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RABBITS

By GEORGE ROBERTSON, Assistant Dominion Poultry Husbandman

AND

W. W. LEE, Poultry Husbandman



FLEMISH GIANT, MALE

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RABBIT BREEDING

INTRODUCTION

Our rural population is realizing more than ever before, the wisdom and the necessity of taking advantage of every possible source of revenue, not only from agriculture (using the word in its strict sense), but also from the smaller and secondary industries which are connected with it. They no longer content themselves with the intensive production of cereals, fodder, and root crops, but have taken some of the lesser branches, such as dairying or poultry farming, and have developed them to a wonderful degree.

For many years, the breeding of rabbits has been an important industry in France, Belgium and other European countries, while England imports annually over 25,000,000 pounds of rabbit meat. In the United States also, and more especially on the Pacific coast, this industry has developed rapidly in recent years, and, without doubt, as the juicy flesh of the rabbit becomes more generally known and appreciated, the industry will continue to grow. Here in Canada there has also been a marked interest shown in the subject during the past few years, and in view of the fact that one Canadian firm of manufacturing furriers imported 600,000 rabbit skins in 1920, there would seem to be a bright future for rabbit breeding in our country. The climate of Canada, by reason of its dryness, is particularly adapted to successful rabbit breeding, and while market conditions do not warrant the promotion of exclusive rabbit farms, there is little doubt but that a market can be worked up, and that given proper care and management, rabbits, as a side line, either on the farm or in the back yard, will prove to be an appreciable source of revenue.

Unfortunately, some ten or fifteen years ago rabbit breeding was exploited by many unscrupulous or over-enthusiastic breeders, who made exaggerated and misleading statements regarding its possible profits, and, as a consequence, many people with no experience in rabbits invested money in them and lost their capital. In this connection, it must be borne in mind that success in rabbit breeding, as in practically any other industry, is only made possible by the application of common sense methods. Furthermore, a profit can be realized from rabbits only in the event of a market being found for the pelts, as well as for the flesh.

TYPES OF BREEDERS

With rabbits, as with poultry and pigeons, there are two types of breeders: the fanciers, who make a specialty of aiming to breed to an ideal, and the utility breeders who are concerned more especially with the commercial qualities of their stock, and to whom the finer points of shape and colour are secondary considerations.

The industry owes much to the former type of breeder, not only from the viewpoint of the standardization of breeds but also with regard to improved breeding methods. It is the second type of breeder, however, to whom we must look for the real development of the industry. At the same time the former must not be overlooked, and, whenever possible, the two types of breeding should be combined.

VALUE OF RABBIT PRODUCTS

As has been already stated, experience has proved that in order to make rabbit breeding profitable, not only the meat, but also the pelts, must be utilized. Consequently, in considering the value of the products, it must be done under these two heads:—

(a) MEAT

There is probably no meat the value of which has been so underestimated by the Canadian public as the meat of a well-fed rabbit. By some it is compared with the flesh of cats, while others confound it with the meat of the wild rabbit, killed possibly out of season, not properly dressed or cooked, and which undoubtedly is tough and often has a most disagreeable, bitter taste. Others again are prejudiced against it because of the fact that, in the majority of cases, the rabbits put on the market, unskinned, and not dressed, are dirty and have a most unsavory appearance.

Analyses, and the expressed opinions of dietetic experts, have demonstrated beyond doubt that the meat of properly fed rabbits has a higher nutritive and digestive value than that of practically any other animal. The following is an extract from a letter from the late general organizing dietician of the D.S.C.R.:—

OTTAWA, ONT., February 27, 1921.

I was exceptionally glad to have an opportunity to try the milk-fed rabbits you sent the other day.

The smaller rabbit, when prepared for a fricassee, weighed four pounds, and did not lose weight in the cooking, but apparently absorbed some of the water. With the gravy and the dumplings, there were liberal servings for eight people and excepting for the size of the cuts, could not be distinguished from very tender fowl. The fibres were perhaps longer, but the flesh was absolutely tender, even the dark meat of the leg muscles. The broth of the larger rabbits, when prepared, was quite as savoury as that of chicken; and "Rabbit a la King" proved to be just as delicious.

Breaded and served en casserole or again as a rabbit pie, the dishes proved to be just as enticing, and could in any case be substituted for chicken or capon.

Meat, eggs and milk form the protein supply of our articles of diet and the "white meat," as the breast of poultry and game is called, provides the protein in one of its most nourishing and appetizing forms. It is readily masticated and can be easily and rapidly digested, and that is why the practice of using "white meat" in diets for sick patients is so prevalent. The milk-fed rabbit produces a large amount of this "white meat" in proportion to other animal foods and if more conspicuously on the market at a normal cost, would form a valuable addition to the comparatively limited supply of fresh fowl and chicken, so universally used in all hospitals.

The milk-fed rabbit should not be confused with the wild rabbit found occasionally on the table in Canadian homes, as it is entirely different both in flavour and texture, and hence in its digestibility, as this depends so much on the tenderness of the fibres.

(Signed) ELIZABETH A. SHERWOOD,
General Organizing Dietician for
Department of Soldiers' Civil Re-establishment.

An exact analysis of rabbit meat, compared with that of chicken, gave the following result, after the extraction of the fat in each case:—

Chicken: Water, 77 per cent; solid matter, 23 per cent.

Rabbit: Water, 75 per cent; solid matter, 25 per cent.

Because of its high nutritive and digestive value, physicians are becoming more prone to order rabbit meat for their patients.

Apart altogether from its nutritive value, rabbit meat is extremely juicy and tasty. Those who have never tasted it will possibly be sceptical concerning this statement, but experience will prove its truth. By reason of the fact that the bones are so small, rabbit meat is also extremely economical.

(b) PELTS

Many extravagant and unwarranted statements have been made concerning the possible use of rabbit skins to replace higher-priced furs. Beyond question, rabbits' skins are being utilized in the fur industry to an increasing degree each year (see report of Conservation Commission on fur-bearing animals) both in Canada and in the United States, and this is particularly true with respect to the making of imitation furs such as "Sealine," Manchurian fox, French ermine and many others. As has been previously mentioned, one firm who have recently built a large plant here in Canada, import annually over 600,000 rabbit skins for this purpose. While the general run of rabbit skins in their raw state are neither particularly strong or beautiful (with the exception of a few of the fancy breeds), by means of tanning, dyeing, and clipping, they undergo a remarkable transformation.

In France, the breeding of Angora rabbits for the sake of the wool is extensively practised, but this branch of the industry has not been developed in either Canada or the United States.

HOUSING

One of the most important factors in successful rabbit breeding is that of housing. The idea that rabbits can be successfully bred in any kind of old box or barrel is entirely erroneous. From this it must not be inferred that an expensive house is necessary, but good ventilation, absence of damp, and facilities for complete and thorough cleaning are absolutely essential.

Rabbits may be housed either in small portable hutches, or in permanent rabbitries.

(a) PORTABLE HUTCHES.

For the small breeder, portable hutches made of wood and wire, or of galvanized iron, provide the best and most convenient method for housing his stock.

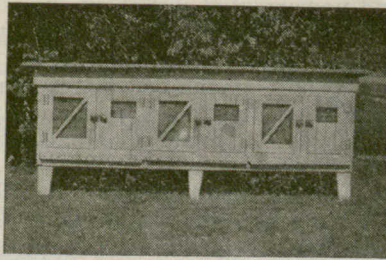
These hutches may be made either in individual units, or in sections of two to six. Those intended for breeding does should be at least 4 feet 6 inches long by 3 feet deep and 2 feet high, while those for individual specimens may be one foot shorter.

They are best made of good lumber, with the front of wire netting. The roof should have a slight slope to the rear, and should project for at least four inches all round. It should also be covered with roofing felt or galvanized iron as a protection against the rain. The floor should have a slight slope to the rear so as to allow the urine to drain through the small opening which is left at the back of the floor, the whole length of the hutch. They must be raised

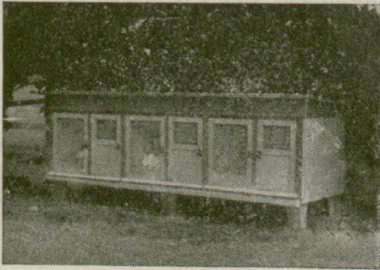
at least a foot off the ground, and a conical-shaped tin collar placed on the top of each leg of the hutch will prove very effective for keeping out rats or similar vermin.

A rack for hay should be fastened on the front of each hutch, or section, being placed so that the rabbit can eat without wasting or soiling the rest. In addition, two small troughs, one for grain and the other for water, may be attached inside, at least six inches above the floor in order to keep the contents clean.

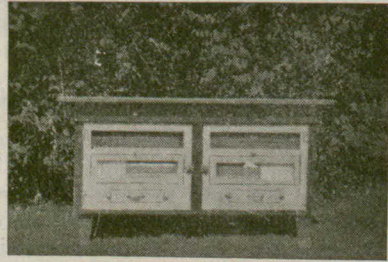
If so desired, the whole of the front may constitute the door, or it may be made half this size. Some breeders prefer to place a partition in the hutches, from back to front, thus dividing off about one-third of the floor space for a nesting compartment. In this case the wire netting will cover only two-thirds of the front, and two doors must be provided.



(a)



(b)



(c)

FIG. 1.—Types of hutches used at the Experimental Farm. These hutches are so constructed that the covers may be removed, and one or more sections of hutches superimposed.

Illustration No. 2 will give a good idea of a new type of hutch (or rather section of six hutches) which is especially adapted for individual specimens. The compartments are not large enough for breeding does, which are better housed in a hutch similar to type (c)—(fig. 1).

The hutches may, of course, be placed outdoors during the spring, summer, and autumn, but during the winter they must be placed inside in a well ventilated—but unheated—building.

(b) RABBITRIES.

Rabbitries, or permanent rabbit buildings, are practically essential for breeding on a large or commercial scale. Here the laws of hygiene must be strictly observed or the rabbits will soon be decimated by disease. Good ventilation, without draught, a dry atmosphere, and plenty of light, are the three most important essentials.

The building should be on high, dry ground, having preferably a sandy or gravel soil, and the floor should be at least a foot above the ground level, on either cement posts or good, stout timbers.

The size will naturally depend upon the number of rabbits kept, and to some extent upon the breed, as the larger varieties require more hutch space than the smaller. The hutches or cages are usually arranged in two tiers, the floors of the lower tier being at least eighteen inches above the floor of the building. The plan of the individual cage is the same as that given under the heading of portable hutches, except that, in the rabbitry the wall constitutes the back of the cage. The cages of the bucks kept for breeding purposes are best made with the back semi-circular—this can be done by means of a piece of zinc or galvanized iron—as this is found to be advantageous while mating.



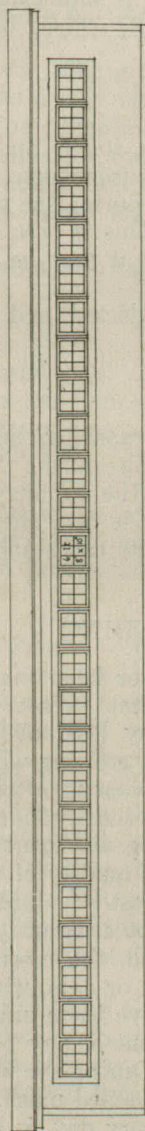
FIG. 3.—Canadian indoor rabbitry.

The following plan will give a good idea of a rabbit house of this type, large enough for 100 adult rabbits:—

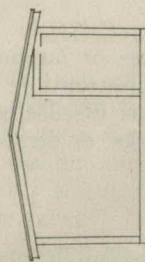
HOUSE FOR RABBITS SCALE=ONE INCH EQUALS FOUR FEET

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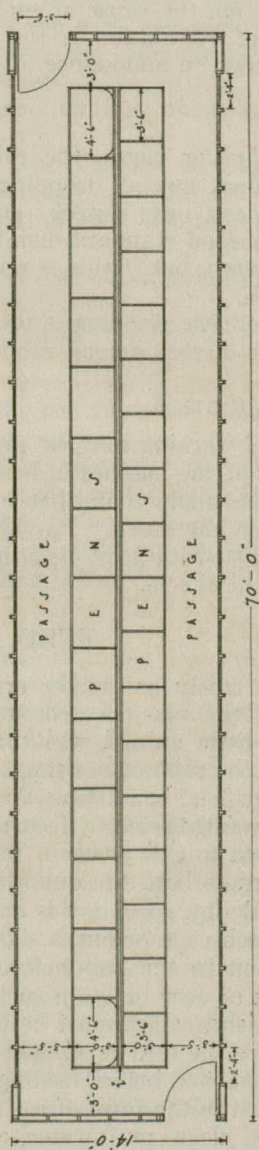
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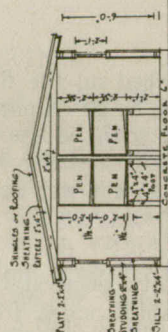
SIDE ELEVATION



END ELEVATION



PLAN



SECTION

FIG. 4.

(1) LITTER.

The litter placed on the floor of the cages or hutches, is most important, and must therefore be given particular care and attention. If it is damp, musty, or rotting, it will soon be the cause of serious disease among the rabbits. It should be composed of either sawdust, shavings, or straw, and changed just as soon as it begins to get wet and dirty.

(2) VENTILATION.

As has already been stated, a good system of ventilation is absolutely essential in the rabbit house, for rabbits, like other animals, cannot thrive without fresh air. At the same time, direct draughts must be carefully avoided, as they are too often the cause of such diseases as snuffles and colds. One of the best systems of ventilation is the Rutherford, which, while preventing direct draught, provides an abundance of fresh air.

(3) CLEANING.

The hutches or cages, the rabbit house itself, and all drinking vessels, should be cleaned, and all droppings removed frequently. They should also be disinfected at least once a week (and oftener during the hot weather), using for this purpose a good standard disinfectant. This is best applied by means of a small spray pump, but if this is not available it may be applied by means of a brush or broom.

This systematic cleaning is too often neglected, and such neglect is largely responsible for disease among rabbits.

(4) WINTER QUARTERS.

A word of warning may be given here regarding the heating of rabbitries, or the placing of the hutches in heated buildings during the winter. No greater mistake can be made than that of heating the rabbitry and nothing will so quickly weaken the stock. Provided the air is dry, the ventilation good, and they are supplied with good clean nests, rabbits can stand extreme cold without suffering any ill effects.

FEED AND FEEDING

No more costly or greater error has ever been made in connection with rabbits, than the oft-repeated statement that rabbit breeding is profitable because this little animal will thrive on any kind of feed or weeds. In its natural state, the rabbit does find ample food growing wild, but when kept confined under artificial conditions, and bred to what is, after all, an artificial type, it requires carefully selected feed adapted to those conditions. Too much care cannot be given to this phase of rabbit raising, nor can the breeder be too careful with regard to both the quantity and the quality of the feed.

Without doubt, good hay is one of the best standard feeds for rabbits, and the rack of each cage or hutch should be kept constantly replenished.

In addition to the hay before mentioned, the morning and evening meal should consist of corn or grain such as wheat or oats, with an occasional carrot or stick of celery. Care must be taken to give them only as much as they can clean up before the next meal, and in the event of any being left in the troughs it should be removed before feeding again. During the winter the grain may be ground, and fed in the form of a slightly moistened mash.

For drink, clean, pure water, changed every day, is by far the best, though milk may occasionally be given with advantage.

BREEDING AND MATING

Many breeders make the common mistake of mating their does too many times during the year, with the result that the progeny are sickly, and the does themselves soon begin to show signs of diminished vitality. Four, or at the most five, litters a year are enough, and not more than five or six of the young should be kept from each litter. Naturally those which appear to be the most vigorous and healthy should be saved. If the breeder has an exceptionally good doe, from which he wishes to keep all the litter, the best plan is to mate a common doe at the same time. They will thus kindle together, when the litter of the common doe may be killed and replaced by part of that of the other one. Care must be taken however, not to transfer all the young at the same time; change them gradually and before putting them into the nest, rub them over with the young that are taken out so that they will carry the same smell, thus lessening the possibility of the doe killing the changelings.

Does may be mated at the age of five or six months, but it is not advisable to mate them before nine or ten months.

In no case should the does and bucks be kept together, nor two bucks in the same hutch. For the actual mating it is far better to transport the doe to the buck's hutch than vice versa, and they need only be left together for a few minutes.

A good buck, vigorous, healthy, and of pure stock, is essential to successful breeding.

STUD BOOK.

A properly-kept stud book is an absolute necessity, for without it the matings will be more or less haphazard and the pedigrees very uncertain. Each rabbit kept for breeding purposes should have either a numbered ear tag, or a number tattooed in the ear. The dates of all matings, and the results, are recorded in the stud book, and in addition a card may be attached to the hutch of the doe, giving the date of mating, number of buck, and probable date of kindling. This will serve as a reminder to prepare the nest box, and clean the hutch thoroughly a few days before the kindling is due.

(a) LITTERING.

The period of gestation is from twenty-nine to thirty days. About ten days before kindling, a nest box should be placed in the doe's hutch. This need be only a common box about two feet long by fifteen inches wide and one foot high, with a sliding door about a foot square placed in the top in order that the litter may be examined easily. At the same time a little short straw or hay must be scattered about the hutch, with which the doe can make her nest.

A few days before kindling, the hutch must be thoroughly cleaned, for this will be the last opportunity to do so for several weeks, owing to the fact that for at least two weeks after kindling the doe should be disturbed as little as possible.

For at least two days before kindling an adequate supply of fresh water must be kept constantly before the doe. Failing this, there is always the danger that she may develop cannibalistic tendencies, and kill and eat some of her young.

Rabbits are born blind and hairless, and as soon as possible after kindling the nest should be examined to see if there are any dead in the litter. These should be removed immediately, as also should those that are weakly and small. As previously stated, five or six is a sufficient number to leave in the litter.

After kindling, and in fact until the young are weaned, it is an excellent plan to give the doe some bread and sweet milk with the evening meal. The dish in which this is fed should be scalded every day, as a suckling doe will often refuse to eat from a sour dish.

(b) WEANING.

Young rabbits may be weaned at the age of five or six weeks, and the weaning should be done gradually, taking away one or two of the young each day. Generally speaking, the best plan is to let the doe wean the young herself, which she will usually do when they are about six weeks old.

Until they attain the age of four months the young may safely be left together, but at that age the young bucks must be separated from the does.

The doe should not be mated again until at least two weeks after the young have been weaned, and in fact if any weakness or lassitude is noticeable, it will be advantageous to leave her for yet another week before mating.

(c) CASTRATION.

The castration of young bucks which are not needed for breeding purposes has a two-fold advantage. In the first place, it makes it possible to keep a number of rabbits together in one hutch, with the consequent economy of space and labour and, in addition, the castrated rabbit fattens more readily, has a much more delicate and savoury meat, and its fur becomes more brilliant and silky.

They may be castrated at the age of three months, but the inexperienced operator will be wise to practise first on a recently killed specimen.

The rabbit to be castrated should be starved for at least twelve hours before the operation. The instrument necessary is a small, sharp knife, and a little carbolated vaseline or ointment composed of pure lard to which a few drops of creolin have been added should be at hand for applying to the wound. The operation is made considerably easier if there are two persons, one to hold the rabbit, and the other to do the operating. The person holding the rabbit

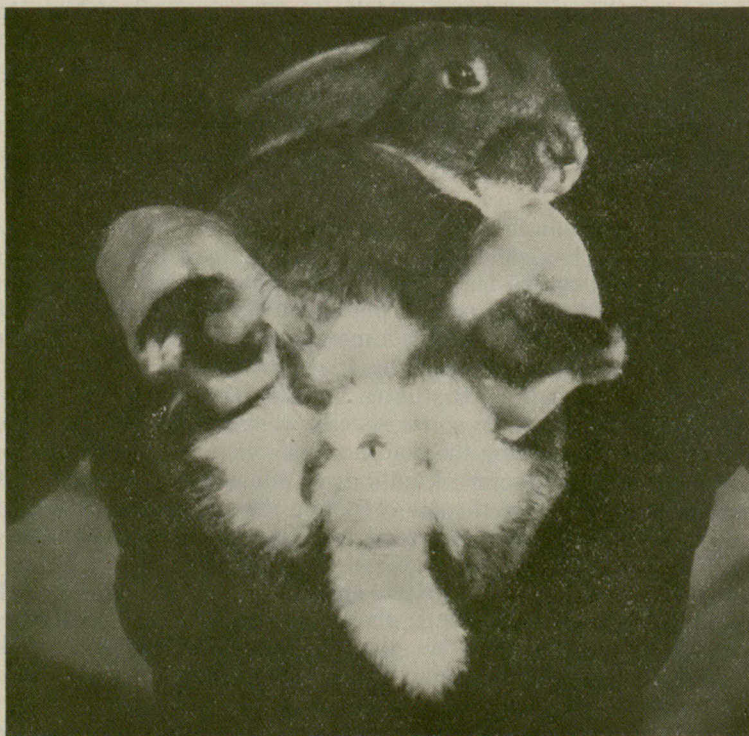


FIG. 5.—Method of holding rabbit for castration.

should be seated, with the rabbit held firmly on its back on his knees, with its head towards him. The left side hind and forelegs should be held together tightly with the left hand, and the others with the right. The operator then takes the testicle on the right as the rabbit is held (see illustration) with the fingers of his left hand, and gradually works it between the thumb and index finger until the skin is stretched tightly over it. A sharp light cut is then made in the skin of the scrotum, lengthwise of the testicle, and the latter squeezed out through the opening made. If the slit in the inner covering is not large enough to allow the testicle to slip out, it should be enlarged until it is, then the testicle is taken between the thumb and finger and pulled out so that the covering may be pushed back clear of the testicle. The ligaments are then cut, the testicle removed and a little ointment applied to the parts. The operation is then repeated for the testicle on the left side after which the animal may be returned to its hutch.

(d) BREEDING PRINCIPLES.

The opinion of breeders on the principles of breeding vary considerably, some standing strongly for in-breeding, and others for out-breeding. Provided that the original stock is pure, and of good standard type, line-breeding can be successfully practised. Care must always be taken to choose only the best of the stock for breeding purposes, and if there is any decided fault or weak point on the female side, then a male having the corresponding quality accentuated should always be chosen for that particular mating, and vice-versa.

If the stock is found to be deteriorating, new blood must be introduced.

MARKETING THE PRODUCTS

(1) MEAT

As has been already mentioned, the meat of a well-fed rabbit is not only extremely tasty and palatable, but also has a very high nutritive and digestive value. Unfortunately, however, in all too many instances, the rabbits exposed for sale, both on the market and in the stores, are underfed, badly killed, and poorly packed, with the result that their appearance is far from appetizing. For this reason, many people are prejudiced against rabbit meat as a food, and if the industry is to develop as it should, far more attention must be given to these points.

(a) FATTENING.

As with poultry, so with rabbits, it is unprofitable to sell them for consumption unless they have previously been fattened.

The fattening process may be commenced at the age of six months, and for this purpose the rabbits should be placed in small narrow hutches, in a quiet place, without too much light. During the first few days they may be fed largely green alfalfa (when this is available), good soft hay, and roots. The green feed should be gradually diminished, and replaced by more substantial feed such as mashed boiled potatoes, mixed with bran, barley-meal, or corn-meal, or stale bread soaked in milk, but an occasional carrot or stick of celery may be given.

Fattening stock should be fed three times a day, the noon meal being the lightest, and the evening one the heaviest. The noon meal should consist of those elements that excite and whet the appetite. During the last few days before killing a few feeds of oats will do much to give the flesh a better and firmer appearance.

The root feed, such as carrots or beets, must be served clean, without any dirt or root hairs adhering. They should be fed whole, never chopped and

mixed (as some breeders do), for the mixing induces fermentation, and rabbits are unable to digest fermented food.

The fattening takes from twenty to thirty days, depending upon the breed and the care given during the process. As soon as the rabbits begin to lose their habitual appetite, they are ready to be killed.

(b) KILLING AND DRESSING.

There are several recognized methods of killing and dressing, each of which has its particular advantage and exponents.

One of the most humane ways of killing is by dislocation of the neck in a similar way to which fowl are sometimes killed. Holding the rabbit by the hind legs with the left hand, the head is held in the right, the arch between the thumb and first finger being placed at the back of the skull where it joins the neck, the thumb round the right side of the face and under the right jaw, and the fingers round the left side and under the left jaw. The rabbit is then placed along the right thigh of the operator and by a sudden stretching of it and at the same time bending up the head at right angles to the body by a pressure with the right hand at the back of the skull and an upward pressure under the jaws by the thumb and fingers, dislocation will immediately take place, when sensation ceases instantaneously. The operator then bends over a tub placed to receive the blood, takes the hind quarters of the rabbit between his legs, the head back with the left hand, so that the neck is exposed; and with a stroke of a sharp knife severs the jugular vein so that the blood, which has already collected in the neck owing to the dislocation, gushes out. The rabbit is then hung up and allowed to bleed thoroughly.

Another satisfactory method is to pick the rabbit up by the hind legs and with a round hardwood stick give it a sharp rap at the back of the skull, stunning the animal; bleeding is then proceeded with as before mentioned.

As with either of these methods a certain amount of discoloration in the neck appears when the rabbit is skinned, some prefer killing by simply bleeding, in which case the dislocation and stunning are omitted.

It is well to remember that immediately a rabbit is killed, the stomach should be squeezed in order to force out all the urine, for if this is not done the meat will have a disagreeable odour.

As soon as the rabbit is bled, it should be skinned before the carcass is completely cold. (The methods of skinning are dealt with under the heading of furs). The entrails are then removed and the rabbit dipped in clean, cold water, and wiped dry. It should then be wrapped in white parchment paper and is ready for shipping.

Rabbits for consumption are best shipped flat, packed tightly, in light wooden boxes of varying dimensions according to the size and number of rabbits to be shipped. The approximate size of the box will be 21 inches in length by 4 inches in depth with the width necessary to take the number of rabbits to be shipped.

(c) MARKET FOR RABBIT MEAT.

Undoubtedly the best market for the small breeder is the local one, through the medium of the local butcher. The latter will usually find it advantageous, in the first instance, to offer the rabbits for sale by the pound (as is done with other meat) rather than whole. Often people who have never eaten rabbit meat will hesitate to pay \$1.50 or \$2 for a rabbit weighing six or eight pounds, but can be persuaded to pay 25 cents or 30 cents a pound for two or three pounds in order to try it. This will usually result in the making of a regular customer, more especially when they find how economical rabbit meat is.

For the larger breeder, who can guarantee the regular delivery of a given quantity of dressed rabbits, hotels, restaurants, and hospitals provide the best

market. Here again particular attention must be given, both to the quality of the meat, and the manner of shipping, for it is only the good quality meat, well dressed, and cleanly packed, that will command the highest price.

FUR

The use of rabbit fur for commercial purposes is becoming increasingly prevalent and will doubtless continue to do so. It must be remembered, however, that except for use as trimmings, or for childrens' cheap furs, rabbit furs are only substitutes for, or imitations of, the higher grade and better wearing furs. Consequently the price paid for individual rabbit skins will never be very high. However, the price paid for prime rabbit skins, from animals killed during the winter, is such that plus the amount realized for the meat, there is a good margin of profit over the cost of feeding.

Rabbits of which the skins are intended for the market should be killed only during the winter months: December, January, February and March. Skins from those killed during the other months have no market value whatever.

(a) SKINNING.

The method of skinning rabbits for commercial purposes, is that known as the "in square" method, and is as follows:—

Immediately after it is killed, hang the animal at a convenient height by both hind legs, and make an incision with a sharp knife at the height of the knees. Draw a straight line down to the anus, by slipping the blade of the knife between the skin and the flesh, and pull the skin back right over the ears. Care must be taken not to tear the skin, and the fat should be loosened as much as possible. An incision is then made on each ear, and the skin pulled down as far as the nose, cut there, and the skin taken off completely. It is then stretched on a V-shaped frame (see photo) with the fur inside, and hung in a warm place until it is thoroughly dry.



FIG. 6.—Adjustable frame for stretching rabbit skin.

(b) DRESSING AND TANNING

In view of the fact that there is no market for home-tanned rabbit skins, and that furthermore there are several firms who make a specialty of doing this work at a very reasonable price (usually 20 cents to 25 cents per skin), it will not pay the average breeder to tan the skins himself.

For those who wish to do it however, what is known as the "Alum Process," is probably the best and easiest.

As soon as the rabbit has been skinned, the skin is cut open down the abdomen from the nose to the tail, and soaked in fresh cold water for at least twenty-four hours. It is then stretched tightly on a board, hair downwards, and scraped with a blunt knife to remove any pieces of flesh which are adhering to it. This must be done very thoroughly, or the process will be a failure.



FIG. 7.—Cleaning skins.—After being soaked for twenty-four hours in fresh water, the skin is laid and stretched on the table and the leather is scraped with a big kitchen knife. After several days soaking in an alum bath, it is put to dry. (From "La Vie à la Campagne").

A solution consisting of one pound of alum and one-half pound of coarse salt added to one gallon of lukewarm water, is then prepared, and the skin or skins placed in it to soak for forty-eight hours. During this time they should be stirred several times a day, and at the end of the soaking period placed on frames or boards and partially dried in the shade. When about half dry they must be stretched in every direction in order to preserve the suppleness of the leather, and then placed in a similar solution for another twenty-four hours. They may then be dried out completely, but before the oil has entirely dried out of the fur they must be spread out on a board, fur downwards, and sprinkled with wood ashes or bran. A sheet of thick paper is then spread over the skins, and the whole rolled up, after which they should be pressed and beaten lightly. The fur is then combed in its natural direction until it assumes a normal appearance, after which the skin is ready for use.

(c) MARKET FOR RABBIT PELTS

As previously stated, there is no market for ordinary, tanned rabbit skins, and as the firms who clip them for the trade will not do work for individual breeders, the pelts must be sold in their raw state. The amount paid for them will depend upon their condition and the prevailing market price. The firms who manufacture "sealine" and similar imitation furs, are generally ready to buy prime pelts but naturally they prefer to buy in as large quantities as possible.

Large quantities of common rabbit skins are used in the manufacture of felt hats, but as this market demands skins in immense quantities, it is not available to the average breeder.

CHOICE OF A BREED

In choosing a breed, the determining factor will naturally be the taste of the prospective breeder, and the purpose in view. For the average breeder, the heavier utility breeds such as the Flemish Giants, Siberians, New Zealand Reds, and Belgian Hares are best. The ornamental breeds such as the Havana, Blue de Beveren, Silver Champagne, Angora, Dutch, Russian, or Lop, will appeal most strongly to the fancier. A more detailed description of some of these breeds will be found under the heading of "Breeds".

It must always be borne in mind that good, pure-bred stock at the commencement is essential. It is far better to start with only two or three pure-bred rabbits than with a dozen mongrels and particular care should be given to the choice of the buck.

BREEDS OF RABBITS

This is not intended to be an exhaustive treatise on the various breeds of rabbits, and consequently only a very brief description of the most popular and outstanding ones is given.

(1) THE FLEMISH GIANT

Among those known as utility breeds, combining both good meat-producing qualities and handsome pelts, the Flemish Giant is undoubtedly pre-eminent. It is the heaviest of all the breeds, some specimens weighing 16, 18, and even 20 pounds at maturity. The skin is also strong and it produces a good quality fur.

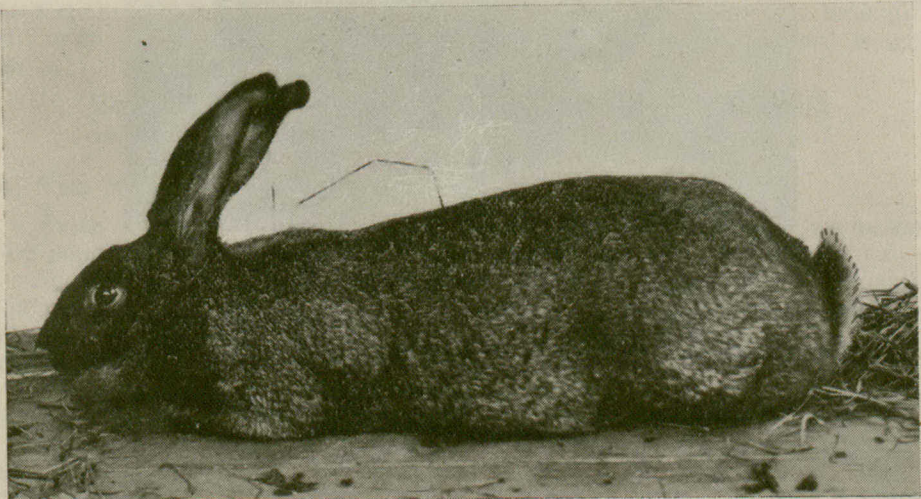


FIG. 8.—Flemish Giant, female.

There are four varieties of Flemish Giants recognized in Canada: Hare Gray, Steel Gray, White and Black. Of these the Hare Gray is most common, but the Steel Gray is undoubtedly the most handsome.

Flemish Giant rabbits born with the abdomen rose coloured will develop into hare gray specimens; those coloured brown will be steel gray; and the black coloured ones, black.

The standard minimum weights as laid down by the National Pet Stock Association of America are:—

Bucks..	11 pounds
Does..	13 "

When breeding for exhibition purposes, the principal defects to be guarded against are: lop ears; white markings on the gray varieties, except under the stomach, and on the feet or tail; legs barred with black or white; fur long or woolly; wry tail; angular back; and the irregular development of the dewlap in the female.

(2) THE SIBERIAN HARE

Next in popularity to the Flemish Giant, and by many breeders preferred to it, is the Siberian. While not as heavy as the Giant, it has a much richer and more glossy fur. The colour is a rich black, often tipped with white, and the meat is particularly tender.

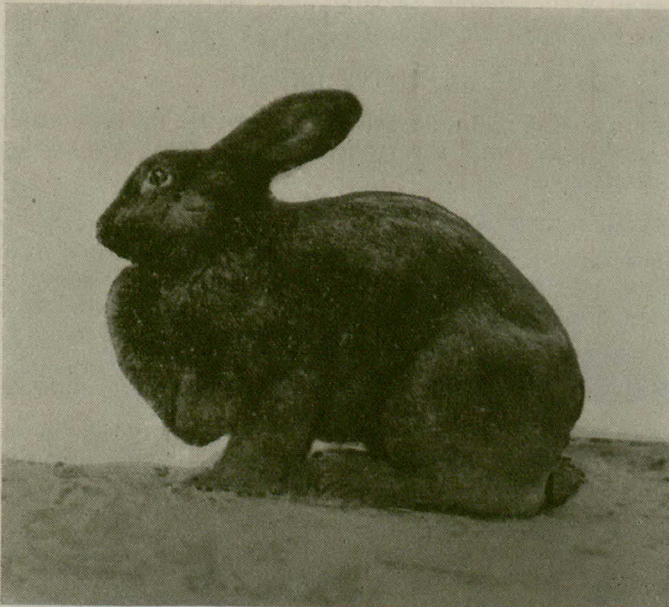


FIG. 9.—Siberian Hare, female.

The standard weights are:—

Bucks..	9 pounds
Does..	11 pounds

(3) THE BELGIAN HARE.

Not many years ago the Belgian Hare had a tremendous vogue in the United States, but owing to the fact that extravagant and misleading statements were made regarding the profits which could be realized from its breeding,

many people without experience, invested capital in breeding stock, and lost it all. In consequence the industry in general, and this breed in particular, received a blow from which it has never fully recovered.

While the name hare is applied to this breed, strictly speaking it is a rabbit, bred to resemble a hare in its shape and colour. There is no satisfactory proof, either, that the breed originated in Belgium, though some Belgian breeders claim that it is the result of cross-breeding between the wild hare and the domestic rabbit. There is no doubt, however, that the breed as at present recognized was bred in England between 1876-1880. The colour, as given by

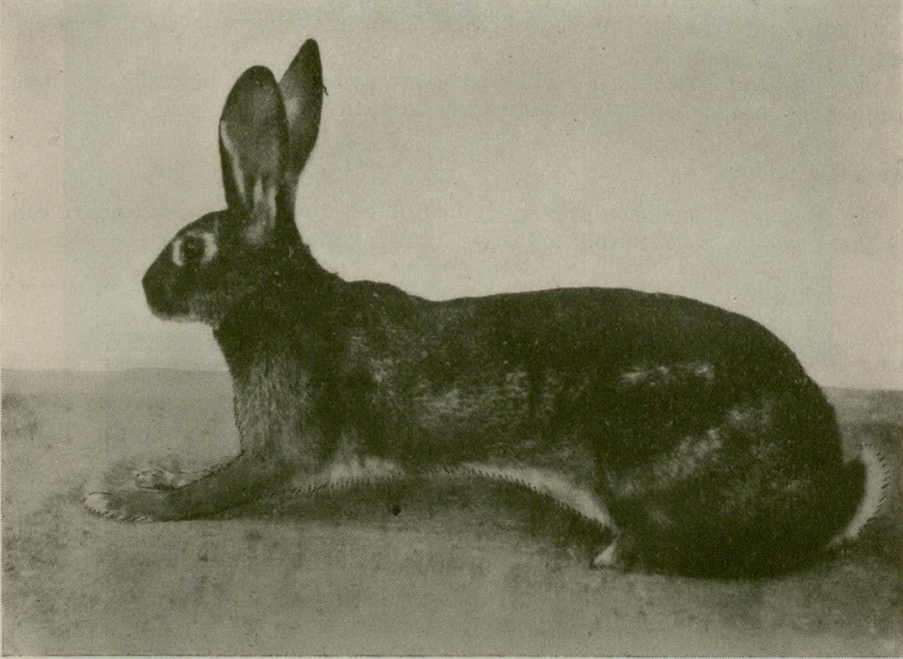


FIG. 10.—Belgian Hare.

the National Pet Stock Association of America is a Rufus Red (a rich, brownish-red) with as little white under the jaws as possible. The standard weights are:—

Bucks	6½-7 pounds
Does	7-7½ pounds

(4) THE NEW ZEALAND RED.

As its name indicates, this breed originated in New Zealand, and has become very popular on the Pacific coast.

It is somewhat larger than the Belgian Hare, but smaller than the Flemish Giant. In shape it greatly resembles the Belgian Hare, and many claim that the meat is more delicate than that of any other breed. The colour is a rich reddish-buff with whitish underbody.

The standard weight for matured specimens is 10 pounds for both the buck and the doe.

The most common defects are: wry tail, foreign colours, lop ears, and crooked feet.

FANCY BREEDS

There are many ornamental or fancy breeds of rabbits, but as this bulletin is intended more particularly for the average utility breeder, only a very brief description of a few of the most popular ones is given.

(5) THE HAVANA.

This rabbit, which is of Dutch origin, has of recent years been introduced into Canada. The fur is a rich, bright brown, changing with the variations of light to an almost blood-red. The eyes should be the same colour as the fur, but showing a red brilliancy in the pupils. The fur should be fine and short and is valuable for making imitation beaver. The maximum weight for both buck and doe is $5\frac{1}{2}$ pounds.

Despite the fact that the Havana is somewhat slight in build and delicate in appearance, it is hardy and vigorous and easily reared.

(6) THE ANGORA.

In France, as has been previously mentioned, the breeding of Angora rabbits for their wool is a profitable industry. In Canada, however, as well as in the

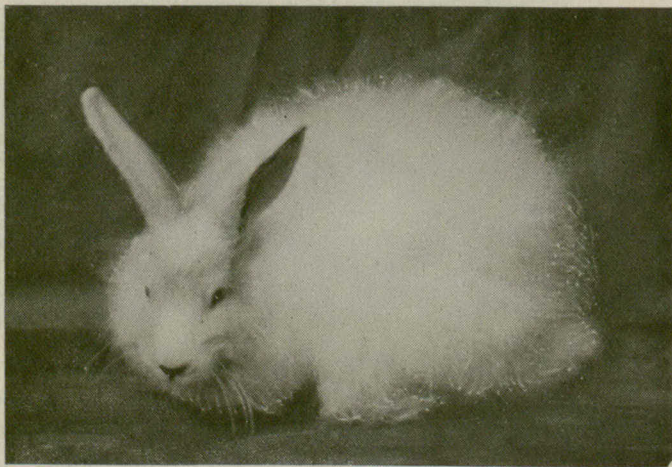


FIG. 11.—White Angora doe. A Canadian Winner.

United States, it is bred almost entirely for show purposes, or as a pet. For the latter it is almost the ideal type, being extremely docile and easily handled.

White is the most popular colour, and as a good specimen has very long, delicate wool of a silky texture, it almost resembles a furry snowball.

Absolute cleanliness in the hutches and constant disinfecting to prevent vermin, are essential, and in order to keep the wool from matting it should be brushed occasionally with a medium bristled hair brush.

A few days before the show, specimens intended for exhibition should be carefully shampooed in a room with a temperature of not less than 75 degrees and thoroughly dried with a soft towel. The fur should then be well brushed, borated talcum powder sprinkled through it (this should afterwards be removed

by brushing the fur in all directions), and then brushed again until the wool is soft and fluffy.

The standard weight is from 6 to 9 pounds for both sexes.

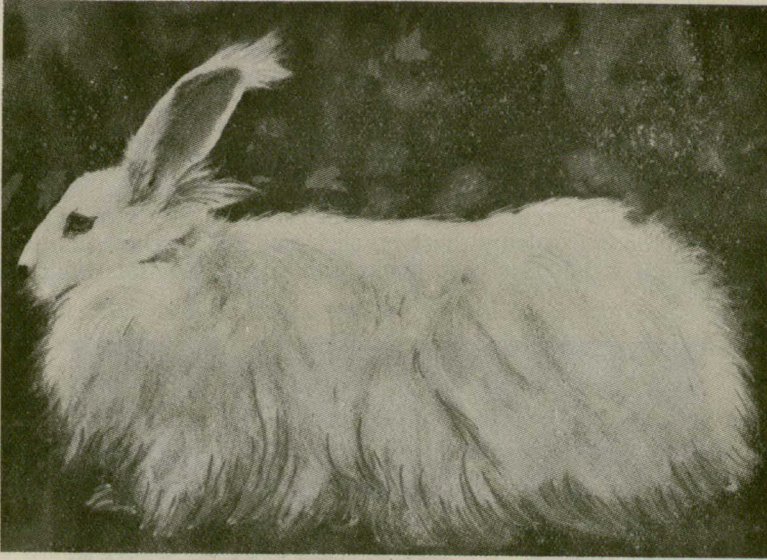


FIG. 12.—JUNON. White Angora doe. First sweepstake prize, Evreux 1911. Sweepstakes at la Reole in 1910, and at Lille in 1911. One of the finest specimens of the white variety. (From "La Vie à la Campagne").

(7) THE HIMALAYAN.

The Himalayan is one of the most beautiful of the fancy breeds, being a pure white, with the exception of the nose, tail, and four feet which are a deep chocolate-brown. The fur is short and fine, and soft as down; and is used for making imitation ermine.

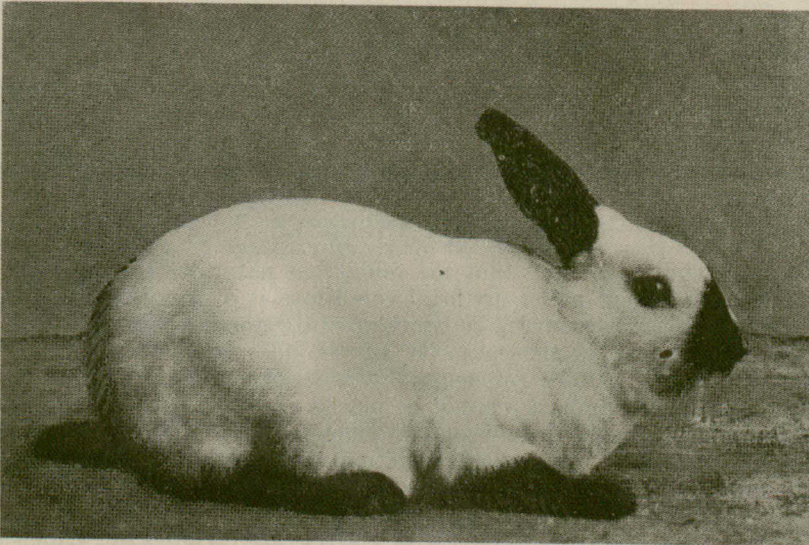


FIG. 13.—Himalayan Rabbit.

As with the Angora, absolute cleanliness is essential for this breed, and it is best kept in a subdued light, as its eyes (which are pink) are somewhat sensitive and delicate.

The maximum standard weight is 5 pounds for bucks as well as for does.

(8) THE DUTCH

When bred true to standard, the Dutch is an extremely handsome rabbit, but its peculiar colour markings entail careful breeding.

The forelegs and feet, shoulders, under jaw, and the nose upward to between the ears, and also the hind feet to about two inches up the legs, must be solid white, while the remainder of the body must be either solid black, steel gray, blue or tortoise-shell. The solid colours must not be smeared into each other, nor must they contain foreign-coloured hairs; in other words, the line of demarcation between the two colours must be clear-cut and distinct.

The standard weight for both bucks and does is not less than 5 nor more than 5½ pounds.

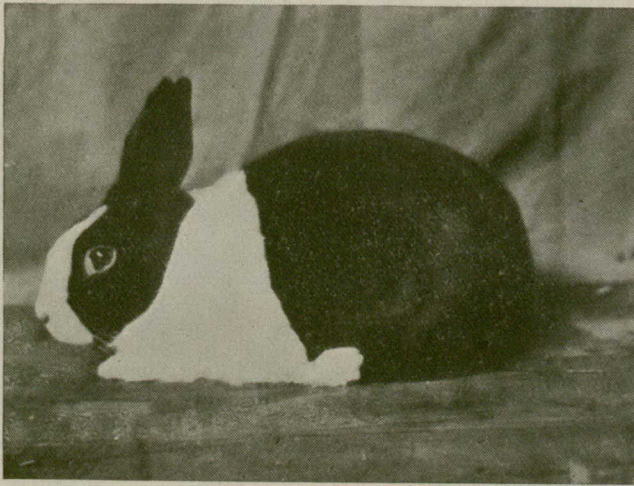


FIG. 14.—Dutch Rabbit.

(9) THE ENGLISH LOP EAR

As its name indicates, the outstanding characteristic of this breed is the lop or dropped ears, which often attain remarkable lengths. Specimens have been bred with ears measuring 27 inches from tip to tip and 7 inches in width. For show purposes the width of the ears must equal at least one-quarter of the length.

RABBIT DISEASES

Notwithstanding the fact that the rabbit has naturally a strong and hardy constitution, when kept under artificial conditions it oftentimes contracts disease. The old proverb, "Prevention is better than cure," applies particularly to rabbit breeding, inasmuch that the majority of the diseases to which these little animals are subject can be prevented by a strict observance of the laws of hygiene. Too much emphasis cannot be placed upon the necessity for thorough and complete cleanliness not only of the quarters in which the rabbits are kept, but also of the feeding troughs and drinking vessels.

All sick or diseased specimens should be immediately isolated and kept so until completely recovered.

The best test of a rabbit's health is its appetite. The rabbit which refuses food, and mopes in the corner of the hutch, if not actually sick may safely be expected to develop disease very shortly and should be carefully watched.

It is impossible, in this bulletin, to treat exhaustively of all the diseases which affect rabbits, and consequently only the most common are dealt with.

(1) ABSCESS

An abscess is readily detected by the formation of a hard lump under the skin. The place usually becomes feverish and tender to the touch, and, as the abscess matures, it becomes soft. If it does not come to a head rapidly, hot fomentations may be applied, then, when it is ready, it should be opened, and the pus squeezed out thoroughly. After this is done wash the wound with warm water containing some good disinfectant and keep it open for a day or two, squeezing out each day any pus that may have formed.

(2) COCCIDIOSIS

Coccidiosis is a scourge among rabbits and oftentimes decimates rabbitries like a plague. It is particularly serious and contagious during wet or damp weather and is especially dangerous to rabbits under three months old.

It is really a parasitic disease caused by the presence of numerous, almost microscopic, parasites, called coccidio, in the mucous membrane of the intestines and the tissues of the liver.

Some of the predisposing causes of this disease are: the over use of green feed; a poorly balanced ration composed mainly of roadside weeds; the eating of watery feeds or those that have begun to ferment; the use of contaminated water; and, last but not least, unclean conditions.

There is no real remedy for coccidiosis, but scientific research has proved that its ravages may be checked to a very large extent by a thorough washing and disinfecting of the hutches, troughs, and drinking vessels used by the affected animals. This is best accomplished by a thorough washing with cold water, followed by one with boiling water. A disinfecting solution composed of $2\frac{1}{2}$ pounds of stone lime, one teaspoonful of a good commercial disinfectant, and 1 pail of water, is then prepared and applied by means of a spray pump. As the life-cycle of the parasite is known to be eight days, this disinfecting should be done thoroughly at proper intervals until the disease has been eradicated.

(3) COLDS AND COUGHS

Colds and coughs are generally caused by draughty or damp quarters, and if neglected may oftentimes lead to much more serious diseases. The removal of the causes, plus good hay and warm feed night and morning, will generally effect a cure, but in obstinate cases 6 to 8 drops of sweet spirits of nitre may be given in a little warm milk twice a day.

(4) CONSTIPATION

Rabbits seldom suffer from constipation and when they do it is generally caused by too much dry feed, without a sufficient quantity of green feed or roots. Feeding a little green feed for a few days will usually cure it, but if not, a dose of castor oil (1 teaspoonful) may be given.

(5) DIARRHŒA

Rabbits fed on green feed, particularly if it is wet or stale, are very subject to diarrhœa, especially during the heat of the summer. If not checked immediately, it will result in the rapid wasting away and death of the affected specimens.

Rabbits suffering in this way (and they will be easily recognized by their listlessness and loss of flesh) should be placed at once in dry, comfortable hutches, and fed on dry feed such as bran, crushed oats and sweet hay, and given plenty of water. A mash of pea meal, made fairly thick, may also be fed for a few days. If this treatment is not successful, 3 to 6 grains of sub-nitrate of bismuth may be dropped on the tongue twice a day.

(6) DISEASED LIVER.

Diseased liver is usually due to a small parasite which attaches itself to the liver, eventually resulting in its decay. The only preventive is careful and judicious feeding, and as the disease is extremely difficult to cure, unless the specimen is very valuable it is usually better to kill and burn it.

(7) DROPSY OR "POT BELLY."

Rabbits of from two to six months old, and especially those bred in small hutches, are particularly susceptible to this diseases. It is also caused by improper feeding, and above all by the over-feeding of wet green stuff. The lower part of the body swells up gradually, the animal loses its appetite, and finally dies from malnutrition.

The affected specimens require exercise, they should be placed in large hutches or, if possible (if the weather is fine), allowed to run on the ground for a few hours each day and fed nourishing dry feed, with plenty of water to drink. In addition 5 grains of ammonium benzoate may be dissolved in a little water and given twice a day.

(8) EAR CANKER AND EAR GUM.

These two diseases, both of which are usually due to the same cause—lack of cleanliness in the hutches—are similar in appearance. Ear canker, however, is caused by ulceration in the lower recesses of the ears, and results in the discharge of a thick, yellow fluid, which, if not removed immediately, will soon form crusts in the ear, and cause the rabbit to lose its appetite and quickly get out of condition. The eye on the side which is affected oftentimes appears weak, and also has a slight discharge.

The ear should be carefully and thoroughly cleaned out with a soft sponge and warm water, and dry, fine, powdered boracic acid dusted in twice a day.

An alternative treatment is to wash the ear out thoroughly with a warm, weak solution of carbolic acid and afterwards to apply an ointment composed of two parts of sulphur to four of olive oil, twice a day.

The rabbit must be given a good nourishing diet and kept in comfortable dry quarters until cured. As the disease is contagious, the quarters must be thoroughly disinfected.

Ear gum or wax also starts in the inner part of the ear, forming scabby excrescences, which will quickly fill the ear if it is neglected. The ears of all rabbits should be examined periodically for the presence of this wax, and in the event of any being found, it should be carefully removed and flowers of sulphur sprinkled into the ear as deeply as possible, and the treatment continued until the ear is clean and free from scabs.

If these scabs are very hard and difficult to remove, a small quantity of sweet oil of almonds should be poured into the ear each day until they are softened. In this event, the same treatment as for ear canker, may be followed.

(9) ECZEMA.

Eczema may result either from poorly ventilated and dirty hutches, or from improper feeding. It can be recognized by the presence of scaly, dry, grey skin at the root of the hair around the nose, and at the base of the ears, and the resulting loss of hair.

Sulphur ointment is probably the best remedy, and it should be applied to the affected parts daily until healed.

(10) OPHTHALMIA.

In well kept rabbitries, where the hutches are thoroughly cleaned, this disease is very rare. It is caused by the accumulation of filthy litter in the

hutch, which, becoming saturated with urine, discharges quantities of ammoniacal gas. Young rabbits are particularly prone to contract the disease, and it results in inflamed and swollen eyes, oftentimes closed for several days, and the presence of red pimples around the eyelids.

The first essential in treating this disease is to remove the cause by placing the afflicted rabbits in clean, dry hutches. The eyes should then be bathed twice a day with warm milk, and if at the end of a week they are not noticeably improved, a solution of boracic acid (1 scruple of the acid to 6 ounces of water) may be applied.

(11) SNUFFLES.

This disease, which is probably dreaded the most by all rabbit breeders, is not only extremely contagious but also infectious, and consequently it is impossible to take too many precautions directly it makes its appearance. It is caused by exposure to damp or draughts, and is frequently contracted when the rabbits are sent to shows. In its earlier stages its presence is detected by the rabbit sneezing, and the accumulation of moisture around the nostrils. If neglected, this moisture quickly changes into a glutinous substance, which in a few days will completely block the nostrils. Inflammation and congestion of the lungs follow and death is the result.

The affected subjects should be immediately isolated, and their hutches thoroughly disinfected.

An excellent remedy for the disease in its earlier stages is the following mixture, administered twice daily, in doses of one teaspoonful; compound tincture of camphor, 2 drams; syrup of squills, $\frac{1}{2}$ ounce; glycerine, 2 ounces; ipecacuanha wine, 2 drams; water, 3 ounces.

The animals may be looked upon as cured when the mucus disappears, but even then they must be given careful attention for a few days longer. In its advanced stage the disease is extremely difficult to cure, and in this event it is generally advisable to kill the animal and so prevent unnecessary suffering.

(12) SORE HOCKS.

Sore hocks may be caused either by blood impurities due to improper feeding or by the hutch being imperfectly cleaned. If the sores become very bad and infected with pus, they should be washed out with warm water containing a little disinfectant, a healing ointment applied, and the application continued until thoroughly healed. Nourishing feed must be given, and the sick rabbit kept in dry quarters. A gentle laxative may also be given with advantage.

CONCLUSION

In view of the fact that the rabbit breeding industry is comparatively new in Canada, increased experience, particularly with regard to climatic conditions, will doubtless result in some modification in the details of breeding methods. These will probably affect more particularly the questions of housing and winter mating, though doubtless further research will also result in some variation in the diagnosis and treatment of diseases.

The future development and possibilities of rabbit breeding depend almost entirely upon the breeders themselves. Provided that modern scientific breeding methods are followed, breeding stock selected with a view to the production of both flesh and fur of good quality, and only well fattened, properly dressed rabbits placed upon the market, there is no doubt but that the demand for rabbit meat will increase rapidly, and that this industry will become increasingly important and profitable.

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