert breeders, but when it is followed merely because the sire used for outcrossing is a good individual, or has a big show record, the method is uncertain to the degree that a few good ones may be produced and a large number of disappointments are very likely to make their appearance.

“When used repeatedly, generation after generation, outcrossing as generally used, produces a weak pedigree, a conglomerate mixture of blood. A sire so bred may transmit the characteristics of any individual in his own pedigree, or, because no individual or family is sufficiently intensified in his breeding, he may even permit the dams he is mated with to assert themselves in many instances. Outcrossing surely encourages reversion, or breeding back, and, therefore, the thoughtless use of this method of breeding leads the breeder to travel in circles. The fact that the blood of no one animal or of no one family is being intensified, reduces, or even eliminates, the chance of definite characteristics being transmitted with certainty. The offspring lack uniformity. There is the occasional good one and the many poor ones, attributable upon the ancestor to which the inherent characteristics happen to trace, revert or breed back.

“Inbreeding is the opposite extreme from outcrossing and relates to the mating of animals very closely related, as the breeding of brother to sister, half-brother to half-sister, son to dam, sire to daughter, and so on. It is an excellent method of breeding when properly employed, but experience has taught that skill on the part of the breeder is necessary for its proper use.

“Inbreeding intensifies. If it intensified only the good characteristics of animals with no ill results, then certainly it would be the wise and simple method. But inbreeding intensifies faults as well as perfection, and faults intensified are as difficult to eliminate as perfection intensified is difficult to maintain. It is therefore seen that inbreeding should be used only when animals so mated attained a high degree of excellence without possession of a serious fault.

4.8 • Principles of Breeding continued

“Linebreeding is safe breeding, provided it is employed in a family of excellence—that is, a family endowed with excellence of type and acceptable breed characteristics. Linebreeding is the conservative method. It may be referred to as just between the extremes of outcrossing and inbreeding. Linebreeding generally implies the mating of animals remotely related, such as great-grandsire to great-granddaughters, uncles to nieces and second cousins.

“Linebreeding perpetuates good blood and, like inbreeding, it intensifies excellent characteristics, but it differs from inbreeding in that it permits bringing in the blood of other animals or families in a gradual manner, and, without outcrossing to correct deficiencies. If, in the beginning, high-class blood is selected and persistently, generation after generation, good judgment is used in selecting the blood of other families brought into the herd, and this new blood is brought in along with additional blood of the family already there, the excellent characteristics of the breeding stock are maintained and the deficiencies corrected.

“A study of this history of the world’s greatest animals in all classes of livestock reveals that the greatest headway has invariably been by judicious linebreeding, and, when perfection has been as closely approached as seems possible, inbreeding has fixed the type and excellencies so that they could be perpetuated with considerable certainty.”

How little do we regard the examples bequeathed by the masters to our generation and with what supreme indifference do we ignore their wisest teachings. **The experiences of the master breeders of yesterday can help us work out our breeding problems of today.** The old masters were confronted by the same problems. The lamps of experience throw into relief the paths we may take. Those who have gone on before have left behind messages that cannot be too often repeated.

It is indeed well to know all we can of breeding history.

It is better still to contribute something useful, wrought in flesh and blood, to it.

4.9 • Producing the Brood Bitch

Patricia V. Trotter
from AKC Gazette, by permission

The next 2 articles are reproduced here for their clear explanation of the roles of the X and Y chromosomes and how they apply to a program of linebreeding. Keep in mind that the author is a breeder of Norwegian Elkhounds principally for the show ring, and the specific attributes that she breeds for are not necessarily the same as those sought by foxhound breeders. For example, we do not yet know scientifically which specific performance attributes are passed on by genes contained in the X or Y chromosomes, although the conventional wisdom throughout this entire Section suggests a consensus that performance is passed on by the bitch and conformation by the dog. (Patricia Trotter is the author of the book, *Born to Win*.)

The backbone of any breed is the outstanding breeder who develops an excellent line of brood bitches. Such a breeder not only produces excellent animals for their own enjoyment but also provides solid breeding material for others to utilize. Such a breeder enhances their own breed in particular and purebred dogs in general. Usually, such a selective breeder does not house their own studs, thereby avoiding the temptation to breed to convenient sires.

How then does this breeder strengthen their female family if they're going to outside sires? The answer is by breeding to males of a "like type" who share classic ancestors from the same line as the breeder's bitches. An important tool in this skilled breeding method is learning to identify a brood bitch sire.

4.9.1 • The Role of the X Chromosome

Understanding how a potential sire for your bitch can be researched involves grasping the role played by the X chromosome in the overall breeding picture. One of the 39 pairs of a dog's chromosomes is known as sex chromosomes because that pair determines the sex of the individual dog. Females possess two X chromosomes in their body cells, while males possess one X chromosome and one Y chromosome. When the male cell divides to form sperm, one sperm gets its X and one gets its Y. When the female cell divides, each egg gets an X. Therefore, when the sperm and egg come together, whichever of the male's two sperm types fertilizes the egg first determines the sex of the progeny. If the X sperm gets to the egg first to combine with the female's X chromosome, the result is XX (female).

If the Y sperm gets there first to combine with the X of the egg, the result is XY (male).

4.9 • Producing the Brood Bitch *continued*

In humans, more than 50 characteristics are known to be associated with the X chromosome. Because the X chromosome is considerably longer than the Y chromosome, it carries most of the genetic information. Thoroughbred horse breeders believe the X chromosome influences character and strength of heart. The X chromosome is especially targeted as the culprit carrier of the most information for genetic disorders. A faulty X gene that is a disease message, or mutant, can occur in a female with a healthy X gene to mask it; in this case, the bitch will be healthy even though she is a carrier for the disease. If the bitch has two faulty X genes, she herself will have the disease. It is reported that more females than males die **in utero** due to the fact that they suffered from a double dose of a lethal gene associated with genetic “trash” on both X chromosomes.

Because a male can only carry one X gene, if he inherits a mutant gene he has no healthy X gene to mask it. Therefore, he is affected. The classic textbook case for such genetic behavior explains why non-colorblind mothers can produce sons who suffer from color blindness. The affected male’s sons will not inherit the faulty X gene, but his daughters will. The daughters, in turn, can pass the faulty gene on to their sons in a continuing zigzagging pattern.

The only X chromosome, then, that can be passed by a sire is the one he received from his dam. Therefore, pedigrees can be structured in pursuit of excellent brood bitches by using only sires from outstanding dams. This is how great-producing female families are created. Every daughter of a given sire receives the same X chromosome from him, for that is the only one he has to give!

A dam’s X chromosome passed along from her own dam is inherited either from her paternal granddam or her dam’s dam. Breeders can use this information to strengthen the tail female line in each generation in hopes of achieving the ultimate in terms of a great-producing brood bitch. This type of planning prevents the dilution of outstanding gene pools if the breeder is fortunate enough to start with a classic bitch from a solid family of matriarchs. Furthermore, if the breeder’s starting stock was not of the class they sought, this type of breeding will help them improve it more rapidly.

4.9.2 • Great Foundation Bitches

It must be remembered that great foundation bitches usually possess two powerful X chromosomes. This is what creates the great-producing brood bitch. One of the greatest of my brood matrons was Ch. Vin-Melca’s Vikina. One of her sons, Ch. Vin-Melca’s Howdy Rowdy, became the top-producing sire in the breed while

4.9 • Producing the Brood Bitch continued

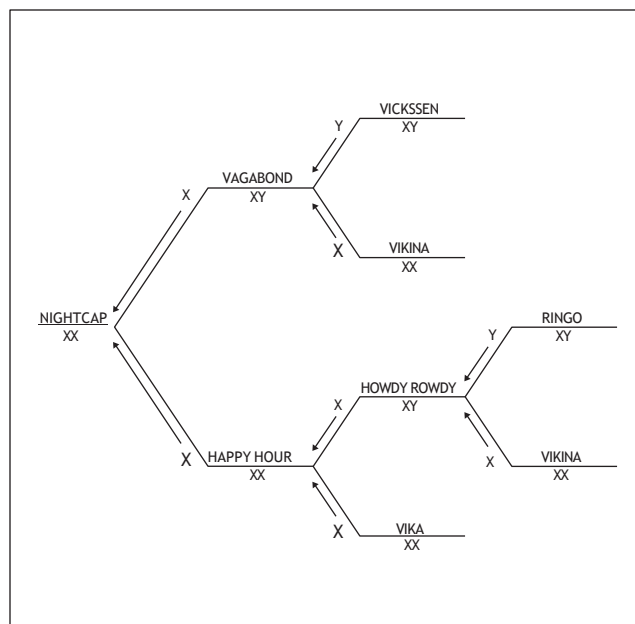


Figure 4.9-1. Identifying a Brood Bitch Sire

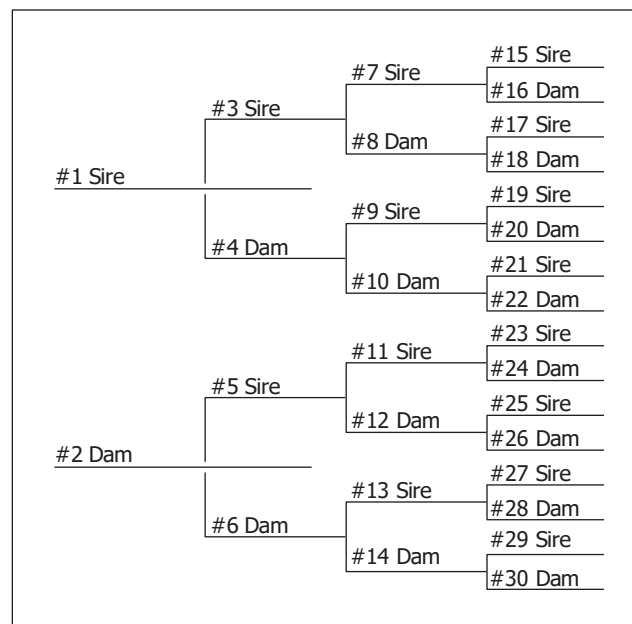


Figure 4.9-2. Direct Sire Line on Top Line, Tail Female Line on Bottom Line

another of her sons, Ch. Vin-Melca's Vagabond, became Number One Dog All Breeds.

Howdy Rowdy was the sire of both outstanding sons and daughters and became well-known as a sire of sires. His half-brother Vagabond produced some very nice dogs, but made his lasting contribution by producing outstanding daughters. He "bred on" best through them, thus becoming identified as a brood bitch sire.

The [figures] show how the attempt was made to concentrate the genetic material of Howdy Rowdy and Vagabond's "blue hen" dam to create another generation of bitches with as much genetic influence. [See Figures 4.9-1 and 4.9-2.] Nightcap received one of her X chromosomes from Vagabond, and that is readily identifiable as the X chromosome Vagabond inherited from Vikina. Nightcap also received one X chromosome from Happy Hour, either the one she inherited from Vikina (through Howdy Rowdy) or the one she inherited from Vika, also an outstanding brood bitch. Is it any wonder that Nightcap herself became a great brood bitch? The fact is that the percentages are pretty good that both of Nightcap's X chromosomes were that of Vikina, but certainly one of them was!

Breeders who utilize such information in their breeding programs will experience progress in their attempts to create an exceptional line of quality animals by concentrating on the strength of the brood bitch. Such breeders are the unsung heroes of the dog fancy whose strong bitch line will eventually evolve to a point where a classic sire emerges to benefit the entire breed.

4.10 • In Search of a Sire

Patricia V. Trotter
from the *AKC Gazette*, by permission

Great breeders seem to possess a sixth sense in their abilities to select sires. One of the world's most successful breeders of purebred animals in history was Federico Tesio. An Italian cavalry-man born in the middle of the 19th century, Tesio's expertise in breeding Thoroughbreds created a legend that still exists today. From a small handful of mares, Tesio was able to breed horses that dominated Europe on the track and at stud, while wealthy owners of huge breeding farms came to his animals to better their own. A look at how such breeders work can help us develop good lines in dogs.

4.10.1 • An Excellent Line

Before examining how breeders like Tesio succeed with small, select breeding programs based on sire selection, let's look back at [Chapter 4.9], which concentrated on establishing an excellent line based on selection of the brood bitch—the bottom line, if you will. In that column I discussed how breeders can achieve the highest quality by concentrating the genes of great brood matrons through their sons, as a result of genetic information carried by the X chromosome.

Because the X chromosome is considerably longer than the Y chromosome, it carries significantly more information, including but not limited to much of that associated with genetic disorders. Males always possess one X chromosome from their mothers, as well as one Y chromosome (which determines their sex) inherited from their fathers. As I explained, the son of a mother who carries the gene for colorblindness will be affected even though she is not, because he has no healthy X chromosome to mask the recessive diseased one.

Although there might not be much genetic information carried by the Y chromosome, the information that is carried there can be responsible for creating a dominant sire line, or tail male line. This is because a portion of the Y chromosome has no counterpart in the X chromosome, thereby allowing information carried by that portion to be expressed. This Y chromosome information would be passed only from father to son, since daughters don't inherit a Y chromosome. That's why the sons of some forceful sires inherit a particular trait while the daughters do not.

4.10.2 • Finding Good Matings

In [Chapter 4.9], I discussed the contributions made by breeders who concentrate on a small, select breeding program based on a quality brood bitch line. The message was that

reeders can strengthen and improve this bottom line by seeking sires with strong dams. At the same time, however, some very successful breeders, such as Tesio, have bred classic animals by taking their good females to strong male lines where the emphasis has been on the strength of the sire line (top side) of the pedigree. Tesio himself purchased well-bred yet inexpensive mares at sales and then sought strong sires to complement them.

This pattern of matings produced greatness such as that exhibited by the Thoroughbred, Nearco. American racing fans best appreciate Nearco through his grandson Northern Dancer and his great-grand-son Secretariat, both of whom descended from Nearco in a direct, tail male line. After studying Tesio and his breeding methods, I concluded that he had a sixth sense that caused him to select sires of great strength whose success might be identified with the elusive Y chromosome. That is to say perhaps the animals' desired traits were sex-linked, or carried by that part of the Y chromosome with no counterpart on the X chromosome.

It's a matter of guesswork at this time to attempt to figure out which characteristics in dogs might be passed on via the Y chromosome, aside from identifiable problems such as color-blindness and hemophilia. Nevertheless, recognizing their existence and the possible contribution such genetic material can make to a small breeding program is one more tool toward breeding excellence. No doubt the day will come when technology will allow breeders to identify what genetic material is carried by which chromosomes, thereby enabling conscientious breeders to reach the ongoing mutual goal of breeding better dogs in fewer numbers.

4.10.1 • The Ideal Sire

The ideal sire is one who always improves on his bitches. He is a dog with a strong sense of self, who is sound in body and mind, and who can be counted on to pass on his virtues to future generations, as well as to his immediate offspring. Not only is he free of genetic disease, but he is a **model** of good health, longevity, breed type and conformation. In addition to improving on The ideal sire is one who always improves on his bitches, putting his stamp on his sons, their sons and so on for a number of generations, founding a dynasty.

Although few sires can meet such extraordinary standards, those who do make a substantial contribution to their breeds. Usually sires of this stature have that mythical "look of a sire," which is hard to describe but unmistakable when you see it. Such were the Thoroughbreds of Tesio.

4.11 • Frozen Semen: New Choices for your Breeding Program

Dr. George F. Seier, Jr. MFH

What happens if your favorite dog hound is injured, lost or dies prior to breeding him to preserve his line? If you are like most hunts, you hope you can find the line elsewhere or just lament the fact that you have lost some valuable breeding stock. What if the hound you want to breed to is in another part of the country or world? Barriers such as these are substantial, but not as much today as in years past.

Today there are reliable methods to preserve male frozen semen for years to come, and to be shipped around the country and world without diminished viability. Used for years in the cattle industry, the canine industry was much slower to develop. Difficulties in freezing, storage and inseminations made the practice questionable at best. New freezing medias, hormonal timing methods, and insemination techniques have all been developed to make canine frozen semen a reliable and valuable tool in preserving and shipping canine semen.

Frozen semen can be successfully stored for decades in liquid nitrogen. At this point, we think it can be stored indefinitely but these new medias have only been available for almost twenty years. I have personally used semen successfully after being frozen and stored for 16 years. So time is not a factor at this point. Veterinarians trained in the area of reproduction and Theriogenology are your best source of information for this new and exciting field of reproduction for the hound.

Several commercial companies have developed good extenders and freezing media for canine semen. They include CLONE (Cryogenics Lab of New England), Camelot Farms and Symbiotics (formerly ICSB). Each has developed freezing techniques and media that have met with great success. But the development of new insemination techniques for frozen semen is a major factor in their success.

Vaginal inseminations have been the standard for artificial inseminations in the canine. It is antiquated for frozen semen as the semen cannot make the trip up the uterus to the eggs as they leave the ovaries through the fallopian tubes. Development of Transcervical techniques in Norway and New Zealand have led to much higher conception rates. Both these techniques allow the semen to be deposited directly into the uterus of the bitch, eliminating the loss of so many sperm that could not make the trip through the cervix. Both are non-surgical and can be repeated as often as necessary.

Advances in anesthesia, and surgery techniques have made surgical implantation of frozen semen a choice many would never have used in the past. The short procedure allows full visualization

4.11 • Frozen Semen: New Choices for your Breeding Program continued

of the uterus, implantation of frozen semen at the ovaries shortening further the travel distance for the spermatozoa, all increasing chances of success. Another factor often overlooked is the fact that so many hounds have ovarian cysts, which reduce chances of successful conception. This can be addressed and treated at the time of the surgery, improving conception rates further. Anesthesia is safe and reliable and generally done on an out-patient procedure.

Each of the techniques requires perfect timing of insemination, no matter what technique is employed. Previous timing methods have been questionable, but research and experience has taught us that Progesterone and Leutinizing Hormone (LH) assays are not only accurate, but also reliable in determining the exact timing for insemination in the hound. Special labs available to most veterinarians can run these tests accurately and in a timely manner to help in the timing for whatever method of insemination is chosen.

Research in the area of canine embryo transfers has opened up possibility of stimulating a normal breedable heat cycle in the bitch. Hormones have been used for years to stimulate heat cycles but they were most often not functional or had significant adverse side effects. Today we can stimulate a breedable heat cycle easily with Gonadotropins without side effects. Implants of Gonadotrophin Releasing Hormone can be implanted in the anustus bitch to stimulate a normal heal cycle within 3 to 5 days. This technique can be used for a number of reasons which include:

- Timing whelping prior to or just after hunt season
- Stimulating a cycle in an otherwise unpredictable cycling bitch
- Timing of pregnancy so resulting pups will be better age for competition or show

Currently the hormones used are of limited supply, but availability will improve over time. Cost is a major issue with this process, and of course requires testing prior to implantation and precise placement by your veterinarian.

Jerry Miller, MFH

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