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Rabbit Project



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This bulletin was prepared by Duane P. Johnson, Extension Specialist, 4-H—Youth, Oregon State University, with the assistance of the Oregon 4-H Development Committee for Small Animal Projects, in consultation with the Extension staff at Washington State University and the University of Idaho.

4-H seeks participation of all youth regardless of race, sex, or national origin.

Your 4-H Rabbit Project

Rabbit Raising is Fun

Raising rabbits is fun. At the same time, a 4-H Rabbit Project can provide an important source of food for the family. Rabbits do not require fancy or expensive equipment. Rabbits can be confined to hutches.

As you work with your rabbits you will find something different is always happening. You will find it rewarding—the handling of your rabbit, the response and the rabbit's dependence upon you. The raising of young will provide new experiences each day. Possibly your greatest thrill will come about when you share your experiences with friends and neighbors.

As you prepare for your rabbits, you should:

- Check with your neighbors to see if they object to your raising rabbits as a 4-H Project.
- Check city ordinances, if you live in an incorporated area, to see if you can raise rabbits in your area.
- Identify a suitable place to keep your rabbits.
- Arrange for proper hutches and equipment.
- Decide if you have time and money to care for your project.
- Decide if dogs, cats, and other animals in the area would be harmful to your rabbits.

Purpose

Your 4-H Rabbit Project will:

- Provide you the opportunity to share with friends in a 4-H Club.
- Let you participate in fun and learning activities with other 4-H'ers.
- Help you develop skills in leadership and communication.
- Help you develop patience, understanding, and feeling for living creatures.
- Help you develop responsibility. Your rabbits will depend on you for their care and comfort.
- Provide opportunity to learn about animals' behavior, how they live and reproduce.
- Provide experiences where you can learn about animal science, feed and nutrition, animal health, and disease control.

- Provide opportunity to keep records and manage a business of your own.
- Provide experiences on how to raise and care for rabbits.

Project Options

You may be a 4-H Rabbit Club member by participating in one or more of the following options.

Market rabbit project

Own one or more does and an appropriate number of bucks, raise one or more litters and market offspring. Members may have crossbred or standardized breeds. Members must provide for proper housing, feed, and care of animals.

Rabbit breeding project

Own one or more does and an appropriate number of bucks, raise one or more litters. Members should also market the young. Members are encouraged to use purebred commercial breeds for this project, although crossbred rabbits are acceptable. Members must provide for proper housing, feed, and care of animals.

Pet project

Own one rabbit (buck or doe) as a pet. Members must provide for proper housing, feed, and care of the animal.

Without a rabbit

Members learn about rabbits and their care and share experiences of a club through:

- Club meetings.
- Tours.
- Presentations.
- Judging and identification activities.
- Sharing with other members.
- Research projects.

All 4-H members have the opportunity to:

- Attend camps, tours, field trips; participate in fairs and shows, statewide activities, and camps.
- Meet and share with friends.
- Learn new things through experiences in club activities.

Rabbit: A Fascinating Animal

Rabbits are extremely interesting because of their special characteristics and their place in history.

Rabbits have been domesticated for more than 3,500 years for food, clothing, and sporting purposes. The ancient Romans bred them for hunting purposes. Also, they controlled them in enclosures and raised them for meat. They believed that women who ate them became more beautiful. Portuguese explorers (1400's) kept them alive on shipboard to supply fresh meat on long journeys. In late 1800's, rabbits were introduced on small islands near the South Pole to provide fresh meat for whalers, explorers, and scientists. The Aztecs, in pre-Columbian Mexico, raised rabbits for meat. Their physicians prescribed rabbit meat as a body builder and recognized its nutritive qualities.

Rabbits and hares are lagomorphs (leaping mammals) and are closely related to rodents (gnawing mammals). They have chisel-like front teeth used for gnawing. These special teeth continue to grow throughout the animal's life. They are kept worn down by use and kept sharpened by grinding against each other. If the teeth do not meet properly, they grow long and crooked; these are called "wolf" teeth. The lagomorphs have an extra set of much smaller teeth placed directly behind their gnawing incisors.

The lagomorphs and rodents are the most common and widespread of all mammals. They are usually small in size, but there are many kinds and they have big families. They have several litters a year and mature rapidly. Together, these two orders contain more species, more individuals, and probably have a greater combined weight than all other mammals on the earth.

Putting the Rabbit in Its Place (in the animal kingdom)

To avoid all kinds of mixups, scientists have developed a *key*, or method of identifying all natural objects—animals, plants, and minerals—according to their description. This allows people in all parts of the world to be sure they are studying and comparing, or buying and selling, the same kind of animal, plant, or mineral. We all know, of course, that rabbits are animals. From there on, the exact identification is as follows:

KINGDOM—Animal (There are three kingdoms—animal, plant, and mineral.)

PHYLUM—Chordata. Animals with a spinal cord, usually within a backbone.

SUB-PHYLUM — Vertebrates. Animals with backbones (five major classes—fish, amphibians, reptiles, birds, mammals).

CLASS—Mammalia (Mammals). Animals that have mammary glands and suckle their young. (Mamma is Latin for breast.) They also have hair or fur.

ORDER—Lagomorpha. Leaping mammals—rabbits, hares, pikas.

FAMILY—Leporidae. Rabbits and hares.

GENUS—*Oryctolagus*. Rabbits of Europe and North Africa.

SPECIES—*cuniculus*. All of our domestic rabbits are of this species.

BREED—New Zealand.

VARIETY—New Zealand White.

STRAIN — "Jones." Improved New Zealand White.

INDIVIDUAL—My New Zealand White Doe.

Rabbits and Hares

Rabbits and hares belong to the same family, Leporidae, but they have different characteristics.

The rabbits are generally smaller than hares, have shorter legs and ears, are quick and elusive, but are not long-distance runners; they live in brushy areas, often at the edge of wooded areas; they make nests lined with fur for their young, which are born naked, blind, and helpless after 30 to 32 days gestation. Our domestic rabbits are true rabbits, rather than hares.

The hares are larger than rabbits, have longer legs and ears, can outrun most of their enemies, and generally live in open country; their young are born fully furred with eyes open and are ready to run and hide in a few hours. Their gestation period is usually 38 to 42 days. See definition of gestation at back of this book.

Wild rabbits and hares in North America

There are many different kinds of wild rabbits and hares in North America. In the far north, the Arctic hares are pure white in the winter and grey or brown mixed with white in the summer. Some are white the year around. They are the largest and heaviest of the native American hares. Coming south, we find the varying or snowshoe hares, which are dark most of the year but turn white in winter. Across the plains of Canada and the United States we find the whitetail and blacktail jackrabbits, known for their running speed. The blacktail extends its range into Mexico. The antelope jackrabbit, found in Arizona and Mexico,

has extra long legs and large ears. It can leap up to 20 feet and is one of the world's fastest animals. Jackrabbits are more correctly called prairie hares. A new species in America is the European hare, which was introduced and has established itself as a wild animal in the state of New York and the Great Lakes area. It is brownish-grey the year around and is even larger than the Arctic hare. It weighs up to 15 pounds.

Cottontail and brush rabbits are found across the continent. They are true rabbits. They make nests and bear their young blind, naked, and helpless, like our domestic rabbits. In the southeastern states there are swamp and marsh rabbits that live in low, swampy areas and are good swimmers. In Idaho and southeastern Oregon there is a tiny pygmy rabbit.

Wild rabbits and hares in the Pacific Northwest

In the Pacific Northwest there are three species of the varying or snowshoe hare. The Washington snowshoe hare lives in densely wooded areas from the west slopes of the Cascades to the Pacific. It is dark brown and is the only varying hare that does not turn white in winter. It is seldom seen. The Rocky Mountain snowshoe hare is found in the mountains of eastern Oregon, Washington, and Idaho. It turns white in the winter, as does the Oregon or Klamath snowshoe hare that lives in the Cascade Mountains from Mt. Hood to California.

In western Oregon and Washington the California blacktail jackrabbit is seen commonly along roads and in open fields. The Columbia blacktail and the larger western whitetail jackrabbits are found in eastern Oregon, Washington, and Idaho. The blacktail is most common. These jackrabbits are all hares.

Three species of true rabbits are native to the Pacific Northwest; the brush rabbit in western Oregon and Washington, the mountain cottontail in eastern Oregon, Washington, and Idaho, and the tiny pygmy rabbit in the southeastern corner of Oregon and southwestern corner of Idaho. The larger eastern cottontail has been introduced in the Willamette Valley of Oregon. You can tell it from the native brush rabbit by its larger size and white tail.

Little Known Facts About Rabbits

1. Four does and a buck can produce more meat annually than the average beef cow.

2. One doe can produce 160 pounds of live weight meat annually on an area of about 16 square feet.

3. One buck can give in excess of 500 offspring annually.

4. A rabbit can convert four pounds of feed to one pound of meat.

5. Rabbits grow from a birth weight of two to three ounces to four to five pounds in eight weeks.

6. Rabbits can be handled easily by young people . . . but demand proper respect.

7. Rabbits will demand as much attention as you are willing to give.

8. Rabbits have been marketed in Europe for more than a thousand years.

9. Rabbits are eaten by the inhabitants of all the continents.

10. Rabbits are raised in all 50 states and our territories.

11. Learning activity in rabbit raising can be five times faster than in a larger animal project.

12. In trying to produce a better meat rabbit, seven breeds were originated in the United States.

13. Rabbit meat can be prepared in more than 300 different ways.

14. The fur of the rabbit is lighter and warmer than that of any other animal except the vicuña and musk ox.

15. Up to 93 percent of the rabbit can be used for food or fur.

16. Only 7 to 8 percent of domestic rabbit is bone.

17. Rabbit meat is a good source of protein.

18. Domestic rabbits have virtually no communicable disease injurious to humans.

19. Over 85 percent of today's furs are imitated with rabbit fur.

20. Rabbit meat, like all meats, is easily digested.

21. Domestic rabbit is an all-white meat.

22. Rabbit manure is an excellent fertilizer, high in nitrogen content.

23. The rabbit is the only animal that will produce 10 times its own weight in a year.

24. Rabbits never have been known to carry Tularemia or Rabies.

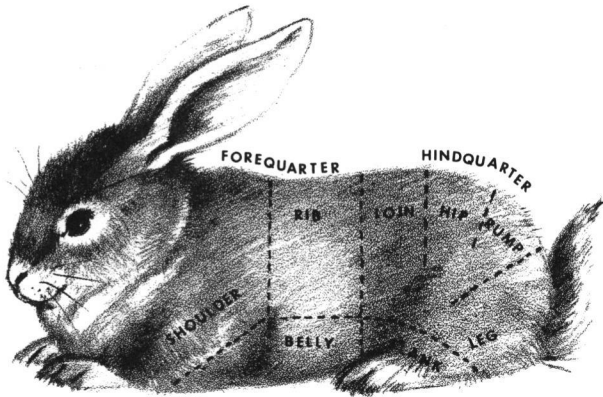
25. Rabbits have made many persons happy and very few rich.

26. Rabbits are the cleanest of vegetarians and are not normally carnivorous.

27. Rabbits have a 30 to 32 day gestation period.

28. Rabbits can be bred all year around.

Parts of the Rabbit



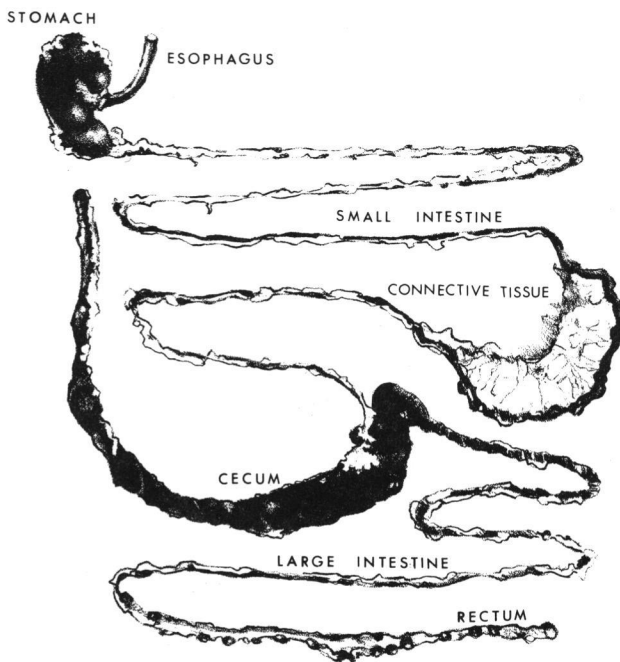
The rabbit's digestive system

The rabbit's digestive system includes a simple stomach, a relatively short small intestine, a large cecum, and a relatively long large intestine.

The stomach begins digestion of the food a rabbit eats.

The small intestine continues digestion and absorbs nutrients from both the fresh feed and from the night stool, which rabbits eat.

The cecum is a holding area where bacteria digest portions of the feed that have not been digested in the stomach and small intestine. The cecum provides the ability for rabbits to handle large amounts of roughage.



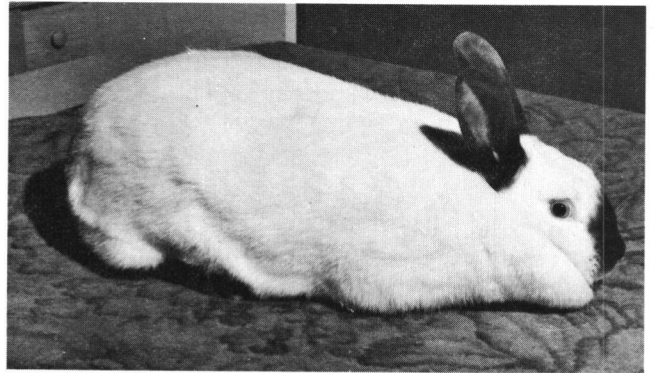
RABBIT: NORMAL ALIMENTARY TRACT

The large intestine permits water absorption and storage of fecal pellets. Fecal pellets are formed in the large intestine and stored in the rectum.

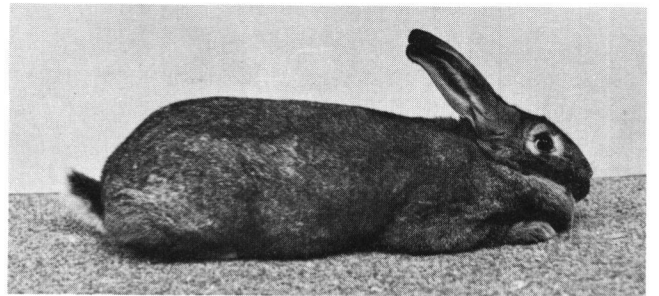
Pellets are not always formed. Usually during the night hours soft stools are passed. These the rabbit catches and eats. Stool eating, coprophagy, is an essential part of rabbit nutrition. Essential elements of the diet are absorbed from the soft stool. Prevention of stool eating can result in malnutrition in rabbits.

Breeds of Rabbits

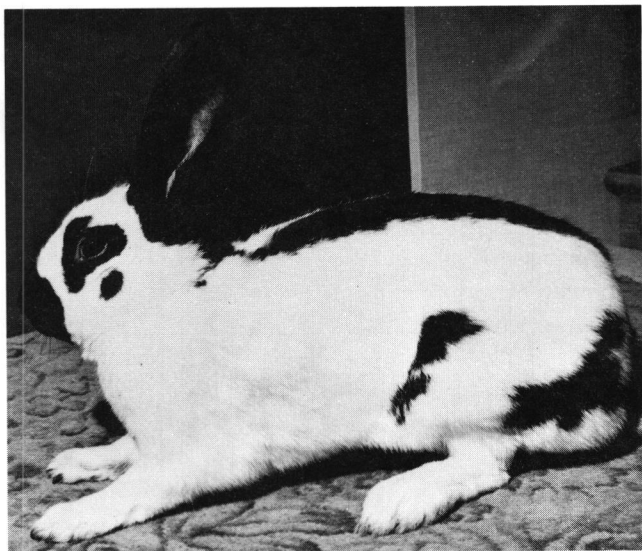
This describes several breeds of rabbits common in Oregon. The table lists others you may see in shows.



The *Californian* breed is an American creation. After experimenting and cross breeding, this all-around rabbit was produced in 1923. It was bred similarly to other livestock, with broad shoulders, meaty back and hips, and a good dressing percentage. This is a white rabbit except for ears, nose, feet, and tail, which are a dark grey or black.



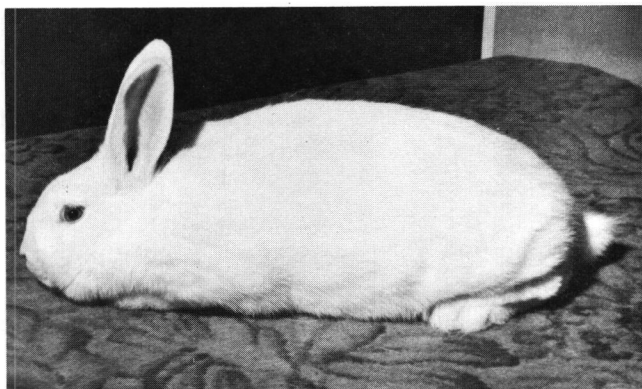
Chinchilla exist in three varieties, based on size. They are beautiful animals, having fur that resembles the South American chinchilla from which they take their name. The fur should be even in color over the entire exposed surface of the body. Chinchillas are normally bred as commercial meat rabbits, and the carcass of the better specimens is of good meat conformation (shape, size, proportion).



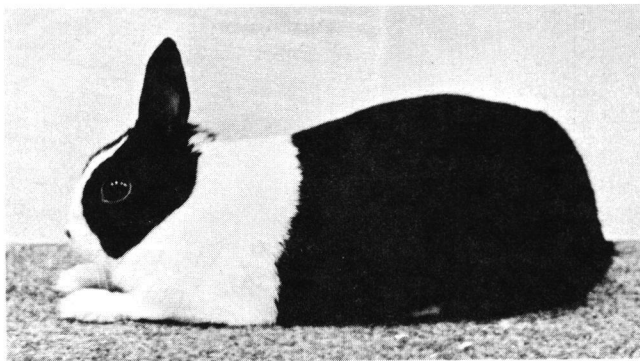
The Checkered Giant is a rather large, rangy rabbit with characteristic markings. They are classified as a fancy breed but also are a satisfactory meat animal.



Red New Zealand is an American creation. The name has nothing to do with the breed's origin. Its true ancestors are the Belgian Hare and the Golden Fawn, both popular before the New Zealand made its appearance. The Red New Zealand has a rich reddish color over the entire body.

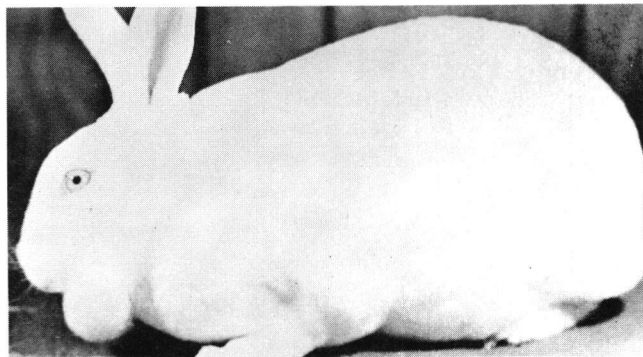


White New Zealand, also an American creation, made its appearance after the Red New Zealand and is one of the best all-around commercial breeds. It is an all-white rabbit whose fur can be dyed many colors for use as garment trims.

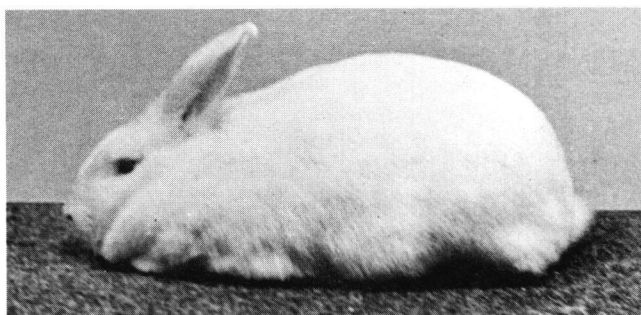


Dutch, said to have originated in Holland, was improved and developed for exhibition purposes in England. One of the most popular breeds, it rates tops with rabbit fanciers.

There are six varieties of this breed to choose from including: black, blue, chocolate, tortoise, steel gray, and grey. Because it is a small rabbit, the Dutch is ideal for limited space. The Dutch is cobby and compact with a well-rounded body, smooth in every respect. Markings of the Dutch, sometimes difficult to achieve, should be clean cut, clear, and sharp.



Rex (Several Colors). Rex rabbits are named because of their fur characteristics. The fur is relatively short, about $\frac{1}{2}$ inch in length. It is free of guard hairs and has appearance and feel of velvet.



The *Satin* is an American breed which occurred as a mutation in a litter of Havanas. The Satin mutation deals with fur structure and sheen. It is

recessive in character, and outcrossing to another breed of normal fur is not recommended. Nine colors are recognized.

The breed is popular for two reasons. Because

of type and size, it is a good commercial breed. Because of its sleek coat with commercial properties, brilliant sheen and rich, vivid colors, it is an excellent show rabbit.

Breeds and Varieties of Rabbits

Breeds and varieties	Ideal mature weights*		Primary use
	Bucks	Does	
American—Blue	8-10 pounds	9-11 pounds	Meat
Angora—English	5½-7½	5½-8	Wool
Angora—French	7 or over	7 or over	Wool
Belgian Hare	6-9	6-9	Show
Beveren	8-10	9-11	Meat
Californian	8-10	8½-10½	Meat
Champagne D'Argent	9-11	9½-12	Meat
Crepe D'Argent	8-10½	8½-11	Meat
Checkered Giant	11 or over	12 or over	Show
Chinchilla Standard	6-7½	6½-8	Show
Chinchilla American	9-11	10-12	Meat
Chinchilla Giant	12-15	13-16	Meat
Dutch (several colors)	3½-5½	3½-5½	Show
English Spot (several colors)	5-8	5-8	Show
Flemish Giant (several colors)	12 or over	13 or over	Show
Havana	5-8	5-7	Show
Harlequin	6-8	6-8	Show
Himalayan	2½-5	2½-5	Show
Li'ac	5½-8½	6-9	Show
Lop—English and French	9 or over	10 or over	Show
Netherland Dwarf (many colors)	not over 2½	not over 2½	Show
New Zealand (red or white)	9-11	10-12	Meat
Palomino	8-10	9-11	Meat
Polish	not over 3½	not over 3½	Show
Rex (several colors)	7 or over	8 or over	Show
Satin (several colors)	8½-10½	9-11	Show
Silvers	4-7	4-7	Show
Silver Fox	8-11	9-12	Show
Silver Marten	6½-8½	7½-9½	Show
Tan	4-5½	4-6	Show

Selecting Your Rabbits

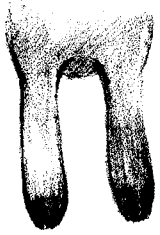
In selecting your stock you first need to:

- Decide what option or project area you want.
- Select a breed to suit your interest and one you feel you will enjoy.
- Ask your club leader or county Extension agent for advice if you need help.
- Buy from a good rabbit breeder near your home. Tell him what you want your rabbits for and ask him to help you pick out good ones.
- Your rabbits should be free from defects or diseases. Do not buy a rabbit with a wry tail, rupture, buck teeth, flop ears, crooked legs, or bad eyes. These defects may be inherited; their young might have them too.

Such conditions as ear canker, snuffles, sore hock, scours (dirty rears), vent disease, bloat, and others may be due to harmful bacteria (germs). If these diseases are brought to your place they may spread to other rabbits.

- Meat rabbits should be well developed in the important parts: the hind legs, hips, and loin.
- It is usually best for a 4-H member to have only one breed.
- The rabbits you choose should be out of a big litter or, if adults, they should be producing big litters.
- Young rabbits should be big for their age. New Zealands and Californians should weigh 4 to 4½ pounds each at eight weeks of age.

DOES YOUR RABBIT HAVE . . .



GOOD FRONT LEGS ?



GOOD TAIL CARRIAGE ?



A CROOKED TAIL (BAD)?



SPRADDLED FRONT LEGS (BAD)?



SPRADDLED HIND LEGS (BAD)?

- Meat rabbits should be of good type and conformation and should carry plenty of natural fleshing.
- Health and vigor are important.

Housing

A good rabbit hutch is illustrated on page 10. It allows for good ventilation in the summer and can be closed in the winter to prevent drafts.

The hardware cloth should be nailed so that rabbits do not come in contact with the wood frame. In making a hutch be sure to put the smooth side of the hardware cloth up.

The hutch should be convenient and easy to clean and arranged so you can feed and water quickly.

It is desirable for the sunlight to reach every corner sometime in the day.

The hutch should be dry. A tight roof prevents leaks.

The hutch should be airy and cool in summer. Provide some shade to keep out hot sun.

Locate hutch so that it is protected from direct drafts.

The hutch should be large enough to accommodate a nest box. A rule of thumb in determining size of hutch is one square foot of space per pound of adult animal.

Keep your rabbits out of the wind. A lattice fence six to eight feet high makes a good wind-break. Buildings and hedges will also break the wind. Overhead lattice or trees will help to protect your rabbits from overexposure to the sun.

Dogs, cats, and wild animals such as skunks, opossums, weasels, gopher snakes, and coyotes are fond of rabbit meat. You will have to protect your rabbits from them.

Rabbits are timid and easily excited. Excitement will cause does to neglect their young and may cause a rabbit to injure itself. Your rabbits need protection against disturbance as well as from direct harm. Try to put your rabbitry inside a good fence.

Equipment

Storage space

You will need a clean, dry, well-ventilated place to store feed, hides, and equipment. Arrange your rabbit room, which may be only a corner of a garage or a tool shed, so that there is a place to put all your equipment and records.

Miscellaneous equipment

You will need feeders, waterers, and nest boxes at the start of the project. Later, you can make or buy tattooing boxes, brushes for cleaning floors, rakes and shovels for handling manure, hand tools for building and repairing, tattooing equipment, carrying boxes, knives and racks for dressing, skin stretchers, wire cutters for trimming buck teeth and toenails, scales, and perhaps a few other items.

Feeders

The simplest feeder is a one-pound coffee can which can be nailed to a board to prevent tipping. A small crock is better.

These feeders are ideal for those bucks and resting does that must be hand fed a limited amount of feed daily. However, these do not serve well for feeding a doe and litter or a pen of fryers.

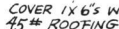
FOR SMALL RABBIT UNITS



SECTION A-A



NOTE:
ENTIRE BOTTOM CAN BE BOXED
IN DURING COLD WEATHER.

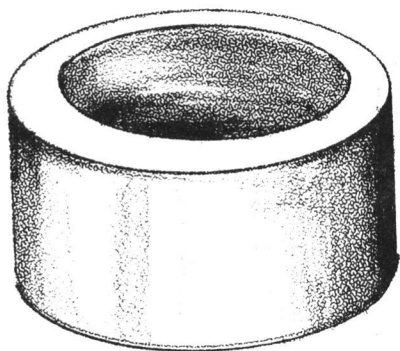


MATERIAL

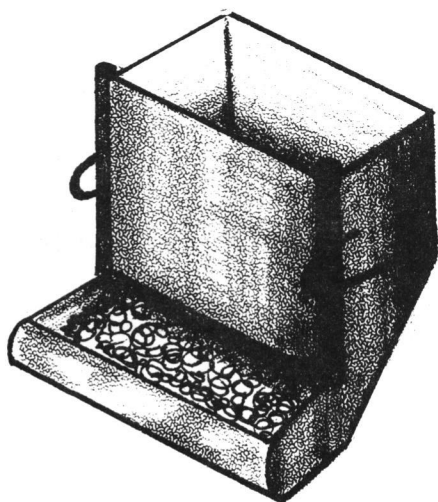
- 2 Lin. Ft.2"x4" (Door Support)
- 60 Lin. Ft.2"x2" (Back, Front, Side Framing)
- 80 Lin. Ft.1"x6" (Roof and Hinged Panels)
- 72 Lin. Ft.1"x3" (8—8'-4" lengths—Back Shiplap)
- 42 Lin. Ft.1"x2" (Braces and Nailers)
- 9 Lin. Ft.1/2"x12" Mesh Hardware Cloth, 19 Ga., 30" wide (Floor)
- 15 Lin. Ft.1x1 to 20 Ga. Poultry Netting, 24" wide (Front and Sides)
- 36 Sq. Ft.45# Felt Roofing Paper
- 2 Pieces1x1x1/2" x 4" long Door Latches
- 8 Hinges
- Misc. Nails, Hooks, Eyes, and Wire

NOTE—Hutch size varies with the breed of rabbits for which they are intended. This hutch plan is for medium breeds. If you raise small breeds (3 to 6 pounds) the hutch length could be cut to 3 feet instead of 4; Giant breeds (14 pounds and up) need much more room. For them, extend these plans to make each hutch 6 feet long. These sizes are recommended for one doe and her litter.

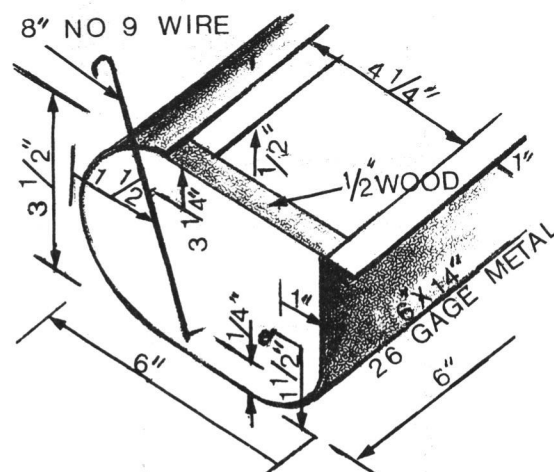
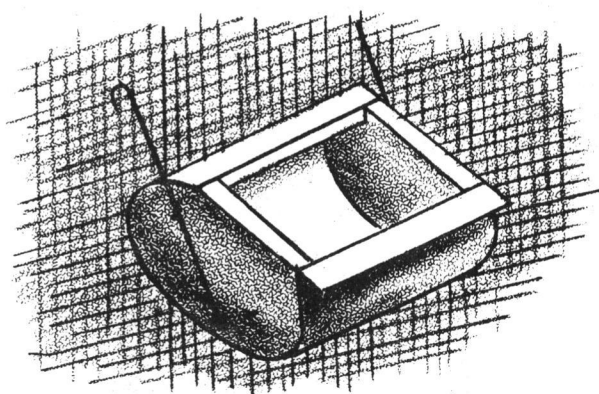
The hinged doors (left) would be needed only in climates where cold weather is a factor.



**PORCELAIN FEED OR WATER
CONTAINER**



METAL FEED HOPPER



WOOD AND METAL HOPPER

The small rabbits get into these simple feeders and waste feed by spilling it or getting it dirty with manure and urine. Rabbits do not enjoy such dirty feed and if they do eat it, they may get sick.

Use self-feeders for your does with litters and for your pens of fryers. You will find many kinds of self-feeders on the market. They should be large enough to hold about a week's feed supply for a big litter.

The best feeder need not be filled often. It keeps the feed clean without allowing rabbits to spill it.

Look at the ground under your feeders. The feed you see there is wasted. You have paid for it. It represents money lost, because you will have to use or sell that feed as manure—not as meat.

Waterers

Crocks or a dewdrop system are best for watering rabbits. Tin cans are too often tipped over and

are hard to keep clean. Crocks should be large enough so rabbits never run out of water. You will have to clean them and fill them daily. This task will be made easier if the water crocks can be cleaned and filled without opening the door.

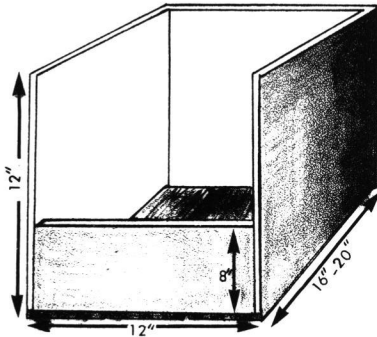
Nest boxes

A baby rabbit is without hair, blind, and unable to run around. It needs the protection of a good nest box. Whether it lives and makes money for you, or dies at your expense, may depend on the kind of nest box and nesting material you provide. When making a nest box be sure it will fit through the door of the hutch.

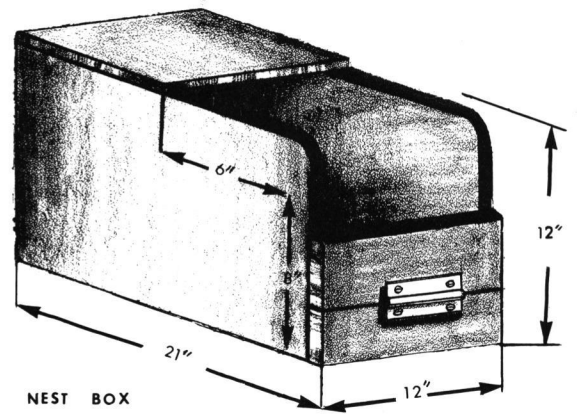
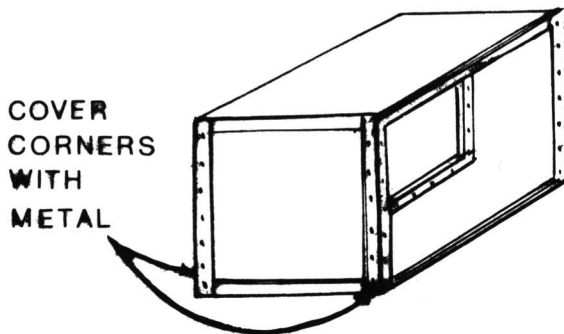
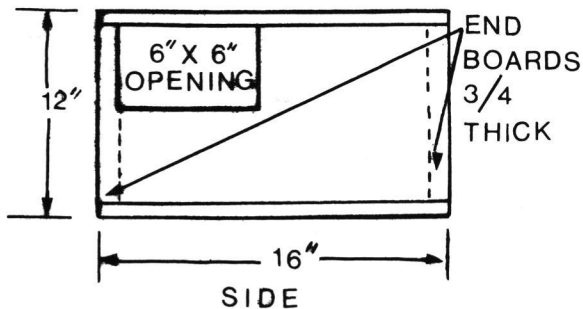
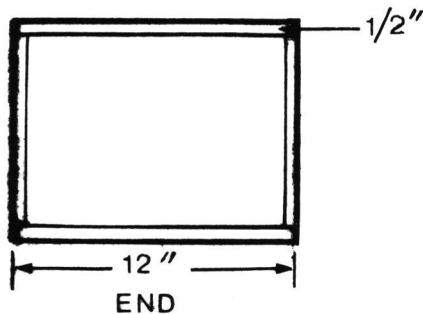
A good nest box will keep the young warm, allow ventilation and drainage of moisture, and keep them in the nest box until they are large enough to get back in by themselves. An apple box with an opening in one corner for the doe to enter is good. In cooler parts of the year, use a box that

is at least half covered. The accompanying illustration show some satisfactory nesting boxes.

Place your nest box in the hutch. If the front or open end is low, the babies are likely to make their nest right at the opening rather than in the more protected part of the box. For all types of nest boxes, make the edge of the opening six inches above the floor and cover all exposed edges with strips of metal.



Leave sides white. Extend bottom to side walls. Use $\frac{1}{2}$ or $\frac{3}{4}$ inch boards.

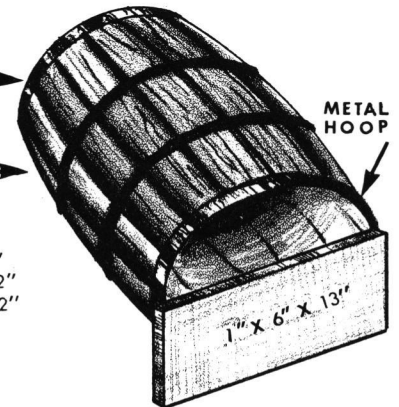


4-1" HOLES IN END FOR VENTILATION

5-1/4" DRAIN HOLES IN BOTTOM

10" DIA. FOR DOES TO 8"
12" DIA. FOR DOES TO 12"
13" DIA. FOR DOES TO 12"

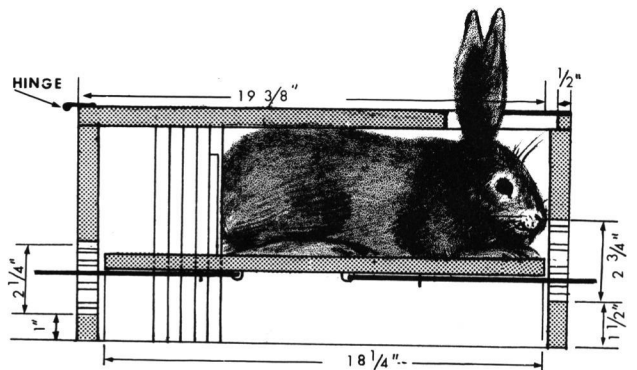
KEG NEST



Tattoo box

If you plan to increase to several does and keep some of their young for breeding, then ear-tag or tattoo your rabbits for identification purposes.

An adjustable box is convenient for restraining the rabbit for tattooing. With this equipment, one



Vertical section of a box for restraining a rabbit for tattooing. The spring-type holders tacked to the lower side of a movable floor compress the rabbit toward the top of the box. A movable cross partition holds the rabbit toward the front. Blocks of wood on each side hold the rabbit's head in the center of the hole at the top.

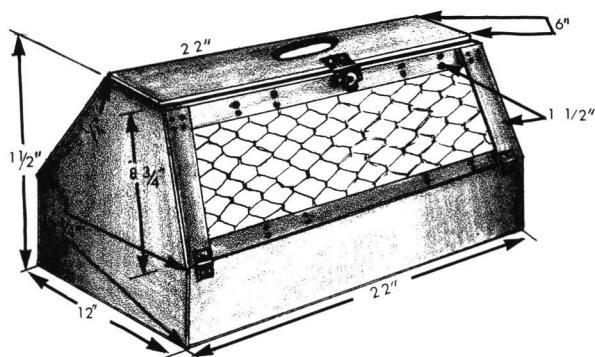
person can do the job. See pages 17 and 18 for additional information on tattooing.

Carrying box

From time to time you may have need for a carrying box. A simple one can be made by placing a hinged, welded-wire cover over a wooden box.

You can build a more elaborate box to transport your rabbits to achievement days or shows. Build a simple box of adequate size with a 1" x 1/2" mesh wire floor.

The carrying box (pictured) gives the rabbit room to lie down comfortably. Care should be taken during shipment to prevent the rabbit from being exposed to extreme heat, cold, wind, or wet conditions.



Put only one animal in a compartment of a carrying box. Provide water and feed while rabbit is being moved if it will be in the box long.

Rabbit Care

Sanitation

Sanitation in the rabbitry is the best method of disease control. Preventing an outbreak of disease is much less costly than trying to get rid of it. Remove manure, soiled bedding, and contaminated feed from the cages daily. Wash the watering equipment every week in hot, soapy water and rinse in clear water before refilling. Clean the feeders weekly.

Clean and disinfect the nest box before placing in cage about three days before kindling. Dead rabbits in a new litter should be buried.

When loose hair on cages and equipment becomes a problem, it can be burned off with a gas

torch outfit or some other method of burning. Move the flame quickly over the wire so the wire will not get red hot since this breaks the galvanized seal and promotes rust. Then wash cages with a solution containing chlorine to disinfect them.

If your rabbit gets sore hocks, they can be controlled by placing a board the size of your rabbit in the cage for it to rest on.

Feeding

Rabbits can be raised on pellets alone, but to supplement and reduce the cost of feed, alfalfa hay may be substituted part of the time.

Bucks, does that are not producing, and juniors more than four months old, should be limited in the amount of pellets they eat. If not, they will get too fat and will not breed. Mature rabbits should be fed from four to six ounces per day.

A pregnant doe should have all the feed she will eat. After kindling, continue this feeding program until the litter is weaned or ready for market. If the doe is not rebred until after the litter is marketed, reduce the amount of feed to that of a non-producing doe.

If the feed is not cleaned up by the next feeding time, reduce the amount of feed. Consider the size and condition of the animal.

By looking at the tag on the pellet feed sack you will find the percentage of nutrient values and minerals. These pellets contain enough salt so it isn't necessary to buy salt spools. If you feed alfalfa only, the salt spools are a necessity.

Pellet feeds can be stored in a metal or plastic garbage can with a tight-fitting cover.

Feed stored in sacks can be wasted by mice or rats, and the sacks may be spoiled. Sacks without holes may be bought back by the feed store. Any cuts in costs are to your benefit.

Preventing and treating diseases

Diseases and parasites are common and natural for all living things, so expect some in your rabbits. Be watchful for any unusual action or appearance in your rabbits that may indicate a disease. Well cared for rabbits in clean, roomy hutches are the least likely to have disease. Some of the more common diseases and their controls are listed on pages 14 and 15. Go to your leader for his advice. You may also want to check with your veterinarian or county Extension agent.

Disease and Symptoms

Coccidiosis

Common and serious problem especially in young rabbits. Symptoms vary with severity of exposure but include loss of appetite, diarrhea, tough coat, and loss of weight. Depending upon the type of coccidia present the disease may involve the liver (liver form) or the intestines (intestinal form).

Post-mortem examination reveals small white spots on liver when liver form is present. In severe infections the liver may be enlarged. With the intestinal form no visible lesions may be observed, although careful examination may reveal small hemorrhages on inner surface of intestines.

Mucoid enteritis

("Bloat" or "Scours")

Symptoms include loss of appetite, depression, rough coat, may grit teeth, abdomen often bloated, and diarrhea often containing gelatinous material.

Post-mortem examination may reveal excess mucus or fluid in the intestines. Fluid often present in stomach. Intestinal lining may be reddened. The condition can often be demonstrated in live animals by shaking it close to the ear. If it sounds as if it is full of fluid, mucoid enteritis is present.

Salmonellosis ("Scours")

Disease may be acute or chronic. Characterized by diarrhea, loss of appetite, loss of weight, nasal discharge, rapid breathing, and fever.

Non-infectious diarrhea

Diarrhea usually only symptom. May go off feed and lose weight.

Pasteurellosis

"Snuffles" or "nasal catarrh"—may be acute or chronic. Symptoms of a bad cold—nasal discharge, sneezing, coughing, watery eyes, head shaking and loss of weight. Rubs nose with front feet.

Post-mortem examination reveals a reddening of the windpipe, hemorrhages and solidified red patches in the lungs; membranes of the nose and sinuses may be inflamed.

Cause

Five different species of protozoan parasites or one-celled animals which injure the lining of the bile ducts of the liver, intestines, or cecum depending on the particular species present, is the cause of the disease.

Specific cause still unknown. Not believed to be contagious or of nutritional origin.

Post-mortem examination reveals few to numerous small white spots on liver, spleen, kidneys, or pancreas. Pneumonia may be present. Ulcers are sometimes found along the intestines.

Not contagious. Due to incorrect feeding methods. Excessive greens or feeds containing poisonous weeds, smut, musty hay or grain. Weaning too early. Unsanitary hutches and feeding and watering equipment.

Bacterial organism known as *Pasteurella multocida*. (*Brucella*, streptococcus, and other bacteria may occasionally produce similar condition.)

Infection of the reproductive tract by *Pasteurella* organisms occurs and may result in sterility.

Control

Sulfa added to the drinking water at a rate of 1½ oz. per gallon. Treat for 14 days. If necessary the treatment may be repeated after 7 days on plain water. To be fully effective, treatment should be accompanied by strict sanitary practices. Clean and disinfect hutches twice weekly with disinfectant. Remove manure daily and do not allow droppings to come in contact with feed and water. Feeders should be cleaned and disinfected regularly with disinfectant. Separate young from other rabbits as soon as possible. Where disease is a persistent problem, special feeds can be used for prevention.

Some feeds contain antibiotics and vitamins to help minimize losses from this condition. Strict sanitation of hutches, feeding and watering equipment important for control.

Several members of the *Salmonella* paratyphoid group of bacteria affect rabbits. Usually *S. typhimurium*, *S. enteritidis*, or *S. aertryche*.

Some feeds can be used as a preventive when the problem is troublesome.

For specific recommendations see your local veterinarian.

Remove rabbit to separate hutch. Eliminate or reduce amount of green feed. A laxative or mash of bran and oats is sometimes helpful.

For specific recommendations see your local veterinarian.

Some feeds can be used as preventive where problem is troublesome.

Strict sanitary practices should be applied to affected hutches.

For specific recommendations see your local veterinarian.

Disease and Symptoms	Cause	Control
<p><i>Listeriosis</i></p> <p>Young most frequently affected. Animals become emaciated. May show nervous disturbance—twist head to one side.</p>	<p>Bacterial organism, <i>Listeria</i>, is the cause.</p>	<p>Affected animals should be destroyed and disposed of properly.</p>
<p><i>Mastitis</i></p> <p>“Blue Breasts” mammary glands become hot, reddened, and swollen—later may appear blue in color. May go off feed and run temperature. Condition may spread through rabbitry.</p>	<p>Usually <i>Staphylococcus</i> or <i>Streptococcus</i> infections, but various other bacteria may be responsible.</p>	<p>Strict sanitary program and thorough disinfection of contaminated hutches.</p> <p>For specific recommendations see your local veterinarian.</p>
<p><i>Caked breasts</i></p> <p>“Caked Udder,” one or more of mammary glands swollen, and hot and firm.</p>	<p>Milk not drawn from glands as rapidly as formed. Too few young or young not nursing sufficiently.</p>	<p>Prevention—correcting faulty management most important.</p> <p>Reduce ration $\frac{1}{2}$ on the day doe kindles and gradually increase to full feed in seven days. Relieve congested glands by partial milking. Rub lanolin into affected glands to soften. Do not wean young from heavy milk doe abruptly.</p>
<p><i>Ear canker</i></p> <p>“Ear Mange”—Shake head and flop ears. Scaly crusts starting at base of inner ear.</p>	<p>Infestation of skin with mites.</p>	<p>For specific recommendations see your local veterinarian.</p>
<p><i>Ringworm</i></p> <p>Loss of hair usually in circumscribed patches, often starts on head but may involve any part of body. Not accompanied by scratching as a rule. Infection may spread to man; gloves should be used in handling affected animals.</p>	<p>Fungus infection of skin.</p>	<p>Clip $\frac{1}{2}$” area around lesion and treat with good fungicide such as strong tincture of Iodine or mixture of 2 oz. tincture of Iodine, 2 oz. tincture benzoine, and $\frac{1}{2}$ oz. salicylic acid mixed with alcohol to make a total of 6 oz.</p>
<p><i>Sore hocks</i></p> <p>Bruised areas on under surface of hocks. Often become infected or abscessed. Front feet may become involved.</p> <p>Prevention by good management is best means of handling this problem—clean, dry floors or wire that provides good supporting area without compromising sanitation.</p> <p>Dispose of “Stampers” and protect from exciting influences.</p>	<p>Due to irritation from wire floors, Stamping or irritation from urine often starts condition. Nervous and heavy animal more often affected.</p>	<p>Regular inspection of breeders for tenderness of feet or early lesions.</p> <p>At first sign, place affected animals on ground or put lath platform in hutch. This is often sufficient to clear up early cases.</p> <p>Clip and clean affected areas with disinfectant. Treat locally with wide-spectrum antibiotic ointment. Penicillin injections helpful in some cases.</p> <p>If lesions are abscessed, surgical drainage may be necessary.</p>

Breeding and Care of Young

Breeding

The age at which rabbits may be bred varies with the time required for them to attain full size (maturity). In small breeds this is usually four to five months; in medium breeds it may be five to six months; and for heavy breeds, eight to 10 months.

There are many practical breeding schedules available to the rabbit raisers. The period of gestation is 30 to 32 days, depending on breed and individual rabbit differences. Gestation is the time between breeding and kindling of young. Most 4-H members will find rebreeding most successful during the period of six to eight weeks after kindling.

Each mature doe should be bred four or five times per year. When your doe is old enough to breed, watch her for signs. She will become restless, often rubbing the crocks or feed containers with her chin, and will display a swelling and reddish appearance of her sex organs. A good way to check a doe for signs of being ready to breed is to run your hand over her back from tail to head. If the doe is ready to breed, she will usually stretch out and raise her tail slightly.

Each breeding doe must have a hutch for herself and her young. Bucks also must be kept in individual cages. One buck per ten breeding does is adequate. At mating time the doe should be taken to the buck's cage. Never put the buck in the doe's cage. When the doe is brought to the buck, she may be held and quieted to prevent undue excitement. After breeding takes place, the buck will usually fall over backward or on his side. The doe should be removed immediately to her own cage.

Sometimes the doe will not allow the buck near her. When this happens, try again in a day or two. When mating does occur, return the doe to her hutch and record the date and name of both doe and buck. This is an important responsibility. Many litters have been lost because the date of the breeding was not recorded and the nest box was not placed in the pen by the day of kindling.

To make sure the doe is bred, return her to the buck's pen for test-mating on the 18th day. Refusal of the buck, whining, and attempts to escape, indicate the doe is bred.

The number of young in a litter may vary greatly, and it is common to have litters of 10 or 12 and sometimes more. Such litters are too large for one doe to raise. Leave about eight of the best young with the doe and transfer ad-

ditional offspring to foster mothers. Does differ in the quantity of milk they give; therefore, some are capable for raising larger litters than others.

Young are born blind and hairless and depend entirely on the doe for the first three weeks of life. Hand raising of orphans is possible but extremely difficult.

Determining Pregnancy

It is advisable to learn early in your 4-H project how to palpate or determine if does are pregnant. Palpating should be done 14 to 16 days after breeding, as during this period the inexperienced rabbit owner will be most accurate with the diagnosis. With experience, the rabbit raiser's confidence and accuracy for diagnosing pregnancy will improve and then the technique may be practiced as early as seven to eight days after breeding. If the doe is pregnant you should feel with the thumb and fingers a series of nodules or lumps in the lower abdomen.

Kindling

Keep an accurate record of the date on which each doe is bred. On the 27th or 28th day after mating, clean the cage and place the nest box in the cage.

Don't underestimate the importance of disinfecting nest box. To completely ready the nest box you'll need to disinfect and clean the entire box thoroughly. Don't forget to scrub down boxes between litters. You'll need a two-pound can full of wood shavings to place in the bottom of nest. Next you'll need plenty of good clean straw. The doe will make her own nest. If the doe eats a lot of straw, don't be alarmed, just add more straw. If all of your breeding herd does are eating a lot of straw, recheck your feeding program to see if something is missing.

Remember to place a nest box filled with straw in the cage three days before the doe is due. Make the doe as comfortable in her cage as possible and do not disturb her just before kindling or until she has quieted down after kindling. The day after the young are born, check the nest box, determine the number of young in the litter, and remove any that may have died. During very cold weather, provide a ramp from the cage floor to the nest box opening. Then, if a young rabbit falls out it has a chance to climb back in. The ramp should have a solid top with step-like ridges so the young rabbit will have little difficulty in climbing back into the nest box.

Care of young

The doe usually will line the nest with fur from her own body. If she fails to pull enough fur to give the litter protection, especially during cold weather, you can pluck some fur from the hips and side of the mother and add to the nest. During the summer months remove extra fur and store in a clean bag or box to be used during the winter.

Occasionally you may have a doe that eats her young. Check to see whether you have given her a balanced diet during the pregnancy period. There also may be something such as a prowling dog or cat disturbing her. Give the doe that destroys her litter another chance. However, if she continues the practice, she should be marketed.

Soon after the young come out of the nest box—about the 21st to 24th day of age—remove the box. It is best to leave the young with the doe until they are seven weeks of age. Males and females that are not marketed at around the eighth week should be separated into pairs of the same sex or individually caged for further growth and development.

Handling

Rabbits are easily excited. Learn to work among your rabbits without exciting them. As you approach the cage, speak to your rabbits or

knock on the door or gate to let them know you are coming. Otherwise you might excite them, causing them to thump and stampede. Move slowly, make no startling noises.

You will need to handle rabbits to examine them for diseases or injuries and to move them from one hutch to another. Learn to do this so as not to injure or excite them. Learn to keep from getting scratched or bitten. Rabbit ears are not handles. Pick up mature rabbits by grasping the hide over the shoulders. If the rabbit is to be held for a moment, place the other hand under the rabbit's hindquarters to take the weight off its hide.

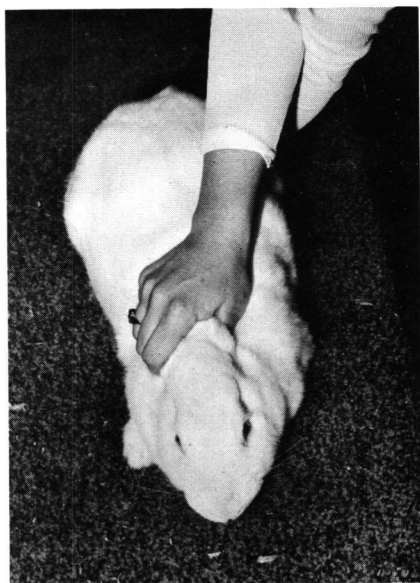
If you wish to carry the rabbit any distance or hold it for awhile, place it under your arm.

Tattooing

Tattooing the ears is a satisfactory method. When properly done, it is permanent and will not disfigure the ears. You can obtain instruments for the purpose from biological and livestock supply houses. Ear tags and clips are not satisfactory because they tear out and disfigure the ear. Identification then is lost.

Definition—The use of number and letter marking in the ear.

Purpose—For identification of rabbit to aid in keeping records.



PICKING UP A MATURE RABBIT

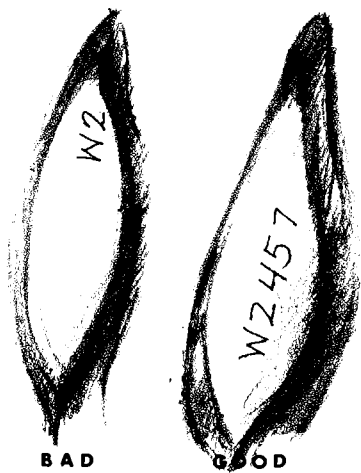


HOLDING A RABBIT



CARRYING A RABBIT

Markings—Use letter and numbers of your own choice, but keep them to as few as possible. Consider how your subsequent numbers may be influenced by first numbers you use.



Minimum Age—Rabbit should be three months old before tattooing.

Equipment—Preferred equipment is a tattoo punch with accessories (numbers, letters, permanent ink).

Permanent Marking—Select desired numbers and letter. Check to see they are the way you want them by testing on a piece of paper. Press them into *left ear* with tattoo punch. Then rub ink into holes made in the ear. Remove extra ink from the ear with vegetable oil. Wipe with alcohol to prevent infection.

Temporary Marking—A felt-tip pen may be used for *very temporary* ear markings.

Keeping Records

Aside from daily management techniques, records are the most important part of your 4-H project. Records represent the “backbone” of your rabbitry; they keep things in order; they tell you how your rabbits are doing; they can make your business profitable. Keep your 4-H rabbit records up to date and accurate. Good records include:

1. Beginning inventory
2. Total operating expenses
3. Total marketing receipts
4. Closing inventory

Keep a herd book—

1. Complete pedigree of each individual.
2. Performance records on service of bucks.
3. Doe Performance Records Hutch Cards, including growth record of litter.

4. At eight weeks of age, individually weigh all rabbits. Make first selections for herd replacements at this time. For commercial meat-type rabbits, all individuals should be ready for fryer marketing.

Shown below are examples of sample record forms for keeping breeding information. Many commercial companies will provide, free of charge, similar records forms or you can make your own.

RABBIT CAGE RECORD CARD													
Doe Performance Record													
Name or ear no.		Born		Dam		Cage no.							
Served by	Date	Tested	Kindled	Number of young				Jrs. saved		Weight	Remarks		
				Born	Left	Added	Raised	Died	Bucks			Does	

BUCK PERFORMANCE RECORD											
Rabbit Cage Record Card											
Ear no. buck	Ear no. doe	Date bred	PG	Tested	NPG	Litter size	Jrs. saved		Litter average weight		
							Bucks	Does	4 wks.	6 wks.	8 wks.

Marketing Your Rabbits

In a 4-H rabbit project, you not only learn the practical problems of raising and caring for rabbits, but you are in business for yourself. You will need to decide if it would be more profitable for you to sell your fryers by live weight or dressed weight. The best way to learn how to dress rabbits properly is watching a demonstration, and then practicing. It's not difficult, once learned.

In deciding if it would be profitable for you to dress your own fryers, figure the hourly income for the extra time spent in butchering and marketing. Could you earn more working for someone else?

Normal market weight for fryers is four to five pounds.

Another consideration is your local market for fresh-dressed rabbits. If you cannot sell them all, you might be better off selling rabbits live weight to someone who will take them to market for you.

Equipment and tools for dressing rabbits

The tools for dressing rabbits are simple. Nail a board to a wall or fence at about head level. See photo below (right). Screw, in a horizontal row, six hooks with sharpened points, about eight inches apart. A small table about 30 inches high should stand near the board.

On the table have two large buckets of cool, clear water. One bucket is for washing blood from your hands, knives, and equipment, and the other is for washing and cooling the dressed rabbits.

Have several wire hide stretchers ready. On the table have a coffee can of clothes pins for fastening the hides to the stretchers.

Under the hooks you need a washtub to catch the blood, intestines, heads, and feet. A simple carrying box may be used to hold the fryers to be killed.

Two knives are needed, a chicken-sticking knife and a boning knife. Keep them sharp.

Killing and dressing rabbits

Have an expert demonstrate proper dressing methods to you. People are particular about the

food they buy, and your method of cutting can help sales.

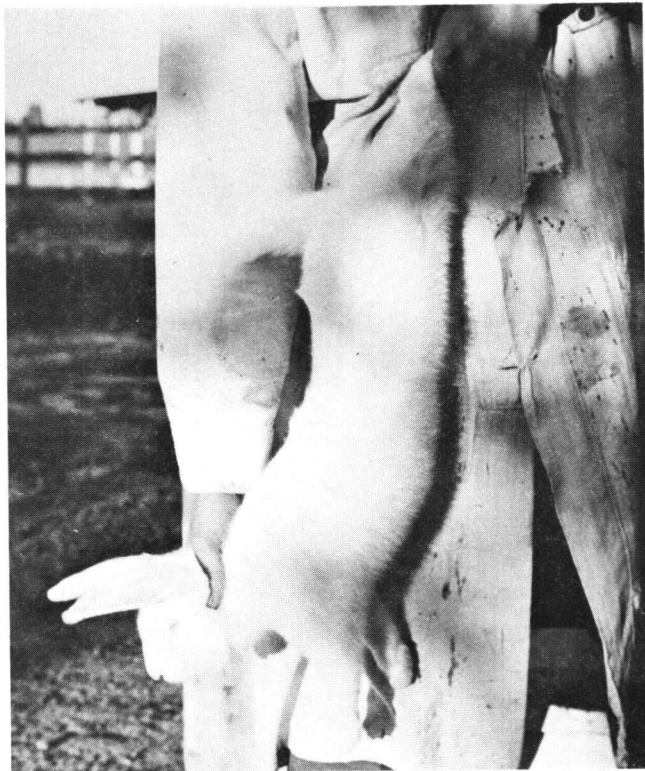
The illustrations, pages 19 through 22, will be useful to you in following the steps in dressing the fryers when you first try to do it by yourself, but experience must be gained through practice. You can soon do the job easier and faster and eventually you will be able to kill and dress a rabbit in a few minutes.

Several points on the illustrations are extremely important. It takes some skill to break the rabbit's neck in the recommended manner. Hold the rabbit's head so it forms the sharpest possible angle with the neck. You will be able to do it quickly with a little practice.

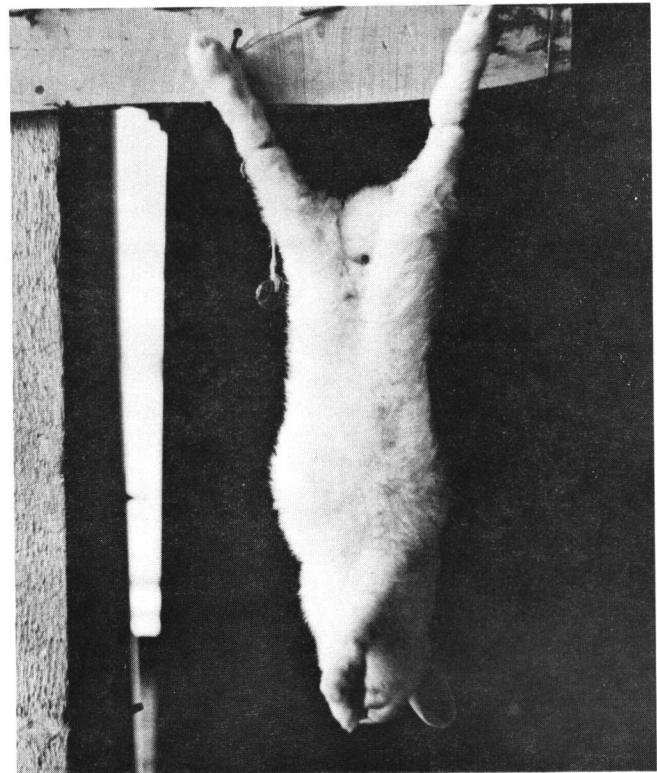
Another point to remember is that the head must be cut off as soon as possible after breaking the neck. Otherwise blood will clot around the neck and be hard to wash off.

When removing the intestines, place the left thumb over the liver as you pull out the intestines and the stomach with your right hand. Removing the gall bladder is tricky at first, but study just how it is attached; you will soon be doing it quickly and neatly.

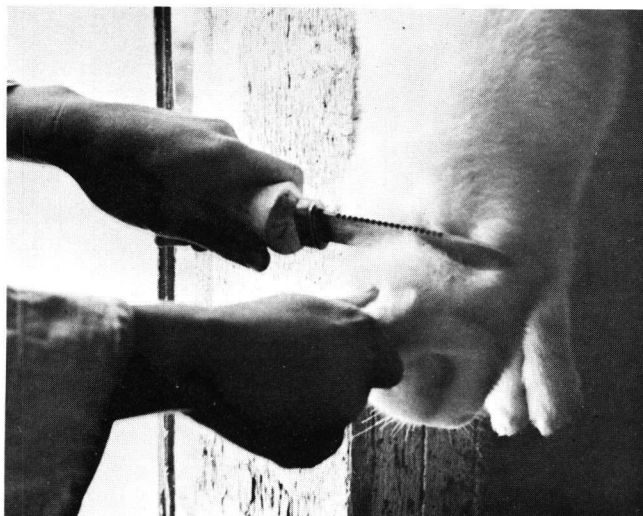
Steps in Rabbit Dressing



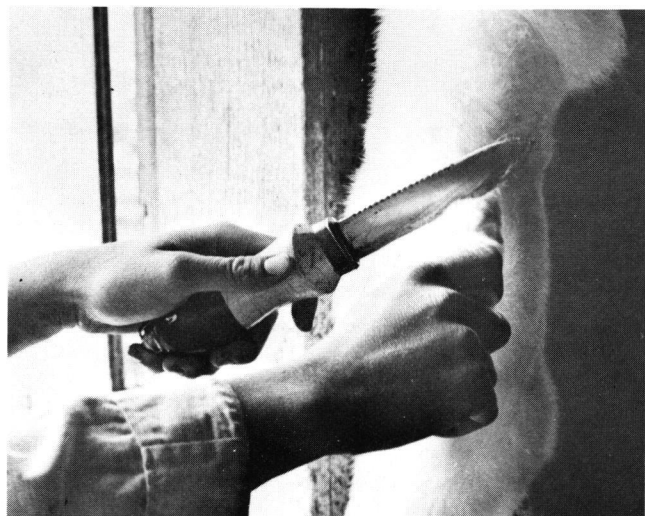
1. Kill rabbit by breaking its neck. Press base of your thumb against back of rabbit's head. Bend head back as far as possible. Pull until you feel head break away from neck.



2. You may hang your rabbit with both hind feet. This is recommended for beginners and younger members.



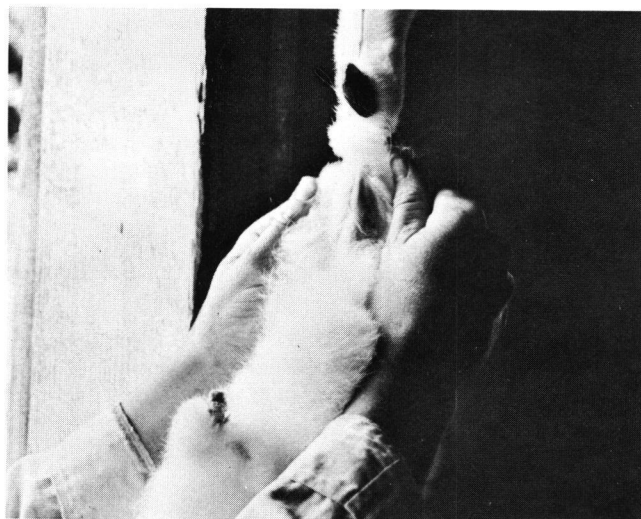
3. Immediately cut off head. Cut close to head and through the place where head was broken away from neck.



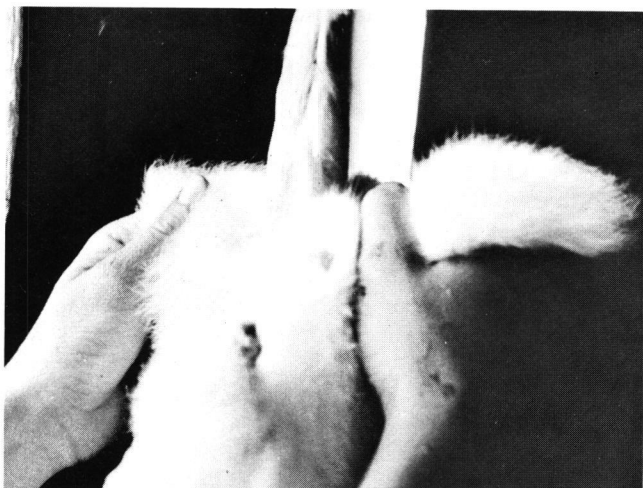
4. Cut off both front feet. Then unhook the right hind foot and cut it off.



5. With a chicken-sticking knife, slit skin up inside of both hind legs.



6. Tear hide away from hind leg on hook.



7. Tear hide from tail and vent by working fingers between hide and body ahead of tail and over rump.



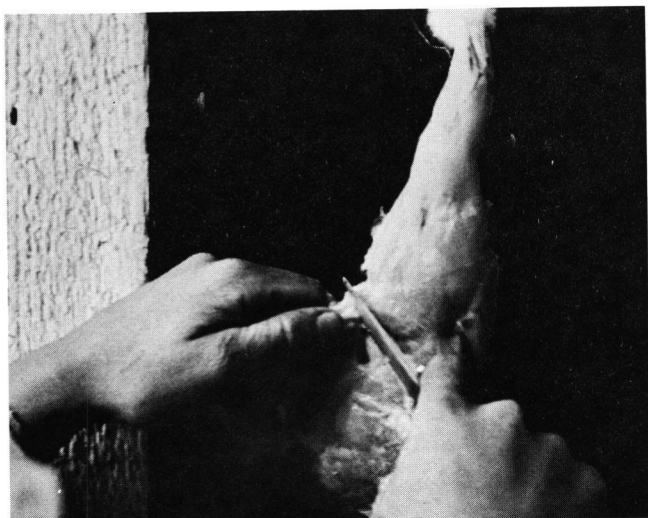
8. Force fingers between hide and body and pull hide from free hind leg.



9. Cut as shown, leaving the fat on the flanks, not on the pelt.



10. As soon as the whole pelt can be held with one hand, remove it with one strong pull.



11. Cut off tail.



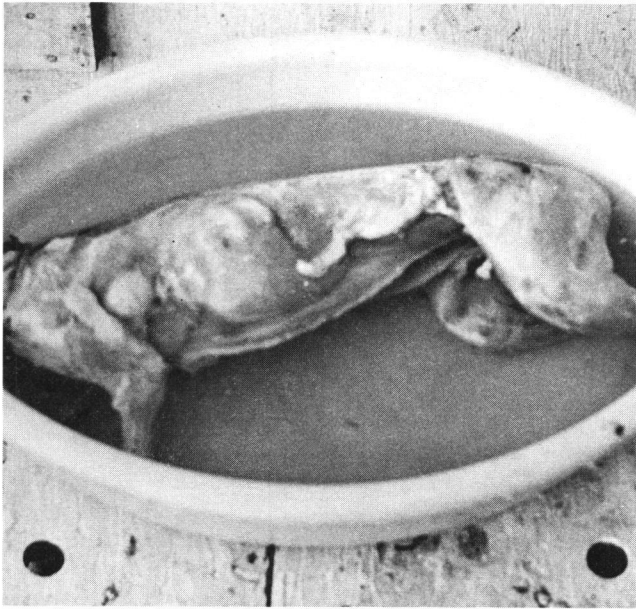
12. Cut pelvic bone between hind legs by inserting knife from above and prying out.



13. Slit down belly, being careful not to cut bladder, intestines, or stomach.



14. Pull out insides by grasping stomach and holding liver in place with thumb of other hand. Carefully remove gall bladder without cutting or breaking it. The bitter green bile of the gall bladder must not be spilled on the meat.



15. Wash the carcass in cold water. It may be left in cold water for 15 minutes for cooling. Remove and place in a pan or wire basket in a natural position.

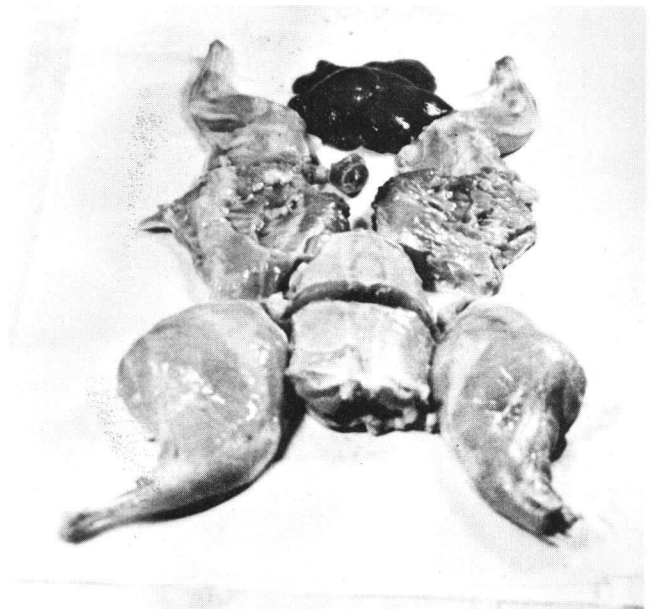
Use care so hairs will not get on the carcass. They are difficult to remove and give it an unattractive appearance. Rinsing the carcass in cold water facilitates the removal of hair and blood, and also cleans the carcass. Do not leave the carcass in the water more than 15 minutes. Prolonged soaking causes the meat to absorb water. This is considered an adulteration of the product. Chill the carcass in a refrigerated cooler, so the internal temperature of the carcass will be no more than 40°F or less than 36°F within 24 hours. Use a knife to cut up a fryer rabbit as shown.

Rabbits for sale come under the state and federal regulations governing the processing of food. All of the PNW states have laws that require that all rabbit dressing plants meet specified minimum standards. We suggest your club secretary or leader obtain a copy of the regulations from the State Department of Agriculture in your state.

Marketing By-Products

Cured or tanned pelts

All pelts have some value in the fur trade. If you butcher your own rabbits, you can add to your income by properly caring for your pelts and marketing them. Or, you may wish to tan your own pelts.



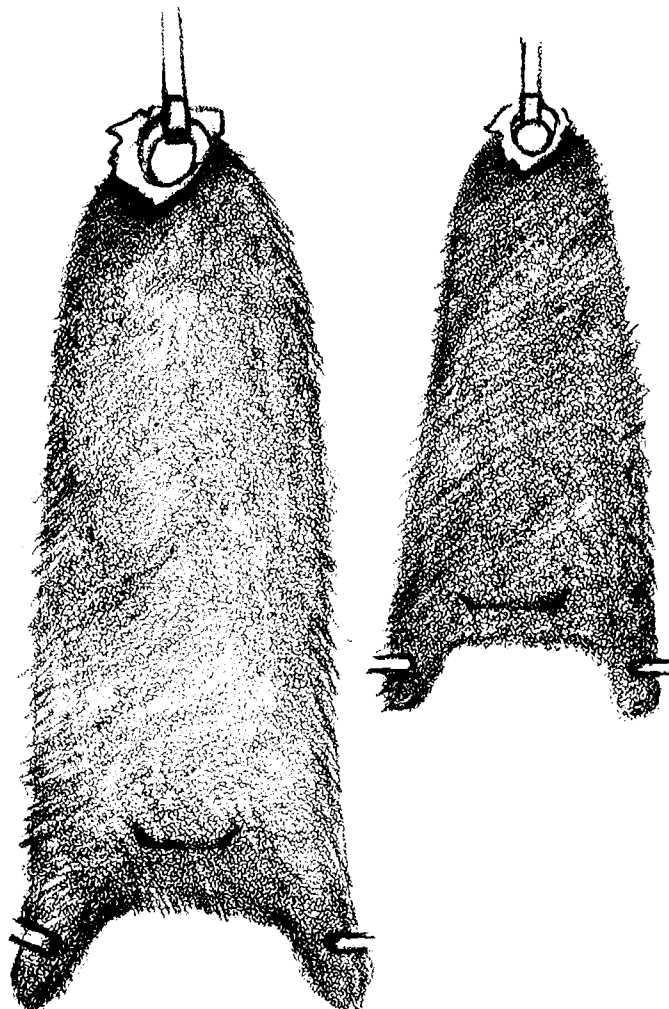
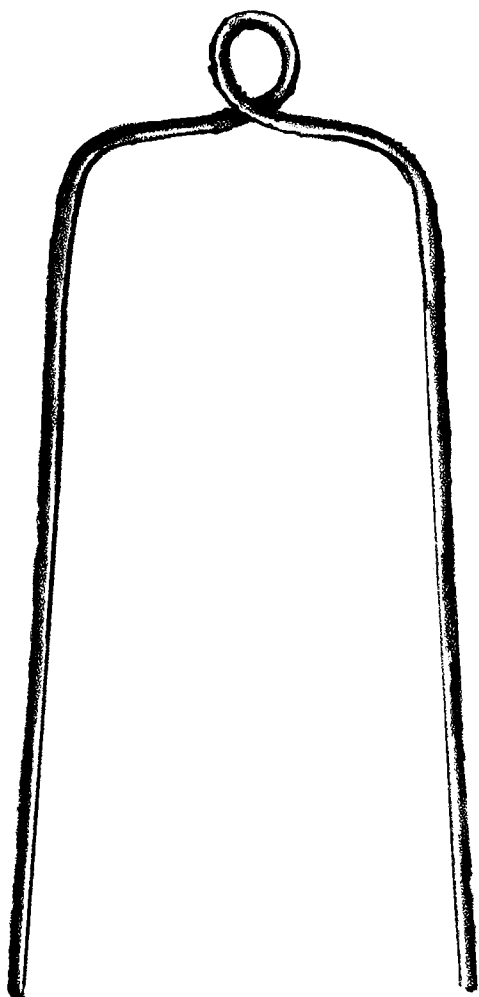
One method of cutting up a fryer rabbit. Rabbits are usually marketed as a cut up fryer rather than whole.

You can cure the pelts or tan them. To cure the pelts, while still warm place skins flesh side out on wire or board, formers or shapers (with the forepart over the narrow end).

You can make a satisfactory skin shaper from five feet of number 9 galvanized wire. It is not desirable to stretch the skin unduly, but to hold it in place. Mount a skin on the shaper, making sure both front feet casings are on the same side. Take care to remove all wrinkles. Scrape all the fat from the hide, being careful not to tear the hide. Be sure skins are thoroughly dry, but do not dry them in the sun or by artificial heat. If they are going to be stored, sprinkle with naphtha flakes. Never use salt in curing rabbit skins.

You can tan your own pelts by the following process.

1. Remove pelt from rabbit and split down the belly.
2. Cut off front legs and open to outer edge of skin.
3. Remove any excess fat. If the fresh pelt cannot be used that day, place in a plastic bag and freeze until needed.
4. If dried already, soak in water until soft and use like the fresh hide.



A SKIN SHAPER OR STRETCHER CAN BE MADE FROM A FIVE-FOOT PIECE OF NO. 9 GALVANIZED WIRE.

5. Place skins in one of the following solutions made in a plastic pail with lid:

2 gallons of water	2 gallons of water
2 ounces sulfuric acid	8 ounces battery acid
2½ pounds salt	OR 2½ pounds salt

In making the solution, place the salt in the water. Mix well. Then slowly pour the acid into the solution. (Do *not* pour water into acid.) Acid will burn. Once the solution is made, it is safe to hands.

6. Leave 24 hours or more.
7. Remove and pull flesh from the skin, working from the tail end.
8. Return to the solution for 48 hours or more. Skin will no longer feel slimy.

9. Remove and wash in a mild detergent. Rinse well and squeeze out excess water.

10. Let dry slowly. As they dry, stretch to break the fibers. This will cause the skin to turn white and will soften it. The more it is pulled and rubbed, the softer it will become.

11. Try to stretch the pet flat as the drying is completed.

Lucky rabbit's foot

Another source of income could be tanning the feet and drying the front feet for sale as lucky charms. Metal caps with chains can be purchased from a hobby store.

Rabbit manure

Rabbit manure is good for use on gardens and shrubs. It can be sold in bulk or in bags.

Activities

Presentations

You will enjoy sharing what you have learned with others. It's fun to tell someone about your project. You can start easily by giving a report on a breed at your local club meeting and gradually make more and more detailed reports until you are giving short speeches; illustrated talks using slides, pictures or charts; or demonstrations that show and tell how to do something.

Examples of reports you could give to your club or to the public might include: "The Breed of Rabbits," "Some Interesting Facts About Rabbits," "The History of the Rabbit," and many others. Examples of illustrated talks, using slides, pictures, or charts, might include: "The Internal Parasites of a Rabbit," "The Breeds of Rabbits," and "Steps in Marketing a Rabbit." Possible demonstrations might be: "How to Cut and Package a Rabbit Carcass," "How to Handle a Rabbit," and "How to Tattoo a Rabbit." You will think of many other topics for reports, illustrated talks, or demonstrations.

Perhaps you would like to give your presentations before a larger audience. Service clubs, granges, P.T.A.'s, etc., are often looking for an interesting program and would welcome you. 4-H presentation contests usually are offered beyond club level and provide an opportunity for competition. Ask your leader for help.

Judging rabbits, pelts, feeds, and equipment

Good management will require that you know how to evaluate the quality of your rabbits, pelts, feeds, and equipment. You will find yourself comparing rabbits within your herd, within a litter, or between your fellow 4-H'ers! The skill you develop will be used over and over.

A fun way of learning how to recognize good quality is to participate in judging contests. In a judging contest you will be scored on how well you can place a group or class of four similar animals or products. You will be asked to select the 1st, 2nd, 3rd, and 4th animals or items in your order of choice.

Here is how to look at the rabbits when judging.

Side view: Deep body, high arched loin, full rounded rump, smooth over the shoulders, and short neck.

Rear view: Wide at hips, tapering slightly to the shoulders, smooth.

Handling: You must feel a rabbit to know what is under the fur. Handle rabbits gently to avoid frightening or hurting them. A rabbit should feel

thick, firm, and solid, with a good covering of flesh over its shoulders, saddle, loin, and hips. It should not be thin or bony, loose or flabby, and should not have rolls of fat about its shoulders. Mature rabbits should not be too fat.

Starting at the shoulders, feel the width and fleshing of the shoulders, the width and depth of the ribs, fleshing over the ribs and back, width and thickness of the loin, and the width and fleshing of the rear quarters. By grasping the rear quarters at the thigh, one in each hand, you can get a good idea of the amount of meat in this area. The loin and rear quarters are most important, as most of the meat is in this area.

Fur: Rabbit skins normally account for less than one-tenth of the value of a market rabbit, but the fur is important and should be considered. It should be dense and thick; it should not be harsh or wiry, nor too fine or silky or woolly. When brushed up with your hand, the fur should fly back into its natural position and lie smooth. The undercoat should be fine, soft, and dense; it should be thickly interspersed with heavier, longer guard hairs that protect the under fur and give body and density to the fur. The coat should be clean, bright, and free from stains.

Faults: Narrow shoulders; long, narrow body; very short body; chopped-off hind quarters; fine bone; short, thin, patchy or too soft or woolly fur; undesirable color; long, narrow head, pinched nose; hair not carried well down on legs; thin pads, bare or sore hocks.

Disqualifications: A rabbit with any of the following faults should be placed at the bottom of the class: crooked feet, legs, spine, tail, or neck; lop ears; blindness; absence of a tail or ear; pot (swollen) belly; missing or wolf (buck) teeth; rupture; any color other than true breed color in any but crossbreds.

Rabbits should be placed down for being over or under weight or for having other defects or ailments such as sore hocks. A buck rabbit in a class of does should be placed at the bottom of the class.

Eliminations (Discriminations): A rabbit with vent disease, ear canker, infected eyes, or infected sores should be eliminated from the contest.

Rabbit pelts and equipment should be placed after examining the whole class, noting good and bad points and comparing how well they fit the needs for their intended use.

You should be prepared to give your reasons for your final placing. Always name the class first, then give your placing, telling why you placed each animal or item over the one below it. Use rabbit terms for rabbit classes, naming parts and

differences: i.e., "Number 1 has a wider loin and more meat on its rear quarters than does number 3." "I placed number 2 last. She is much too fat."

Your leader will be able to provide help and training in preparation for your participation in judging contests.

Exhibiting

You may want to show your rabbits and pelts to others. This can be done by inviting your club to meet at your home or by participating in a rabbit show or fair.

If you exhibit in a public show or fair, you will need to know the classes that are open to you and the rules for participation including ownership and entry deadlines. This information is usually available through your 4-H leader.

You should start grooming, handling, and training your rabbits and selecting your pelts well in advance of the show.

Consumer studies

The final product found in the marketplace is the direct result of how well the producer or the industry relates to the consumer. The size, quality, and packaging of the product must respond immediately to consumer demands if the rabbit producer hopes to succeed. These demands might well affect future expansion or present size of your operation, the breed of rabbits you choose, your time of breeding, how you slaughter and cut up your rabbit, and even how you package it.

Study and make a report to your club, community, or other interested groups on an area of consumer education. Here are some possibilities.

How do the markets in your neighborhood prefer to display their rabbits? Will the local house wife buy direct from you? What are the local laws that govern the raising of rabbits? How do you package rabbits? What are the methods of marketing rabbits? What are the methods of slaughtering rabbits?

You may wish to explore and share information on cooking and serving rabbit, such as rabbit burger, rabbit sausage, pickled rabbit, or smoked rabbit. Prepare and serve it to your family or others.

Career study

Your 4-H project provides the opportunity for you to learn about careers associated with rabbits. Awareness of careers can be accomplished by:

- Study through library research of various careers and reporting to your club.
- Arrange for a speaker to come to the club,

thus acquainting you with the various fields associated with rabbits.

- Arrange for tours and field trips such as a commercial rabbitry, processing plants, feed companies or stores, veterinary laboratories, retail outlets, and a tannery.

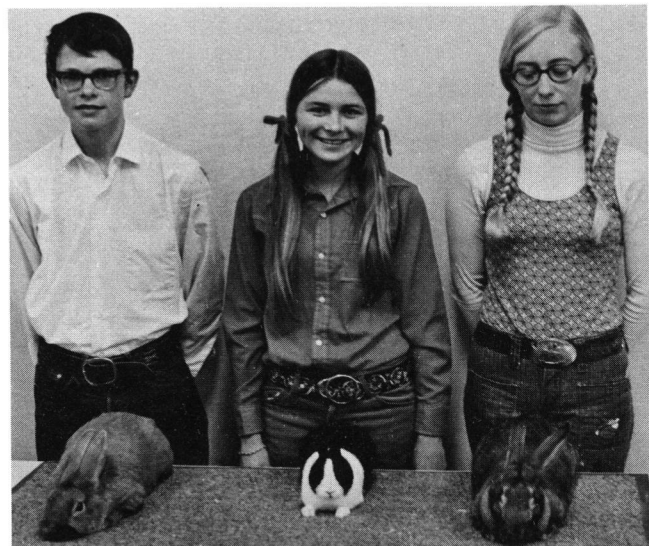
Training

All 4-H'ers can participate in training opportunities. The younger member might start out with a simple report to his club on a breed of rabbits, while more experienced members can prepare and present a training in some of the simple rabbit skills such as "Skinning a Rabbit," "How to Handle a Rabbit," or "How to Keep Rabbit Records."

Some clubs host other rabbit clubs to a training meeting, using their own members as teachers. Some counties ask older members to assist with county training.

You will enjoy teaching a skill. "Try it—You'll like it!"

Showmanship (Handling and Showing Rabbits)



Handling

Handle your rabbit gently at all times. Use the method that is easiest for you, and that causes the least discomfort to the rabbit. Rabbit should feel secure with handler. Following is one method which 4-H'ers have used successfully.

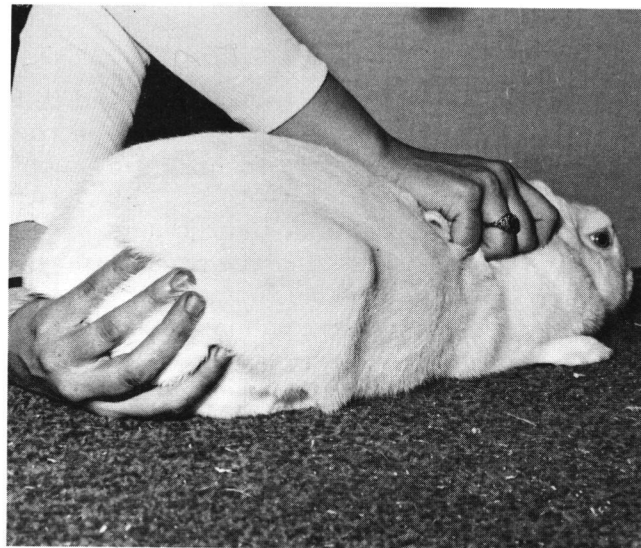
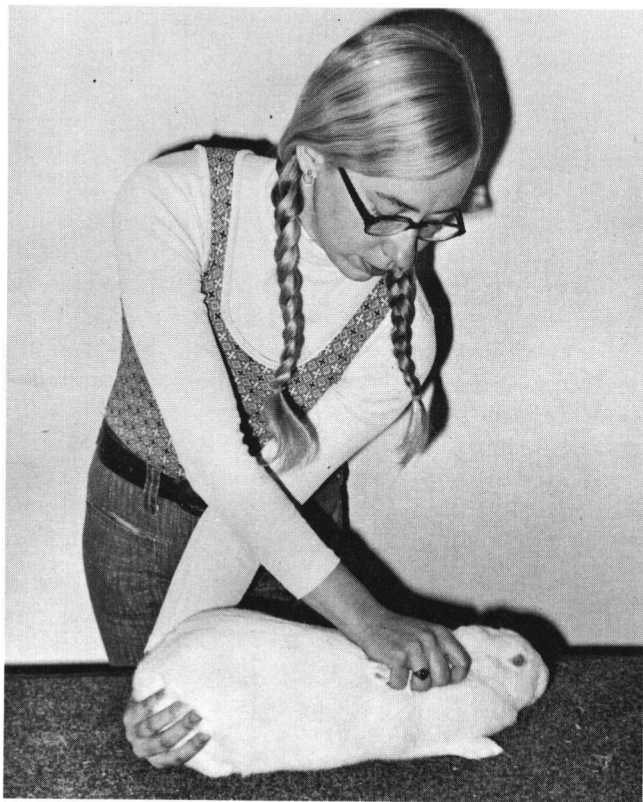
Show Preparation

Rabbits should be cleaned by brushing the coat, washing hocks (if necessary), trimming nails, and checking ears for evidence of disease. Trim the toe nails, a small portion at a time, so as not to cut

too deep (do not cut into the quick or draw blood).

When showing your rabbits remember that people look at and "judge" you too. Be clean, and

have your clothes clean and neat. Contrasting colors of clothes and rabbits are desired (for example, wear dark clothes when showing a white rabbit). Long sleeves will protect your arms.

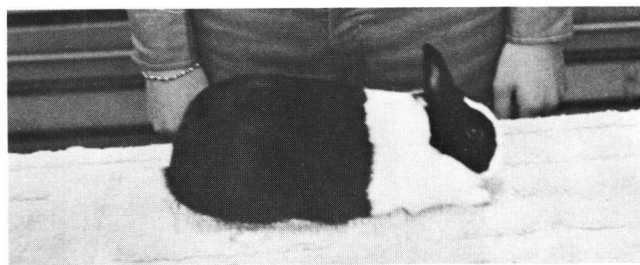
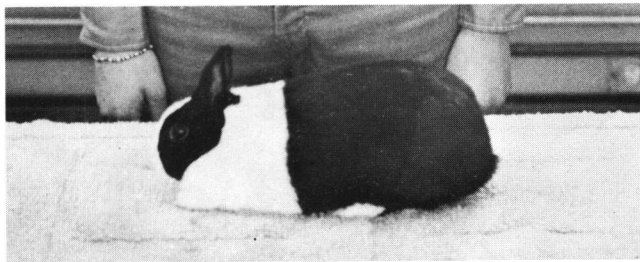


Carrying rabbit to show table: (above) Grasp the loose skin over the shoulders with one hand and place the other hand under the rump. (below) Lift it and tuck its head under your arm while placing your forearm around its legs (still grasping ears for security).

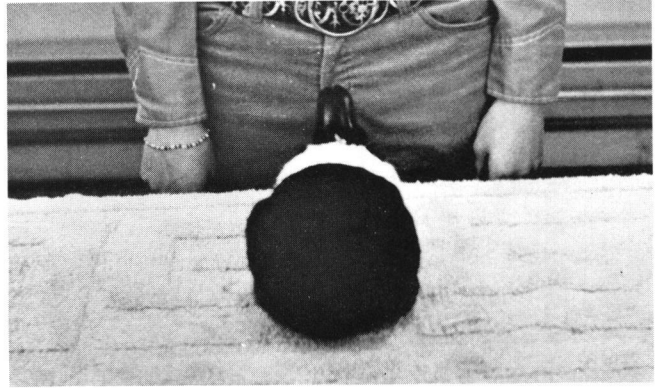




Front view: Pose your rabbit facing forward in a comfortable, balanced position.

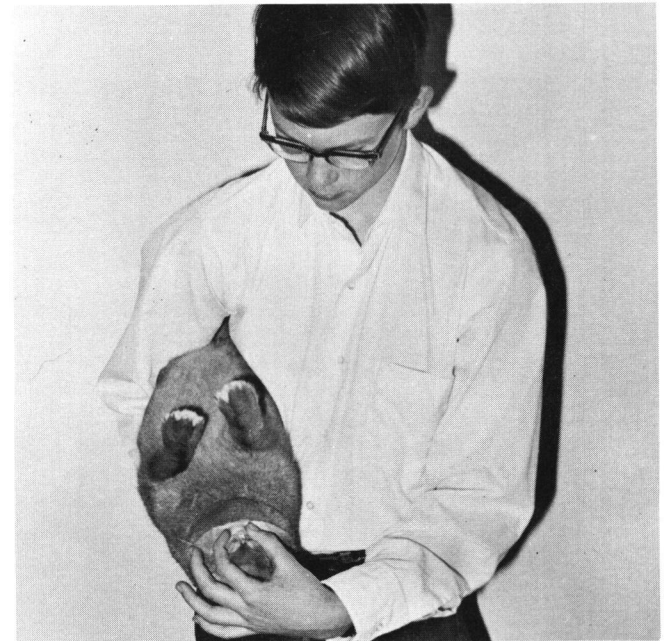


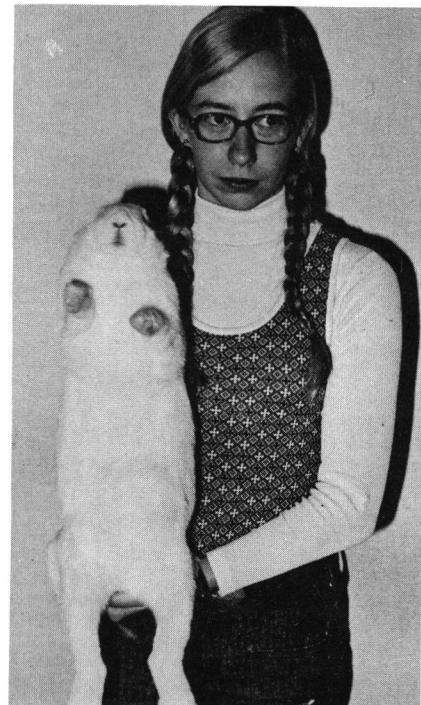
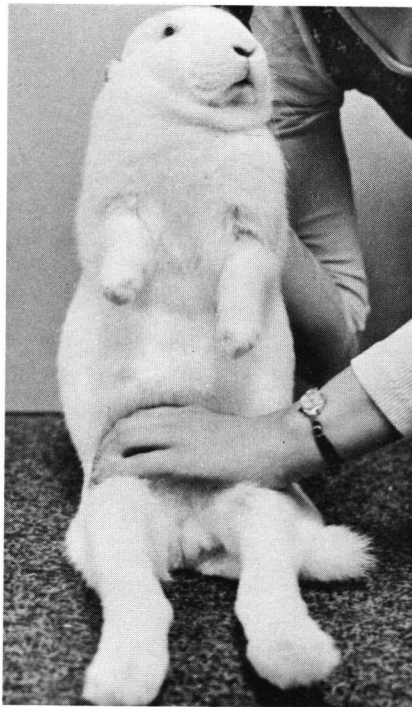
Side view: The rabbit's feet should be under it so that the loin is arched, but not "chopped off" in the rump. You may be asked to turn your rabbit so it is facing left or right.



Rear view: Pose your rabbit facing you in a comfortable, balanced position.

Showing teeth: Lift rabbit as for underarm carrying as below. Then turn the rabbit completely around and upside down, supporting its weight on your hand until you lay it on your arm. Then, with your other hand under the rabbit's head, reach around with your thumb and fingers (so it cannot bite you) and pull its lips back to expose the teeth.

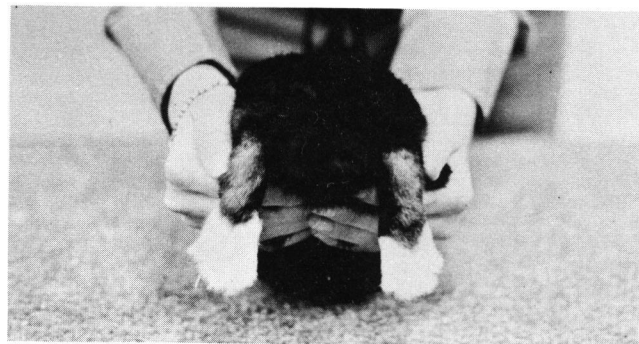




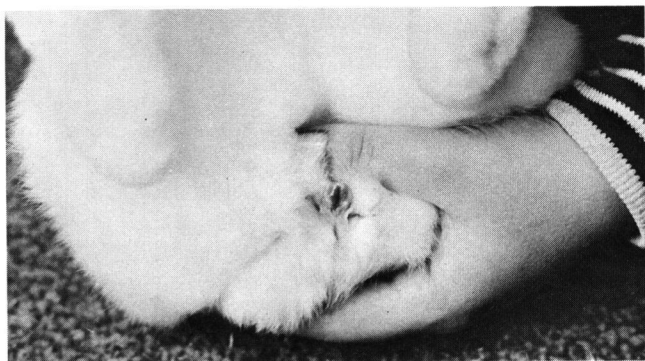
Straightness of rear legs: Place rabbit on its rump (still retaining hand on ears for security) facing forward and extend the legs by pressing on the stifle joints. A second method which can be used is to suspend the rabbit to show straightness, as illustrated in photo at far right.



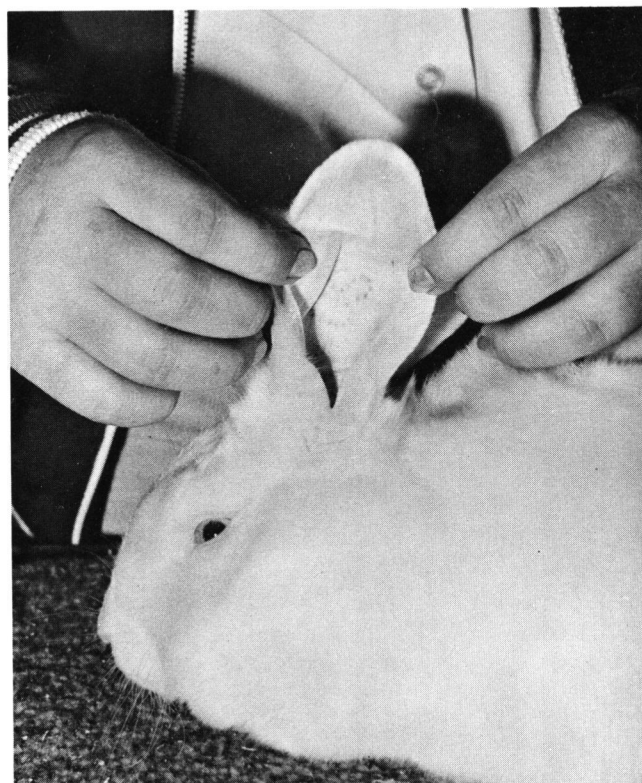
Straightness of front legs: With rabbit on its rump, straighten rabbit's leg with free hand by sliding hand from shoulder of rabbit to the toe nails.



Showing of hocks: Place rabbit in same position as for straightness of legs. Then, with free hand, grasp hind leg and turn upward to expose bottom part of hock. A second method is to pose your rabbit toward you and with both hands turn the hocks out as illustrated in bottom photo.



Sexing rabbits: Place rabbit on rump on show table but retain hold of ears with one hand. With other hand, place first two fingers on either side of sexual organs and apply light pressure to determine sex. Closeups show male and female.



Ear identification: Place rabbit in side view so that *left* ear is closest to the judge. Then expose inner, top part of left ear, with both hands, to reveal tattoo identification.



Checking for rupture, abscess, etc. Place rabbit on its rump facing forward and examine belly with free hand.

Words to Know

Back—In general, the entire top portion of the animal extending from neck to tail. The area covered by the backbone or vertebrae.

Bare spots—A section of the animal entirely denuded of fur.

Bell ears—Ears which have large tips with distinct fall or lop.

Belly—The lower part of body containing the intestines—the abdomen. (For purposes of defining color area: The underbody of an animal from the forelegs to the crotch area.)

Boils or abscess—A hard swelling or isolated collection of pus or purulent matter occurring in the rabbit's skin, accompanied by localized fever and heat.

Bowed legs—Applied to both fore and hind legs. Bent like a bow, curved outwardly in the middle.

Breed—A race or special class of domestic rabbits which reproduce distinctive characteristics of fur markings and texture, shape, size, and growth. A breed may be subdivided into varieties, as for example, the Black, B'ue, and Tortoise varieties of the Dutch breed.

Breeder—One who breeds or rears a special variety or varieties of rabbits in conformity with accepted standards of perfection or for the purpose of improving their commercial value.

*High-priority words

Broken coat—Guard hair broken or missing in spots exposing undercoat; areas where coat is affected by moult exposing undercoat.

Broken ear—A distinct break in the cartilage which prevents erect ear carriage. Also lop ear.

***Buck**—An unaltered male rabbit.

Buff—A rich golden orange with a creamy cast.

Bull dog—As applied to head; a short, broad, bold head of pronounced masculine appearance.

Bunny—A pet name for a rabbit.

***Caked teats or caked udder**—Inflamed and feverish condition of the teats arising from superabundant milk supply in a doe rabbit. Easily noted by the teats distended with hardened milk.

Carriage—The mode in which a rabbit bears itself; the style or station of the animal.

Chest—The front portion of the body between the forelegs and neck—the breast or thorax.

Cheek—The sides of the face beneath the eyes.

Choppy—As applied to type—having the back and loins cut off abruptly and falling vertically to the tail; not having a gracefully arched back and loins.

***Cobby**—Stout and stocky; short legged and short coupled.

***Cold**—A respiratorial infection in rabbits, characterized by sneezing, a thin watery nasal discharge, and slightly matted fur on the inside front feet.

***Conformation**—Body structure conforming to the standard type of the breed represented.

***Condition**—The physical state of a rabbit in reference to health, cleanliness, texture, and moult of fur; and grooming.

Cow Hocks—Hocks that turn or bend inward causing the foot portion to turn outward.

Creamy—Light yellow; the color of cream.

Dead Hairs—Lacking life—produced by molting.

Density—The property or quality of a thick coat.

***Dewlap**—Fold or folds of loose skin hanging from the throat.

Disqualification—A defect in a rabbit which cannot be cured.

***Doe**—A female rabbit.

***Dry Doe**—Doe that is not nursing young.

***Ear canker**—An inflamed, swollen, scabby condition of the lower inside ear of rabbits, caused by colonies of rabbit ear-mites.

Ear-Lacing—A black or dark colored line of fur outlining the sides and tips of the ear.

***Elimination**—The taking of a rabbit out of the show. One or more defects presumed to be temporary and curable. Cause for elimination in a show.

Eye color—As described in breed standards; the color of the iris—the circle of color surrounding the pupil.

Faking—Any change in the external appearance of a rabbit on exhibition, with intent to deceive.

***Fertility**—Ability to reproduce.

***Fitting for show**—Preparing a rabbit for show—feeding, grooming, training.

Fine coat—Too fine in texture—lacking body. Guard hairs being too weak and thin in structure, similar to hairs making up the undercoat.

**Flabby*—The condition of a rabbit when the flesh or fur hangs loosely on the animal by its own weight—not trim and shapely.

**Flank*—The sides of the rabbit between the ribs and hips, above the belly.

Flat coat—Coat lying flat or close to body. Lacking spring or body as evidenced to touch. Fine coat coupled with lack of density.

**Fly back*—Fur properties which causes it to return quickly to its normal position when stroked toward the head.

Flying coat—A loose, fluffy coat of fur caused by undue length and thinness of under wool and weak guard hairs.

Foot—That part of the leg on which an animal walks or stands. On the foreleg—that portion below the ankle or pastern. On the rear leg—that portion below the hock joint.

**Genus*—A division or group of animals or plants that may include several species.

**Gestation*—The period that a doe carries her young from breeding to kindling.

Glossy—The reflected luster of brightness from naturally healthy fur in rabbits—a natural sheen of the fur enhanced by grooming.

Guard hair—The longer, coarser hair of the coat offering protection to the undercoat and furnishing wearing quality to the coat in addition to providing the sheen.

**Hindquarters*—The after portion or posterior section of the body, composed of loins, hips, hind legs, and rump.

Hip—The thigh joint and large muscular first joint of the hind leg.

**Hock*—The middle joint or section of the hind leg between the foot and hip.

**Hutch*—Man-made home of a rabbit.

**Intermediate*—A rabbit six months of age or over and under eight months of age.

**Junior*—A rabbit under six months of age.

**Kindle*—To give birth to young rabbits.

**Litter*—Brother and sister bunnies born together.

**Loin*—That portion of the back on either side of the spine and between the lower rib and the hip joint.

Loose coat—Fur lacking density in undercoat coupled, usually, with fine guard hairs and a resultant lack of texture. (Does not indicate a slipping coat.)

**Lopped ear*—Hanging; not carried erect; falling to the side or front.

Luster—Brightness and brilliance of fur.

Mandolin—As applied to type; having the appearance of the body of a mandolin laid face down—back and saddle arching toward the loins to make noticeably large and broad hindquarters.

**Marked*—Having the basic color broken up by orderly placement on a white (usually) background.

**Mate*—To breed.

Mealy—Having the appearance of being powdered or sprinkled with meal.

**Meaty*—The quality of being able to carry a goodly proportion of meat in proportion to the size and type of a rabbit—a noticeable meatiness at the forequarters, back, saddle, loins, and haunches.

**Molt (moult)*—The act or process of shedding or changing the fur, twice yearly. The baby or nest fur is moulted at two months and the first natural coat of fur is fully developed at four to six months.

Muzzle—The projecting portion of the head surrounding the mouth, nose, and lower jaw.

Neck—That part of the animal connecting the head and body.

Off-colored—Applied to several hairs or patches of fur foreign to the standard color of the animal.

**Pad*—Thick, coarse hair on lower leg that protects the rabbit's feet and hock.

Palpate—To test or examine by feel.

**Pairs*—A male and female rabbit.

**Parasites*—Rabbits occasionally harbor mange, lice, or fleas, but such parasites are very uncommon.

Patches—A small section of fur foreign to the color standard of the animal.

**Paunch*—The prominent portion of the abdomen.

**Pedigree*—A written chart of the male and female ancestors of a rabbit showing the date of birth, ownership of dam and the parents, grandparents, and great-grandparents of the specimen in question.

Pelage—The fur coat or covering of an animal, as in rabbits.

Penis—Male copulatory organ.

Pepper and salt—A flat, unattractive appearance of black and white ticking, as in Chinchillas. Caused by lack of contrast and waviness, and in ticking and weakness of color in the tips of guard hairs.

**Pot belly*—A distended condition of the stomach and intestines usually found in young rabbits.

**Poor Coat*—Fur not in good condition through moulting, rust, or ill health of the animal.

**Pregnant*—About to produce young; carrying young; a bred doe.

Racy—As applied to type; slim, trim, alert and active. Slender in body and legs; harelike.

**Reproduce*—To have young.

**Ribs*—The curved portions of the sides immediately back of the shoulders above the belly.

**Rump*—The hinder portion of the back and back-bone.

**Saddle*—The rounded, intermediate portion of the back between shoulder and loin.

Sandy—The color of sand, as in sand-gray Flemish Giants. Gray with reddish brown cast interspersed with dark guard hairs.

**Screw tail*—See "Wry-Tail."

Scrotum—Skin sack that contains the testicles.

**Senior*—Older than eight months of age.

**Sex*—Determine doe or buck.

**Shoulder*—The uppermost joint of the foreleg, connecting it with the body.

Silvered—Having the appearance of silvery sheen or luster; an abundance of silver-white or silver-tipped guard hairs interspersed through the fur so as to produce a lustrous silvery appearance.

Slipping coat—A coat that is shedding or moulting a profusion of hairs.

Slobbers—Excessive salivation creating wet or extremely moist and unsightly fur around the mouth and lower jaw and forelegs.

Snuffles—A virulent contagious infection of the nasal passages and respiratory organs, usually terminating in chronic illness. Indicated by fever, heavy breathing, sneezing, and discharge of thick, creamy pus from the nostrils.

Sore hocks—An ulcerated condition of the foot-pads or soles of either fore or hind feet of the rabbit. (A misnomer—not actually pertaining to the hock.)

Species—A division or group of animals or plants with certain similar characteristics that may interbreed (all domestic rabbits are of the same species, *O. cuniculus*).

Standard weight—Recommended weight established for breed and age class.

Stocky—Compact, stout, and cobby.

Strain—A race or stock of rabbits in any standard breed of the same family blood, having the quality of reproducing marked racial characteristics.

Suckle—To nurse.

Tattoo—Marking in the ear for identification.

Testicles—Male reproductive glands.

Texture—That quality of fur pertaining to its action when stroked toward the head. The character of fur as determined by feel or touch, such as “fine” or “coarse” in texture.

Ticking—A wavy distribution of longer guard hair throughout the fur of a color distinct from the under wool or body fur. Such ticking is usually produced by black-tipped guard hairs, as in Agouti Cavies, Chinchillas, Flemish Giants, and Belgain Hares, and adds greatly to the beauty of the fur.

Type—As used in these standards; to denote body conformation of a rabbit or shape of a particular part of the animal as in “Head Type.” The general description of the physical makeup of the animal.

Typical—Serving as an ideal representative of any given breed or variety as applied to type, color, or fur quality.

Under-color—The base of the fur hair-shaft next to the skin, not the belly fur of the animal.

Variety—(As applied to rabbits, “Type shows the breed and color the variety.”) A breed subdivision applicable to animals of any recognized standard breed, but distinct in color of fur from other races or subdivisions thereof.

Vent disease—Venereal diseases in rabbits of both sexes. Indicated by scabby, reddened male or female organs, usually exuding pus.

Vulva—External female sexual organs.

Wall eyes (moon eyes)—Having a milky film over the cornea or appearance similar to a moonstone. Colored eyes have an extremely light iris giving a glazed appearance.

Wool—Applied as descriptive of the fur of Angora rabbits; the guard hairs and under-fur being from 2½ to 5 inches in length and resembling fine wool in texture.

Wry-tail—Abnormally bent, curled, or twisted permanently to one side; a corkscrew tail with one or more turns.



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