FARMERS' BULLETIN 1090

UNITED STATES DEPARTMENT OF AGRICULTURE

Rabbit Raising

THE SAVING AND EARNING possibilities of rabbit raising are illustrated by the following concrete examples of what has actually been done:

One resident of Kansas City, Kans., has raised 300 to 400 pounds of rabbit meat a year for his own table at a cost of only 8 to 10 cents a pound. A large religious institution in Nebraska that has raised rabbits instead of poultry reports the meat more satisfactory than chicken and the experiment profitable. According to a former county commissioner of the State of Washington, rabbits were grown on the county farm to provide a substitute for chicken for the county hospitals; the initial stock, numbering 119 rabbits, increased to 1,200 in 10 months, besides those used in the hospitals. A high-school boy in Iowa, who breeds registered stock on a space 33 feet square in his back yard, raised and sold enough rabbits in 1918 to clear more than $1,200. An Ohio farmer sends 400 pounds of rabbit meat a week to city restaurants, yet is unable to meet the demand.

These are not isolated cases; they are simply examples of what has been done in rabbit raising, and are an indication of what this industry is likely to become when it is generally understood.

Contribution from the Bureau of Biological Survey
E. W. NELSON, Chief
Washington, D. C. March, 1920

RABBIT RAISING.

NED DEARBORN, *Assistant Biologist.*[1]

CONTENTS.

UTILITY RABBITS.

DOMESTICATED RABBITS have been bred in America and exhibited at pet stock shows as a kind of sport for many years. They are gentle and attractive. People who raise them find real pleasure in breeding them to conform to chosen standards of size, shape, and color, and there has been a keen competition among rabbit fanciers in their endeavors to produce prize winners. An essential part of their work has been an intensive study of the qualities and requirements of the animals. This has not only enabled them to raise fancy rabbits successfully, but has also disclosed the way to turn their product to practical uses. It is now well known that rabbit meat is as fine as that of poultry; and that a prolific 10-pound doe can easily raise in a year 20 young, which at 5 months will produce not less than 50 pounds of delicious meat. By means of compound hutches all this can be done on an area 4 by 6 feet. Half an hour of time a day, and some hay, roadside weeds, and refuse from orchard, garden, and kitchen, supplemented by a small quantity of grain, cover the cost of production. Raising rabbit meat for home consumption is a proposition for turning to account time, space, and materials which are ordinarily wasted. As such it appeals very strongly to prudent people. In regions where rabbit breeding is practiced extensively, rabbit meat is in common use and has a place with other kinds of meat in daily market reports.

[1] This bulletin is based on a manuscript prepared by Prof. David E. Lantz, shortly before his death, October 7, 1918, but the accumulation of new material has made it necessary that it be completely rewritten and considerably extended.—EDITOR.

Rabbit raising is light work and thus is suitable for persons unable to engage in a more laborious occupation. It is especially attractive to young people, who in it may turn their energies into a profitable channel and incidentally acquire a knowledge of the principles of animal husbandry. Boys' and girls' clubs organized by the United States Department of Agriculture and by State agricultural colleges have been a most important factor in demonstrating the good points of rabbits. The large number of requests for information constantly being received by the department is a sure indication of a great popular interest in rabbit raising, and it is confidently expected that the production of rabbit meat and fur for home use will steadily increase.

Rabbits have been kept on the farms and in the towns of northern France and Belgium for home use and for market as commonly as poultry. About 100,000,000 rabbits have been marketed annually in France, and approximately 2,200,000 were raised in Belgium in 1898 for home consumption and for export. The value of rabbits annually exported from Ostend to England has exceeded $1,000,000; the value of wild rabbit meat imported into Great Britain through London from Australia and New Zealand was $4,500,000 in 1910; while England herself was producing from 30,000,000 to 40,000,000 rabbits.

In the United States wild rabbits always have been an important source of food, especially during the cold part of the year, but the value of the domesticated rabbit as a producer of food and fur had never been fully appreciated until the conditions resulting from the great war awakened many of our people to its economic importance.

The first object in rabbit raising is to supply home needs. The best indorsement an article can have is the fact that it is used freely by its producer. If one is inclined to disdain domesticated rabbits on account of experience with wild rabbits, he should know that the latter, as sold in butcher shops, are not to be compared with tender young hutch rabbits. The flesh of the tame rabbit is a highly nutritious and desirable food, resembling somewhat the white meat of chicken. Wherever it has been introduced in the markets it has become popular and the demand for it has steadily grown.

BREEDS.

The family of hares and rabbits[1] is distributed over the greater part of the world and comprises a large number of species and races. It is of considerable economic importance, as it furnishes sport and partial subsistence and clothing to the inhabitants of many countries. The skins supply warm garments for natives of northern latitudes and are used in temperate climates in the manufacture of furs. The

[1] Leporidae.

hair, sheared from the pelts, is utilized extensively in making hats, and mixed with wool or cotton, is made into cloth.

Only one species of the family of hares and rabbits has been domesticated. This is the European rabbit.[1] native, probably, of southern Europe, it has been introduced in the wild state into most of northern Europe, northern Africa, Australia, New Zealand, and other countries. In the domesticated state it has been carried to many parts of the world, until rabbit breeding has become an important industry in Europe and parts of America. Under domestication the rabbit has proved to be a plastic species in the hands of the breeder and has been modified as to size, form, color, and other superficial characters until a large number of distinct varieties, or

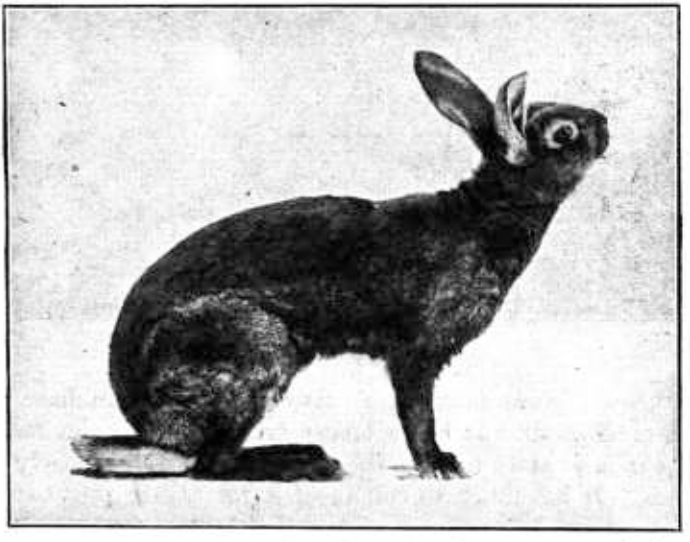

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FIG. 1.—Belgian hare.

breeds, have been produced. Out of more than 20 of these breeds now established in American rabbitries, there are 3 types which, because of their large size, are classed as utility rabbits. These are the Belgian hare, the New Zealand red rabbits, and the so-called "giants," including the several color varieties. At present the smaller breeds are kept as fancy stock, but it is quite possible that some of them may be utilized eventually in the production of fur and wool.

BELGIAN HARES.

The Belgian hare has long been a favorite in America and abroad. It develops rapidly, furnishes meat that is white and tender, and, as it has small bones, makes less waste than do the larger breeds. It is

[1] *Oryctologus cuniculus.*

a long, slender, racy-looking rabbit. The name hare is applied to it only because of its general resemblance to the European wild hare. The American standard now requires a rich, deep, dark cherry-red or light mahogany color, which should be uniform over head, ears, chest, feet, and body. The ears should be straight, about 5 inches long, and have fine black edging or lacing near the tips. The standard weight for adult does is 8 pounds; an earlier standard was 10 pounds.

The "rufous red" is not a distinct breed, but is merely a Belgian hare which conforms to the present American standard in size and deep color.

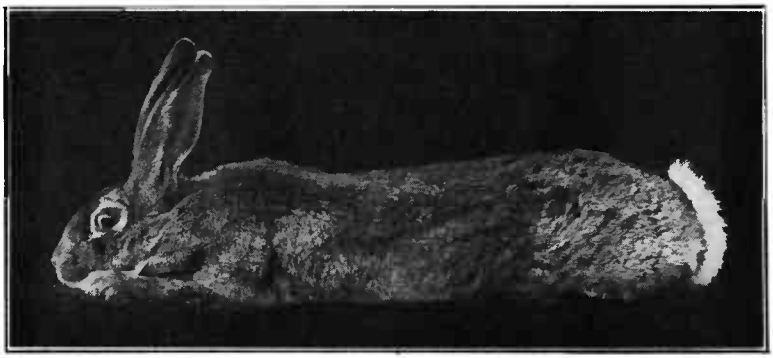

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FIG. 2.—Gray giant rabbit.

The Belgian giant is a cross between the Belgian hare and the gray Flemish giant. It has a larger frame and heavier bones than the Belgian, and at 12 months the adult should weigh nearly or quite 12 pounds. It has much to commend it for utility purposes.

FLEMISH GIANTS.

Flemish giant rabbits originated in Europe and were derived from an old breed of rabbits known as the Patagonians, or Patagonian giants. They were not originally a fixed type as to color, but through careful selective breeding a number of standard varieties have been developed and fixed. These are known as steel gray, dark steel gray, gray, checkered, white, and black (the last sometimes called "Black Siberian hare," see p. 11).

The Flemish giants are excellent utility rabbits and have a high reputation as meat producers. They are adapted to either outdoor or indoor management and are now bred in all parts of the country. They grow rapidly, withstand cold well, and are highly recommended where the market demands a heavy type of rabbit.

The gray Flemish giants are the largest rabbits bred by American fanciers. They attain their full development at about 15 months,

when the bucks should weigh 13 pounds or more and the does not less than 15 pounds. The adult does have the appendage known as "dew lap" well developed.

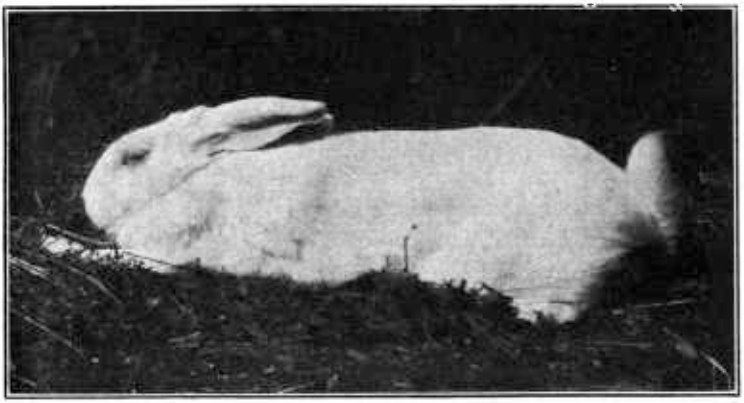

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FIG. 3.—White giant rabbit.

NEW ZEALAND REDS.

Some doubt exists about the origin of the New Zealand red rabbit. When first exhibited in California, about the year 1909, it was claimed that the animals had been purchased in a New Zealand port and brought to America by sailors. While this claim has not been

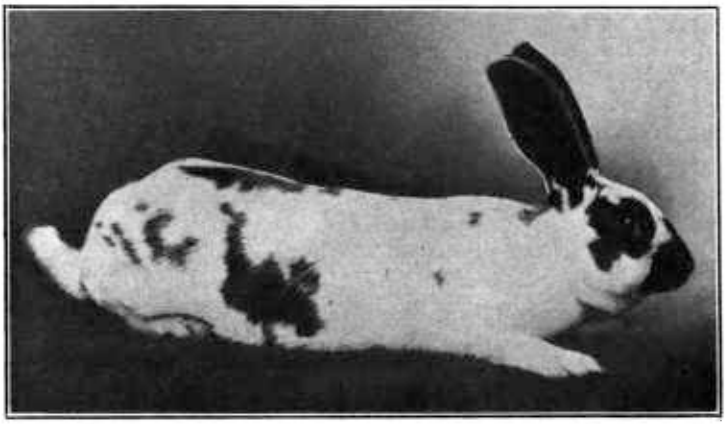

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FIG. 4.—Checkered giant rabbit.

disproved, it is now believed that the animals are a cross between the white giants and the rich red Belgians and that they originated in America.

The New Zealand red rabbit is exceedingly popular wherever it has been introduced. It is now well known in nearly all parts of the country and bids fair to become our most important utility rabbit.

Its color is a reddish buff, which should invade the hairs to the skin and be carried evenly all over the upperparts of the animal; no black hairs, darker spots, or lighter areas are desirable. The underparts

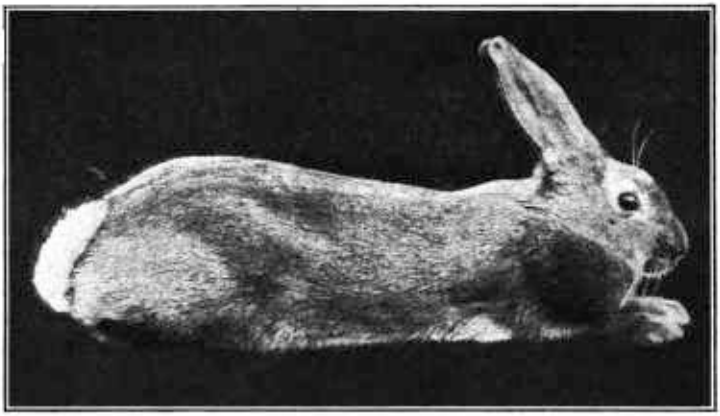

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FIG. 5.—New Zealand red rabbit.

should have a nearly uniform reddish cream color, blending gradually with the buff of the upperparts.

In size the New Zealand is medium between the Belgian and the Flemish giant. It grows very rapidly, weighing 6 pounds when 5 months old, and 9 to 10 pounds when mature, at about 12 months.

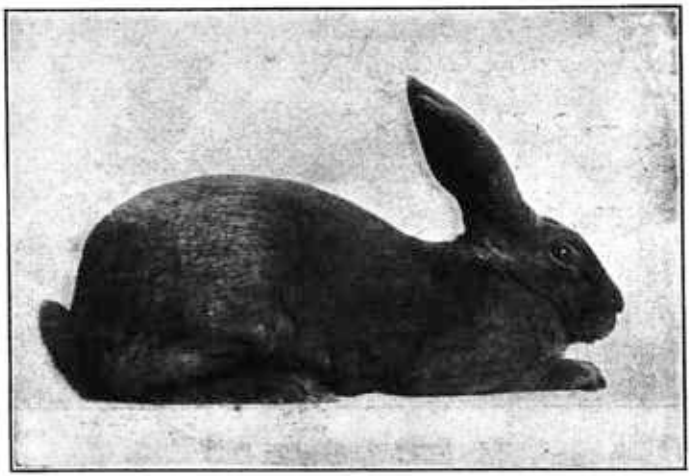

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FIG. 6.—American blue rabbit.

OTHER POPULAR BREEDS.

American blue.—The American blue rabbit, a variety recently developed in California, bids fair to become popular not only as a fancy but as a utility rabbit. No details of its ancestry or origin

have been given, but it closely resembles the blue Beveran, now very popular among British breeders. The type of the California animal has been well fixed by several generations of descent, and a standard

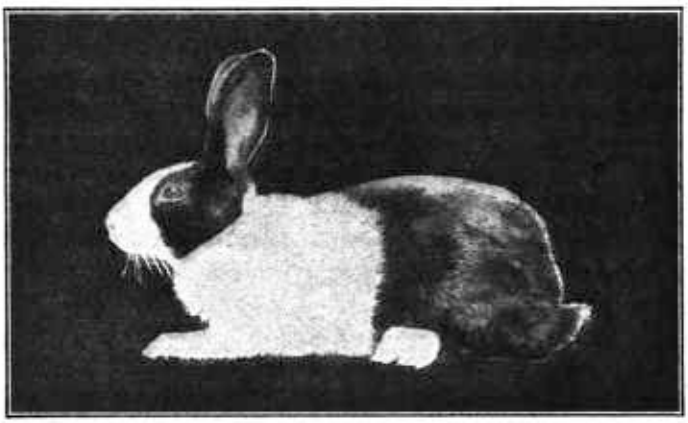

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FIG. 7.—Dutch rabbit.

for the breed under the name "American blue" has been adopted by the National Breeders' and Fanciers' Association. The animal has short, dense fur, which seems well adapted for manufacture into cony, and the flesh is of fine quality.

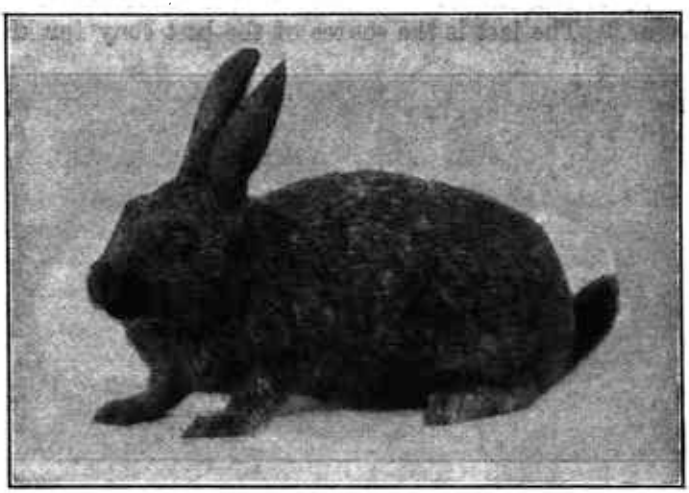

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FIG. 8.—Silver-gray rabbit.

Dutch.—The Dutch rabbit, while one of the smallest breeds, is a hardy and healthy animal and is becoming quite popular in America. The does are excellent mothers and are used by many breeders of larger rabbits to nurse the young of their high-grade pedigreed stock. When a doe of a better kind gives birth to a larger litter than she can

properly feed, some of the young are turned over to a Dutch doe bred at the same time, her young being removed and destroyed. Dutch rabbits are of three general color varieties, black, blue, and tortoise. The standards for distribution of color patches, size, shape, condition, and weight are the same for all colors. For the fancy, the

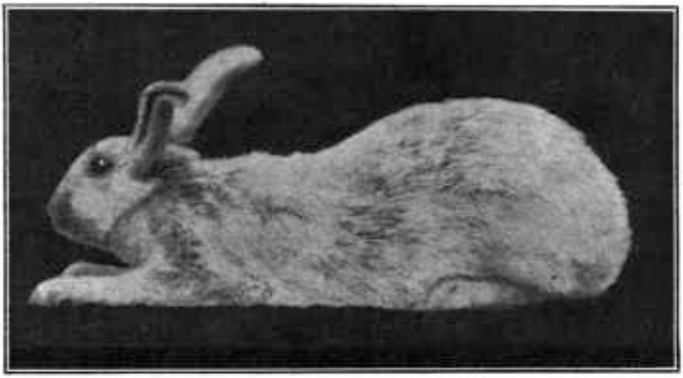

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FIG. 9.—French silver rabbit.

weight should be under 5 pounds; but does of larger sizes with mixed Dutch blood will serve just as well for foster mothers in the rabbitry.

Silver.—The silver rabbits comprise several varieties—silver grays, silver browns, silver fawns, and also the French silver, or "Argent de Champagne." The last is the source of the best cony fur known to

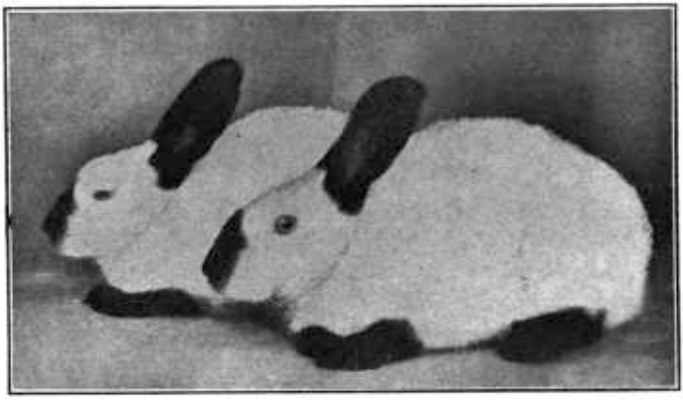

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FIG. 10.—Himalayan rabbit.

the trade. The standard for the grays, browns, and fawns is a rabbit under 6 pounds in weight, while for the French silver the standard demands a weight of about 8 pounds. This rabbit has thus far been bred in America only as a fancy rabbit, but when it becomes better known it will, no doubt, be popular both for its flesh and for its fur.

Himalayan.—The Himalayan rabbit is known chiefly as a fancy breed and is probably the most attractive variety to be seen at exhibitions of pet stock. It attains a weight of about 5½ pounds, and is pure white except on the nose, ears, feet, and tail, which should be a dense velvety black. The fur is short and dense and probably sheds less easily than that of most other rabbits. For this reason the skins of the Himalayan are in demand for making imitation of ermine, and this breed may yet come to merit the name "fur rabbit."

The breed takes its name from the fact that the first specimens shown in London were said to have been brought from the Himalayan Mountains. It is now known that these animals are not found wild in the Himalayan region and that they probably originated some-

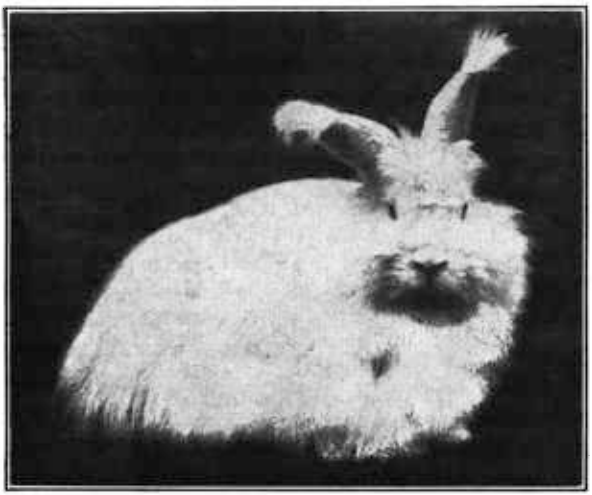

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FIG. 11.—Angora rabbit.

where among European hutch rabbits. Like all other known varieties of the domestic rabbit, they are the result of selective breeding and crossing. The names Himalayan, Patagonian, New Zealand, Polish, Dutch, and Siberian, and the like are seldom properly applied as indicating the country in which the variety originated.

Angora.—The Angora rabbit is noted for its long, woolly, white pelage. This is soft and sufficiently long to be spun and woven, and it is quite possible that producing Angora rabbit wool may be profitable if it can be carried on extensively enough to support its manufacture continuously.

"Black Siberian hare."—The widely advertised "black Siberian hare" is a misnomer and has no standing among reputable rabbit breeders. The animal did not originate in Siberia, as has been claimed, but is a black giant rabbit derived from the Flemish giant, and probably had its origin in the United States. It has been bred

here for many years and is regularly exhibited at shows under its true name, "black giant." When it can be bred true to its standard jet-black color, its fur is worth more than that of the other giant rabbits; but in many litters of young some are found that show a tendency to revert to gray or maltese. For this reason it has really little advantage as a fur producer over other solid-colored giant rabbits. The absurd and fraudulent claims of origin that have been made for it have been emphatically condemned by breeding associations in America.

COSTS.

The cost of starting a rabbitry depends on its size and on the price of material. One can buy two good does and a buck of breeding age—enough to supply an average family with all the rabbit meat it would care to use—for anywhere from $1.50 to $10 each, or for a total of from $4.50 to $30. Hutches for animals may vary in cost from a few cents each, the price of an empty dry-goods box, to several dollars, if expended for dressed lumber to be put together by a carpenter. On a farm where usually odds and ends of lumber and poultry netting are available, and where hay, grain, and milk are produced in abundance, the money cost of starting and carrying on a small rabbitry is negligible. In any case the initial cost need not be great.

Every breeder should keep a strict account of all items of expense and income connected with his operations. He should also know exactly what it costs to produce a pound of rabbit meat at the different ages from two months to maturity, and what is the average daily cost of feeding rabbits at different ages. The time required to do the extra work of weighing, computing, and recording results is well paid for by the certainty that one has as to whether he is gaining or losing, and how much. The daily cost, when all feed is purchased, is not usually above 1 cent for a 10 or 12 pound rabbit.

SELECTING STOCK.

The first step in selecting stock is to decide on a breed. This is chiefly a matter of taste, although it may be influenced more or less by the market that is to be supplied. For example, the family table would demand smaller animals than would the trade of a restaurant or hotel. It is best to begin with only one breed and to concentrate on developing that into stock that may be a source of pride and profit.

One buck and two or three does are enough to start with. Young animals of breeding age are better than older ones, which will soon be past their usefulness. The buck should come from a different source from the does. It is always best to deal with reputable

breeders and to examine stock before buying it. When rabbits are ordered by mail, it should be on condition that they may be returned immediately if not found to be as represented. Before rabbits are accepted, they should be scrutinized to see that their ears are erect and free of canker, their eyes full and bright, and their tails and feet straight and shapely; and that they show no signs of snuffles, such as sneezing, a discharge from the nostrils, or paws soiled with mucus; and that they do not have long, coarse claws, which are a sure indication of old age.

While color is of no consequence from the standpoint of meat, well-colored animals, conforming to standard pure-bred types, are more satisfactory to most breeders than those of varied colors or shades. When possible, it is well to select bucks and does of the same shade of color and to dispose of any young animals differing from this shade. The established breeder, in selecting from his young animals those that are to be kept, should consider their form, health, disposition, rate of growth, and parentage—aiming constantly to improve his stock by selective breeding.

The rabbit industry has suffered greatly from unscrupulous advertising. Misrepresentations as to the origin of stock and as to its quality have been common, and novices in rabbit breeding have often been deceived. It has been found that firms with quarters in city office buildings and neither owning nor raising rabbits advertise stock for sale with agreements to buy back all young rabbits raised by the purchaser. The price at which their stock is offered is usually unreasonably high. An offer to buy back the young is legitimate and reasonable if only first-class and registered stock is sold and there is assurance that its high grade will be scrupulously maintained by the purchaser. The prospective breeder should be wary of "buy-back" offers, and before investing should make certain that the advertiser is responsible and has a good standing among breeders.

HUTCHES AND YARDS.

Two widely different systems of management are followed by American rabbit breeders. Under the first system, which may be called hutch management, the animals are confined in small pens or hutches and obtain little exercise. This is the more common practice and has the advantage of requiring less room and probably of producing meat more rapidly. Under the other system, rabbits are given the freedom of open yards or runs, where they obtain abundant exercise, and are sheltered in small hutches or kennels. This method promotes the general health of the animals and probably gives a better development of their fur. It is especially adapted to the southern part of the United States, where there is a mild climate

throughout the year, and may be followed in the North during the summer months.

Hutches for a large breed of rabbits should have about 12 square feet of floor space and a height of 18 to 24 inches, inside measurement. If there is plenty of room in the rabbitry it is best to have the hutches separate, but to save space they are frequently built in tiers, or stacks, of two or three in height. A single hutch may be made from a dry-goods box by nailing 1-inch-mesh galvanized poultry netting over the open side. A tier of hutches may be similarly constructed from

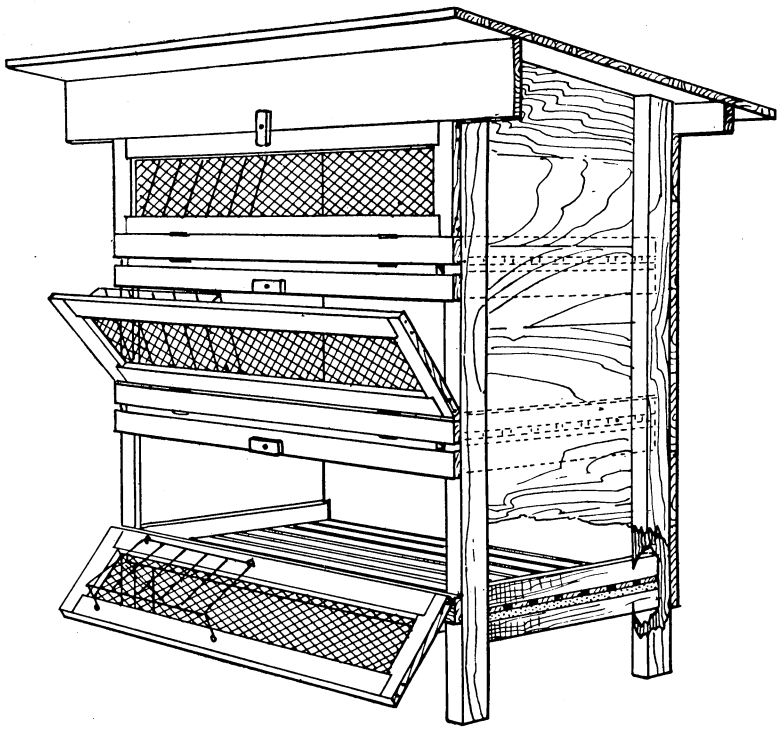

FIG. 12.—Slat-floored hutches built in a tier.

a piano box. Rabbits are more easily cared for, however, and are less likely to become diseased in well-built hutches than in extemporized ones, which become foul and unwholesome unless cleaned and re-bedded with straw, sawdust, or other absorbents very frequently. Self-cleaning hutches, such as are here illustrated, require no bedding and are easily kept in good order.

There are two general kinds of self-cleaning hutches, those with slat floors and those with slanting floors, both of which are here illustrated. Slat floors are built of 2-inch strips of board, spaced half an inch apart. Beneath each floor is a galvanized-iron pan about 1 inch deep, designed to catch droppings from the floor above. This

pan is made to fit closely in order to prevent upward drafts of air. The slats forming the floors are nailed to the cross pieces above them in order to save space and allow the pan to slide close to the floor. Attached to the door of each hutch is a rack designed to contain hay

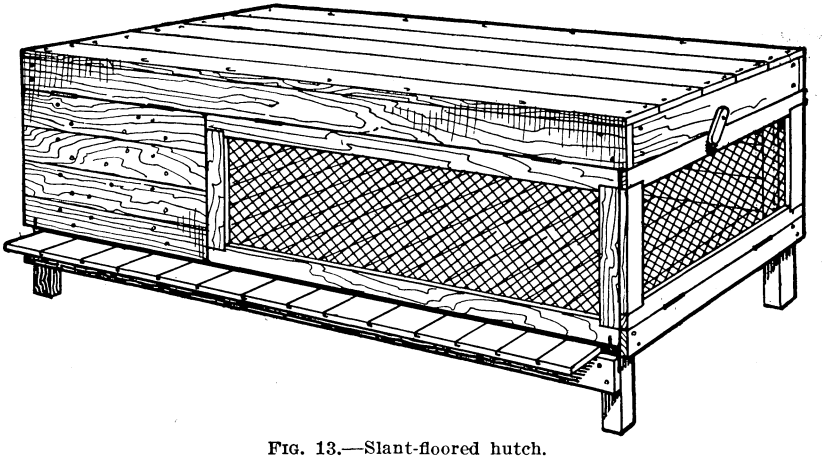

FIG. 13.—Slant-floored hutch.

or greens. The nest box for this hutch may be made of an ordinary wooden packing box about 12 inches wide, 16 inches long, and 10 or 12 inches high. Such a box needs only to have the cover left off and to be half filled with bedding. It is not necessary to cut a hole in

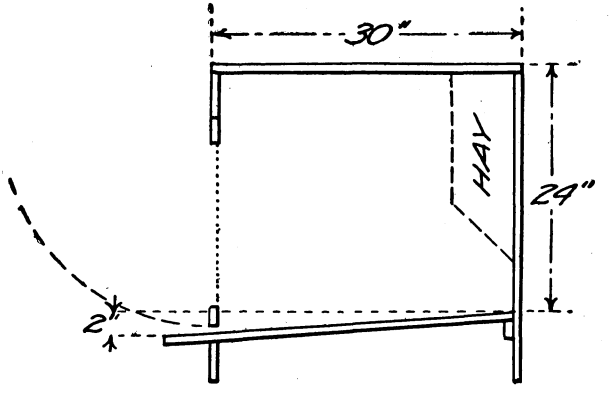

FIG. 14.—Cross section of slant-floored hutch shown in fig. 13.

the side for an entrance. The hutch shown in figure 12 was designed for outdoor use. For indoor use the roof may be replaced by a level top.

Figures 13 and 14 illustrate the construction of the slanting-floor type of hutch. In this, the floor is built of dressed tongued-and-grooved lumber running crosswise of the hutch and has a slope of about 1 inch to the foot toward the front. A space of about half an

inch between the floor and the side doors allows refuse from the hutch to roll beneath the doors and fall to the ground below. The end door is designed to be used in feeding the animals, while the side doors are used for cleaning or disinfecting the hutch. This type of hutch lends itself readily to the compound construction outlined in figure 15. Compound hutches in this form may be arranged so as to occupy very little space, as shown in figure 16. This arrangement permits the caretaker to feed rabbits from broad passageways and to clean the hutches from the alcoves, thus keeping the feeding and cleaning operations separate. By this arrangement 72 breeding rabbits may be kept in an area 30 feet square, each individual hutch having a floor space 2½ by 5 feet.

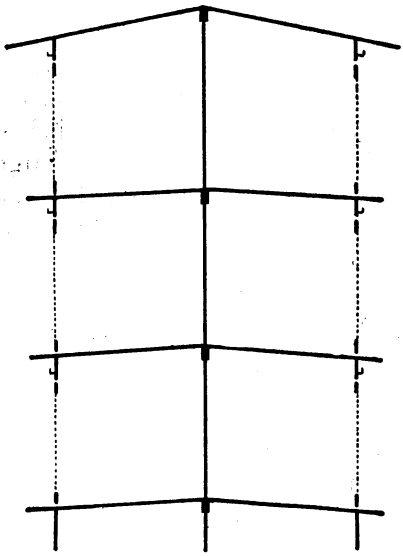

FIG. 15.—Slant-floored hutches compounded, cross section. Perspective of this type is illustrated in fig. 13.

Where one has outdoor space sufficient for the construction of runways it is well to construct yards in which young stock may get exercise. Such yards may be permanent or may consist of portable pens. Permanent yards have the fence extend into the ground 10 or 12 inches and have a height of at least 3 feet. In order to keep dogs away from the rabbits the top of the runway should always be covered with wire netting. The walls should be built of 1-inch-mesh galvanized netting, but the top may consist of 2-inch netting, which costs considerably less.

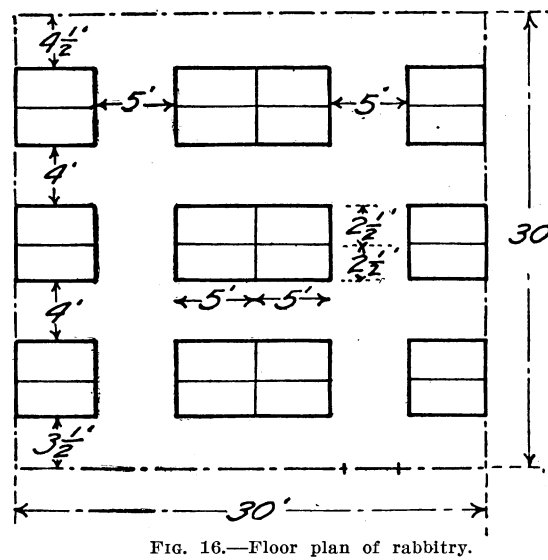

FIG. 16.—Floor plan of rabbitry.

A convenient portable pen is shown in figure 17. This may be moved about from day to day, giving the rabbits inclosed in it fresh

pasturage each day and reducing the danger of disease. It will be noted that instead of extending the wire netting into the ground it is laid on the surface as a carpet. This arrangement serves quite as well to prevent rabbits from digging out as that of extending the netting into the ground. The size of this pen depends upon the width of netting used. A convenient size can be constructed of netting 4 feet wide, one strip being sufficient to cover the top and another to cover the sides and turn inward 6 inches at the bottom.

It is often convenient to combine the hutch and yard methods, using hutches for the breeding stock and a series of outdoor yards or pens for the young.

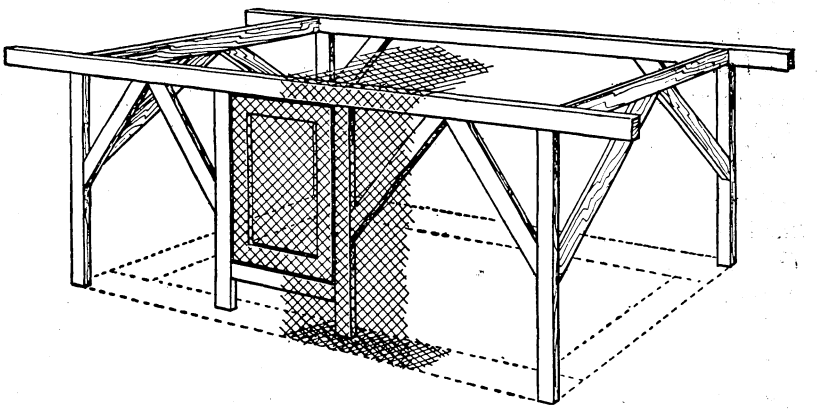

FIG. 17.—Diagram of portable pen. The wire covering extends inward 6 inches as a carpet to prevent rabbits digging out.

FEEDING.

American breeders follow no uniform system of feeding rabbits. Some feed no green stuff, while others use all that is available. It is usually wise to avoid both extremes, but green feed must be used with more caution than is necessary with dry, and only the best of any kind should be used. This means particularly that spoiled, moldy, or dirty feeds are to be avoided as injurious to rabbits. Clean oats (whole or crushed), bright well-cured hay, and a small portion of some kind of greens daily is the steady diet used in most rabbitries. Crushed barley may be substituted for oats; clover or alfalfa may be used with green oats or timothy hay; and the greens may consist of carrots, rutabagas, prunings from apple and cherry trees, and plantain, dock, burdock, dandelion, cauliflower, lettuce, or lawn clippings. Lawn clippings or other green grass should be clean and not fed when moldy or fermented. Dandelion tops and roots not only have a food value, but are useful on occasion because of their medicinal properties. A variety of feed is essential.

Warm mashes should be given daily to the nursing doe and to young rabbits for a time after they are weaned. All rabbits are benefited by warm mashes in very cold weather. Bread and milk, oat or barley meal and milk, and many other kinds of mashes may be provided. Rolled oats and bran make an excellent grain ration for the young.

The quantity of grain required by rabbits depends on their age and condition, and also on the kind and quantity of other feed they receive. Some rabbits require more grain than others. Only by noticing the condition of each animal day by day can its feed be properly regulated. Full-grown animals require less grain between than during breeding periods. They should never be allowed to become heavy with fat unless wanted for the table. Eighteen or twenty young rabbits from 3 to 5 months old having a pint of crushed oats or barley a day, in addition to plenty of dry alfalfa and greens, will grow very nicely.

Fattening rabbits for meat may begin at any time after they are 10 weeks old and should continue 3 weeks, the animals being confined in small quarters to prevent their getting too much exercise. The proportion of greens in their feed should be decreased, while that of grain should be increased. By gradually replacing half the usual grain ration with corn meal the rate of fattening can be increased.

Most breeders feed rabbits twice daily, giving greens in the morning and dry grain and warm mashes in the evening, but keep a supply of dry hay constantly before them. Rabbits that are fed two or three times a day should not be supplied with a larger grain ration than they will clean up within a short time. Water should be given every morning, but in freezing weather it should be removed when the rabbits have finished drinking. Salt should be supplied with the oats two or three times a week or a small piece of rock salt may be kept beside the feeding pan permanently. Salt bricks may be made from table salt by placing the required quantity in a paper funnel and adding to it sufficient water to moisten it. When the salt is dry it will be solid.

Hay, oats, or other coarse, dry feed should not be fed to young rabbits before they are weaned, and only limited quantities should be allowed them for a week afterward, as such feed eaten in excess causes indigestion. Too much green food is equally injurious to young rabbits during this period. Digestive troubles frequently result from overeating either class of food. Bread and milk will regulate the bowels, and an occasional feed of dandelion leaves will prove beneficial.

Cabbage leaves are not good for young rabbits and should be fed sparingly to adults kept in hutches. In open runs a larger variety of feed may be used with safety than under hutch management.

All dishes from which rabbits eat or drink should be cleaned and scalded frequently.

BREEDING.

The period of gestation of the female rabbit is about 30 days. Breeders usually raise four litters of young in a year, giving the doe a rest in July and August and again in December and January. The doe is bred early in February, having the first litter of the year early in March, and is mated again when her first litter is 6 weeks old and ready to be weaned.

When rabbits are raised exclusively for meat, five or six litters are sometimes raised in a year from one mature doe, but such intensive breeding should not be continued for more than one or two years. Younger does should then be used and the older ones discarded or bred less frequently.

The number of young in a litter varies greatly. Litters of 10 or 12 occur, but these are too large for a doe to raise. Only 6 or 7 of the best of the young should be saved. It is of advantage to have several does bred about the same time, for the number of young may then be adjusted by transferring from those having too many to those having few.

The age at which rabbits may be bred varies according to the length of time required for them to attain full size. Flemish giants are usually bred at 9 or 10 months of age, New Zealand reds at 7 or 8 months, and Belgian hares at 6 or 7 months. Small breeds, as Himalayans or silvers, may be bred at 5 months. It is not advisable to breed rabbits after they are 3 years old. Old does are generally mated with young bucks and young does with old bucks in order to increase the vigor of the progeny. The young of rabbits mated while molting are frequently rough coated and consequently unfit for show or fur purposes.

Each breeding doe must have a separate hutch for herself and young, and the buck must also be kept by himself. One buck is sufficient for 10 or 12 does. At mating time the doe should invariably be placed in the hutch of the buck. The pair should be watched to see that they really mate, after which the doe should be immediately removed to her own hutch. At the end of 10 days she should be returned to the buck, and if she then refuses his advances it may be concluded that she is pregnant.

A few days before the young are expected the hutch should be carefully cleaned and plenty of soft hay or straw placed in it. The

doe will make her own nest. She should have extra feeds of warm mash to induce a good flow of milk, and a day or two after the young are born she may be removed from the hutch for a few minutes to permit an examination of the nest for determining the number of young in the litter and for removing any that may be dead. No other disturbance of the young is advisable until they are large enough to come out of the nest and run about the hutch. At this time the nest box should be cleaned and fresh straw provided.

The young may be weaned when about 6 weeks old, after which they may be kept in one hutch until 3 or 4 months old, when the sexes should be separated.

In open runs a considerable number of young female rabbits may be kept in the same inclosure until they are ready for market or for breeding. The same is true of males, unless some are unusually quarrelsome. Unruly young bucks must be separated from the others.

SELLING.[1]

The market for rabbits, both for food and for breeding purposes, should be considered well before one engages extensively in the rabbit-raising business.

Rabbits of recognized breeds, conforming in size, build, and color to the accepted standard, are usually in demand for breeding stock. Those born of registered parents are preferred and are spoken of as "pedigreed." They can be registered if the owner so desires. The cost of keeping pedigreed or registered stock is no more than that of keeping ordinary stock and the returns usually are considerably greater. If registered breeding stock is kept the best individuals can be selected and sold for breeding purposes at more attractive prices than can be obtained for ordinary animals sold for food purposes. Such stock can be disposed of, as a rule, if the home demand is not sufficient to absorb it, by advertising in poultry and pet stock journals.

A fairly good demand for domestic rabbits for food purposes has been developed in sections where rabbit raising as a business has been carried on more or less extensively for several years, while in other localities where few rabbits, if any, are raised, the meat as an article of food is little known. One should not begin raising rabbits on an extensive scale in a locality where people are unaccustomed to eating them and expect to find a ready sale for the surplus animals produced. It is much better to begin by raising a few for home use and try to develop a market gradually. Production can be increased easily as the demand and experience justify.

[1] The section on selling rabbits was prepared in cooperation with the Bureau of Markets of the Department of Agriculture.

No breeder can expect to make much profit until he has developed a market for his rabbits. He can demonstrate the good qualities of the flesh of young rabbits to his neighbors by inviting them to dinner or by contributing the meat to supper committees to be served as salads at community sociables. Another way is to interest managers of restaurants and hotels in his product and to make arrangements with them to serve rabbits in specially prepared and advertised dishes.

If producers are not able to carry out a satisfactory campaign singly they can organize and work together. By combining they can save expenses in advertising and standardize their output. The market demands a steady and reliable supply. This can be maintained by producers cooperating much better than by individuals working separately.

Rabbits sold for food purposes usually give the greatest profit when they are 2 to 4 months old. They are marketed in three ways, (1) alive; (2) drawn, with skin, head, and feet on; and (3) drawn and skinned. If they are sent a considerable distance to market they are usually shipped alive and in crates; the second method is in many respects preferable for the general market; and the third is best when sales are made direct to consumers. When rabbits are sold dressed, care should be taken to handle them according to sanitary methods and to offer them to customers in a clean and attractive way.

DRESSING.

The best way to kill a rabbit is to stun it by striking it a sharp blow on the back of the head with a round hardwood stick and then hang it head downward and bleed it by cutting the throat. The time required by an experienced hand to skin a rabbit is less than one minute.

With a sharp-pointed knife slit from one heel past the under side of the tail to the other heel. Then twist each hind foot until the knee sticks out through the slit in the skin. Pass the fingers between the muscle and the skin to separate them and break the skin at the heel. By placing the thumb and fingers beneath the skin at the base of the tail, the bone may be pulled through them, thus stripping off the skin. It is then convenient to hang the carcass by the hamstrings as high as the operator's head, from iron pins driven 8 inches apart into a horizontal scantling. By using the knife a little around the flanks, shoulders, eyes, and lips and by severing the ears from the skull, the skin may be stripped from the body, inside out, as a glove is turned from a hand. If care is taken the skin may be removed whole, thus preserving the pelt and at the same time leaving no hairs on the meat.

Next remove the feet by breaking the bone about halfway between the first and second joints and cutting through the muscle and connective tissue. Make a lengthwise slit through the thin muscular wall over the belly, up through the cartilage of the ribs to the neck. Remove the entrails, lungs, and windpipe, reserving the heart and liver for cooking, and carefully remove the gall bladder.

After a carcass has hung in a cool place where there are no flies until its exposed surfaces are dry, a paper sack may be drawn over it and tied so as to leave the hind feet exposed, making a package that is both sanitary and convenient. For display purposes the hind feet may be cut off about an inch below the heel and one heel thrust under the hamstring of the other leg, allowing the carcass to be hung from a single peg. The appearance of a dressed rabbit may be made still more attractive by draping the fat covering the intestines across the front of the carcass.

COOKING.

The Office of Home Economics, States Relations Service, has studied the composition and digestibility of rabbit in comparison with other meats as well as the preparation for table use, and has prepared the following tables comparing the composition of rabbit and other meats and the relative weights of rabbit and chicken in the different stages of dressing and cooking.

Composition of edible portions of rabbit (Belgian hare and New Zealand red) and other meats.

Kind of meat.	Water.	Protein.	Fat.	Ash.	Fuel value per pound.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Calories.*
Rabbit	67. 86	25. 50	4. 01	2. 13	627
Chicken (broiler)	74. 8	21. 5	2. 5	1. 1	505
Beef:					
Hind quarter	62. 2	19. 3	18. 3	. 9	1, 130
Fore quarter	62. 5	18. 3	18. 9	. 9	1, 135
Veal:					
Hind quarter	70. 9	20. 7	8. 3	1. 0	735
Fore quarter	71. 7	20. 0	8. 0	. 9	710
Mutton:					
Fore quarter	52. 9	15. 6	30. 9	. 9	1, 595
Leg	63. 2	18. 7	17. 5	1. 0	1, 085
Pork (shoulder)	51. 2	13. 3	34. 2	. 8	1, 690

In general it may be said that in composition and digestibility the rabbit closely resembles beef or other meat and poultry, but in appearance and flavor it is more like poultry and can be used in much the same way.

Comparison of live, dressed, and cooked weights of rabbits (New Zealand red) and chicken.

Condition.	Rabbit weights.		Chicken weights.	
	Lbs.	*Oz.*	*Lbs.*	*Oz.*
Live weight	5	8	5	8
Dressed (skinned, drawn, and ready to cook)	2	14	3	15
Cooked weight (meat and bones)	1	13	2	8
Loss in cooking	1	1	1	7
Weight of bones (and skin in chicken)	..	6	1	0
Weight of meat	1	7	1	8

In dressing, a rabbit loses approximately one-half of the live weight, and the chicken somewhat less, the refuse weight of the rabbit used in the experiments being 2 pounds 10 ounces, and the refuse weight of the chicken being 1 pound 9 ounces, including heart, liver, and gizzard (3 ounces), not cooked with the meat. The weight of the rabbit bones was only 6 ounces, as compared with 9 ounces in the chicken and in addition 7 ounces weight of chicken skin. The rabbit cooked in 1 hour 15 minutes and the chicken in 2 hours 30 minutes, but even then the meat of the chicken was not so tender as that of the rabbit.

In its study of the meat of the rabbit the Office of Home Economics developed the following recipes and directions:

The rabbit should be washed carefully in cold water and patted dry with a clean towel. It may then be cut into 8 or 10 pieces (if not to be cooked whole). First disjoint the legs, cutting the hind legs into two pieces each if desired, and cut the saddle into four pieces.

RABBIT SOUP.

1 cup concentrated rabbit broth.
3 cups milk.
4 tablespoons flour.
1 teaspoon salt.
Few grains pepper.
1 tablespoon onion juice.

Add the milk to a broth made from rabbit bones (see rabbit pie recipe) and season with onion juice, salt, pepper, and parsley or celery leaves if desired. When it is almost boiling, stir in carefully the flour which has been moistened with part of the cold milk or with water. Stir until the soup is of a creamy consistency and serve at once.

FRIED RABBIT.

Dress rabbit, cut in pieces, dredge with flour, salt, and pepper. Heat 4 tablespoons of fat in a frying pan, drop in the rabbit, and fry slowly for 30 to 45 minutes, depending upon age of animal.

Serve with a cream gravy, using the fat in which the rabbit was fried.

FRICASSEE OF RABBIT.

Skin, draw, and wash rabbit and cut it into pieces. Dredge with flour, salt, and pepper. Brown in 4 tablespoons of fat. Change from frying pan to stewpan, cover with boiling water, and cook slowly until tender. Remove meat

from broth. Thicken broth with 1 tablespoon of flour to 1 cup of broth. Boil vigorously for a minute or two, then add dumplings, cover closely, and allow to steam 15 to 20 minutes. Pour dumplings and gravy over meat on hot serving platter.

DUMPLINGS.

2 cups flour.
4 teaspoons baking powder.
½ teaspoon salt.
1 cup milk.
1 egg.
2 tablespoons fat.

Sift together flour, baking powder, and salt. Cut in fat. Beat egg well and add to milk. Combine the two mixtures. Drop by spoonfuls into slowly boiling gravy. Cover closely and allow to steam 15 to 20 minutes.

SPICED RABBIT.

1 rabbit.
6 slices bacon.
1 medium-sized onion.
2 teaspoons salt.
¼ teaspoon pepper.
1 tablespoon cloves.

Brown sauce:
1 tablespoon sugar.
½ cup water.
1 tablespoon flour.

Skin, draw, and wash rabbit and cut it into pieces. Put it into stewpan with bacon cut into small pieces, onion cut fine, salt, pepper, and whole cloves in a bag. Cover with boiling water and cook slowly until tender.

Caramelize the sugar and add water thickened with flour well blended with 2 tablespoons of water. Pour this brown sauce over the spiced rabbit and allow the whole to simmer 2 hours.

CASSEROLE RABBIT.

8 slices bacon.
1 large rabbit cut into pieces.
2 medium-sized potatoes.
2 small onions.
2 cups hot water.
1 teaspoon salt.
¼ teaspoon pepper.

Fry the bacon until light brown and remove it from the fat. Use this bacon fat to brown the rabbit, which has been dipped in flour. Arrange in a casserole the pieces of rabbit, the strips of bacon, and sliced onions and potatoes, and dredge lightly with flour. Pour water over all. Cover and cook slowly 2 hours.

BAKED RABBIT.

1 rabbit.
3 cups cream or a thin white sauce.
6 slices bacon.
Flour for dredging.

Skin, clean, and wash the rabbit, and split it into two pieces, cutting along the backbone. Rub with salt and a little pepper, place in a roasting pan, and dredge with flour. Lay strips of bacon across the rabbit. Pour over and around it 3 cups of the white sauce or 3 cups of cream. Bake 1½ hours, basting frequently. Serve hot with the cream gravy. The liver may be boiled until tender, chopped, and added to the gravy before serving.

RABBIT IN TOMATO SAUCE.

2 tablespoons lard or butter.
3 tablespoons flour.
1½ cups tomato pulp and juice.
1 large onion chopped fine.
2 teaspoons salt.
½ teaspoon pepper.
3 cups water.
1 large rabbit.

Skin, clean, and wash the rabbit and cut it into pieces at the joints. Dip in flour and brown in a little fat.

Put the lard or butter in a deep iron skillet or a roasting pan, and stir in the flour. Add the chopped onion and the tomato juice with the seasonings and the boiling water and cook for 5 minutes. When this is boiling put in the browned rabbit. Cover and let simmer on top of stove or in the oven for one hour. The tomato sauce cooks down and gives a very good flavor to the rabbit.

RABBIT STEW WITH VEGETABLES.

1 rabbit (about 3 pounds).
4 medium-sized potatoes cut into quarters.
4 large carrots cut into cubes.
1 medium-sized or 2 small onions.
3 tablespoons flour.
2 teaspoons salt.
Few grains pepper.

Skin, draw, and wash the rabbit carefully, cut it into pieces, cover with cold water, and allow to boil slowly until almost tender. Add the potatoes, carrots, onions, or other vegetables if desired and cook until tender. Add the seasonings and flour, moistened in a little cold water. Stir until the liquid surrounding the stew is slightly thickened, and serve at once.

SAVORY RABBIT.

Skin, draw, and wash the rabbit and cut it into pieces. Dredge with 4 tablespoons of flour, 2 teaspoons of salt, and ⅛ teaspoon of pepper. Brown in 4 tablespoons of bacon or other fat. Remove meat to stew pan and cover with boiling water, and add one medium-sized onion cut in small pieces and 2 bay leaves. Cook slowly until nearly tender. To the fat that was used to brown the rabbit add 2 tablespoons of flour, mix thoroughly, and add 1 cup of vinegar. Pour this sauce over the meat and simmer until it is very tender. Serve with dumplings. This makes an excellent meal served with fresh or canned string beans and with a dessert of baked apples.

RABBIT SALAD.

To each cup of diced rabbit meat add ½ cup of celery and ¼ cup of salad dressing, ½ teaspoon of salt, and a few grains of cayenne pepper. Mix thoroughly and pour into a salad bowl lined with lettuce. Put one or two tablespoons of dressing on top and garnish with strips of green and red pepper.

Either a mayonnaise or a boiled dressing may be used for this salad.

MAYONNAISE.

1 egg, well beaten.
1 cup salad oil.
2 tablespoons vinegar.
1 teaspoon salt.
⅛ teaspoon cayenne pepper.

Beat egg constantly, add oil slowly, 1 teaspoon at a time, until egg begins to thicken. When it has thickened the oil may be added 1 or 2 tablespoons at a time until all is used. Add salt, pepper, and vinegar, and mix well. This dressing is improved by standing on ice an hour or so before using.

RABBIT PIE.

Skin and draw rabbit, cut it into pieces, put it into stewpan, and cover with boiling water. Cook until very tender. Remove meat from the broth and concentrate the broth to about one-half. Pick the meat from the bones in as large pieces as possible. Thicken stock with 1 tablespoon of flour for each cup of broth and pour over meat. Add 2 teaspoons of salt and ⅛ teaspoon of pepper. Line the sides of a baking dish with crust, add meat mixture, cover with crust, and bake in hot oven 30 minutes.

PIE CRUST.

The crust may be made in two ways—one as pie paste and the other as a rich biscuit dough.

Pie paste:

1 cup flour.
4 tablespoons fat.
2 tablespoons water.
¼ teaspoon salt.

Mix and roll as ordinary pie paste.

Rich biscuit dough:

1 cup flour.
2 tablespoons fat.
½ cup milk.
2 teaspoons baking powder.
¼ teaspoon salt.

Sift together flour, baking powder, and salt. Cut in fat and add milk to soft dough. Roll on board to one-half inch thickness and cover baking dish. This dough may also be cut as biscuits and these put on top of meat mixtures in baking dish.

RABBIT BROTH STOCK.

Crack the bones of rabbit used for pie, cover with cold water, and let simmer for 1 hour. This stock may be used for the meat stock of vegetable soup. (See also rabbit soup recipe.)

RABBIT CROQUETTES.

1½ cups milk or half milk and half rabbit broth.
6 tablespoons flour.
1 teaspoon salt.
2 teaspoons butter.
1 teaspoon onion juice or finely chopped onion.
1 teaspoon finely chopped green pepper.
Few grains pepper.
2 cups ground or chopped rabbit.

Make a white sauce of the milk, flour, butter, and seasonings. When it is thoroughly cooked remove from fire and add the ground rabbit. Cool and shape into croquettes. Roll in egg and bread crumbs and fry in deep fat or bake in a hot oven until well browned.

BAKED HASH.

2 cups coarsely chopped cooked rabbit.
2 medium-sized potatoes (diced).
1 small onion.
1 tablespoon chopped green pepper.
1 teaspoon salt.
1½ cups rabbit broth.
2½ tablespoons flour.

Place the potatoes in the boiling broth, add the onion, green pepper, and salt and let boil until the potatoes are almost done. Add the flour, moistened with a little cold water, and cook until slightly thickened. Place in casserole with alternate layers of the chopped rabbit. Cover with bread crumbs and bake until well browned over the top.

SMOTHERED RABBIT.

Put the rabbit, whole, in roasting pan, stuff (recipe given below), truss, lard with 3 strips of bacon, dredge with 3 tablespoons of flour, 2 teaspoons of salt, and ¼ teaspoon of pepper. Put 2 cups of water in pan. Allow to cook until tender and well browned, or about 1 hour. Remove the rabbit and

thicken the gravy with 1 tablespoon of flour to each cup of liquid. Into this gravy drop baking powder biscuits (directions under rabbit pie recipe) and bake uncovered until well browned.

RABBIT STUFFING.

2 cups bread crumbs.
1 egg slightly beaten.
1 teaspoon salt.
¼ teaspoon pepper.
1 sprig parsley cut fine.
1 small onion grated.

RABBIT SKINS.

Rabbit skins should always be saved, as they have a value, depending on their condition, and are regularly in demand. A skin may be prepared for market with less trouble than is required to bury it. It has only to be drawn, flesh side out, over a piece of thin board or No. 9 gauge galvanized wire, shaped to give it a uniform tension, and hung in a shady, well-ventilated place, as under an open shed, until it becomes bone dry. Artificial heat should not be used to dry skins if it is possible to dry them otherwise before there is danger of their becoming sour or moldy. Usually after hanging a week or 10 days skins may be removed from stretchers.

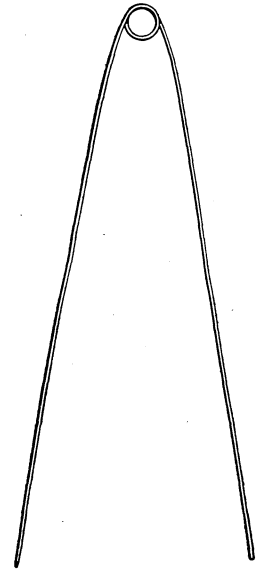

FIG. 18.—Wire stretcher to spread skins sidewise.

Figures 18 and 19 show two kinds of wire stretchers. The wire shown in figure 18 is similar to that used in making cased skins of minks, muskrats, and other small fur-bearing animals. It stretches the skin from side to side. This form is not suitable for skins that are cut or torn more or less along the under side, as it leaves the fur side of the rump exposed to the greasy surface of the skin packed next to it in the bale. The form shown in figure 19 stretches skins from back to belly instead of from side to side, thus leaving no part of the fur side exposed.

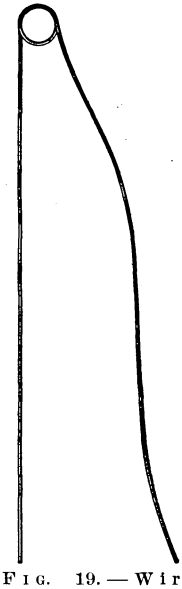

FIG. 19.—Wire stretcher to spread skins vertically.

Unless one is killing a great many rabbits, it is usually preferable to sell the dried skins to a local fur buyer, who will bale and ship for several producers. When there are a large number of skins they may be piled between upright

scantlings as stove wood is piled and kept thus until enough have accumulated to make a bale. They should then be baled under lever or screw pressure, securely bound, and covered with burlap before being shipped.

If rabbit skins are intended for home use and not for sale, they may be tanned by anyone. However, amateur tanners are seldom able to secure as good results as can professional fur dressers, for the

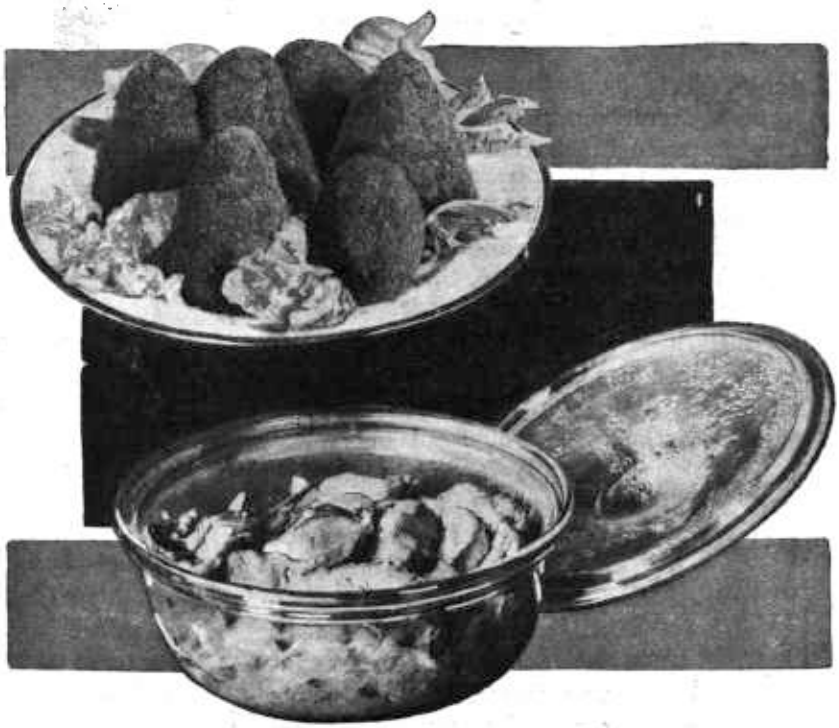

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FIG. 20.—Above, rabbit croquettes; below, casserole rabbit. See recipes, pp. 24 and 26, respectively.

pliability of a pelt depends largely upon the amount of labor put upon it, and the furrier does this labor by the aid of modern machinery.

For home tanning, skins should be taken off "open" instead of "cased"; or, if cased skins are to be tanned, they may be slit down the median line of the belly. The skin should be scraped on the flesh side to remove all adhering bits of flesh. Many amateur tanners are accustomed to use alum to fix the hair, but this is not recommended, as alum hardens the skin and adds to the labor required to make it pliable.

A good tanning liquor is composed of one quart of salt and one-half ounce of sulphuric acid to each gallon of water. As the acid

corrodes metal, this liquid should be kept in a glass or a wooden container. Rabbit skins will be tanned in this mixture in from 3 to 4 days, but they may be kept in it for any length of time without injury.

When removed from the tanning liquor skins should be washed several times in soapy water, wrung as dry as possible, thoroughly rubbed on the flesh side with a cake of hard soap, folded in the middle lengthwise over a line, hair side out, and left to dry. When both outer surfaces are barely dry and the interior is still moist, the skins should be laid over a smooth, rounded board or plank and scraped on the flesh side with the edge of a worn flat file or other

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FIG. 21.—Above, fried rabbit; below, smothered rabbit. See recipes, pp. 23 and 26, respectively.

blunt-edged tool. In this way an inner layer of tissue is removed and the skins become nearly white in color. They should then be stretched, rubbed, and twisted until quite dry. If parts of a skin are still hard or stiff it should be returned to the tanning solution and the process repeated until the entire skin is soft. Fresh butter or other animal fat worked into skins while they are warm and then worked out again in dry hardwood sawdust, or extracted by a hasty bath in gasoline, increases their softness. Home-dressed skins should be matched for color before being made up into garments.

The fur from thousands of tons of dried rabbit skins is annually manufactured into felt hats. Muskrat, nutria, or beaver clippings are used for the finer grades of hats, but of the felt hats in common use, the vast majority are composed of rabbit fur that has been chemically treated to improve its felting qualities. The preparation of fur for hatters' use is a business in itself. Entire factories are exclusively devoted to it, and in the processes no part of the skin

is wasted; the fur goes to hat factories, while the skins, reduced to shreds by the fur-clipping process, are made into glue, and the overhair and waste underfur are disposed of to manufacturers of fertilizer.

Before the war rabbit skins from Europe and Australia were sold here at about 12 cents a pound, or at the rate of from 1½ to 2 cents a skin. Few dealers in American rabbits cared to preserve skins for so little money. In the early days of the war, however, lack of shipping facilities reduced importations, and finally led to an embargo on furs which stopped their importation altogether. For the first time American manufacturers of hatters' furs were obliged to look to American sources for raw materials and to offer prices high enough to obtain them. The demand was supplied from wild rabbits and hares and from domesticated rabbits. Manufacturers of hatters' furs thus became familiar with American rabbit fur; buyers of raw furs became accustomed to handle it; and rabbit breeders and dealers learned that the effort necessary to prepare a cased rabbit skin is so slight as to be worth while even though the skin brings only a few cents.

Under a variety of trade names rabbit skins are largely used also for ladies' furs, the general name being "cony." White skins are known as "French ermine." Those clipped and dyed to imitate fur seal are called "near seal," "sealine," or "electric seal." Skins clipped and dyed to imitate mole fur are "cony-mole." Natural gray skins, which in the hands of expert dyers have taken on black blotches, are called "cony-leopard." Skins from young rabbits are called "kit cony."

The domesticated rabbit's skin is much thicker and stronger than that of any of the wild American rabbits or hares. Its fur breaks rather easily, although in this respect it is scarcely inferior to that of the fox or lynx, but when used as trimming for garments it is usually as durable as the fabric to which it is attached. Rabbit skins suitable for ladies' furs are worth considerably more than those fit only for making felt hats.

Many furriers think that cony is exclusively a foreign product and that the pelts of American-grown rabbits are inferior and of no value. As a matter of fact American breeders are raising the same kind of rabbits that produce the best cony of the fur shops. The climate of the United States is as favorable for the production of good fur as is that of Europe. Where American rabbit skins are of poor quality, the cause is not in breeds or climate but in management. It is possible that hutch rabbits are not so well furred as those kept in open warrens, but this has not been proved.

By adopting cooperative plans, providing uniformity as to fur-bearing varieties kept, and methods of preparing, selling, and exhibit-

ing good dressed skins, breeders can do much to popularize rabbit fur. Rabbit skins now offered to the trade find a ready market, and furriers handle them on commission or buy them outright at a fair price.

DISEASES.

The diseases of rabbits are mainly due to improper feed or care. A few are contagious, and newly acquired stock should not be placed in an established rabbitry until it has been kept under observation in quarantine for two weeks. When it becomes necessary to treat a rabbit, it should be wrapped in a piece of burlap to confine its feet, as its sharp claws are capable of inflicting painful scratches. Rabbits should always be picked up by the loose skin over the shoulders, never by the feet or ears, and should be held as shown in figure 22.

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FIG. 22.—How to lift a rabbit. It should be picked up by the loose skin of the shoulders and supported as illustrated. Never pick up by feet or ears.

COCCIDIOSIS.

Coccidiosis, a disease due to a microscopic parasite, affects the intestines of young rabbits, causing diarrhea, weakness, convulsions, and death, usually at the age of 2 or 3 months. It also causes the formation of abscesses in the liver of adult rabbits but does not appear to affect their health. Coccidia expelled from the body must live outside of it for about 5 days before they are in condition to reinfect rabbits. Hutches should, therefore, be disinfected at intervals of 5 days by washing with boiling water or with a solution made by mixing 1 part cresol with 50 parts of water. Medicines have not thus far been of any avail in combating this disease. Occupied hutches should be kept as dry as possible. Water and feed dishes should be scalded daily. Droppings from infected rabbits should be disposed of where they can not possibly spread the disease.

EAR CANKER.

Ear canker is caused by one of the mange mites. It is infectious and fatal when neglected. Rabbits having ear mange, or "canker," shake their heads, flap their ears, and try to scratch inside their ears with their hind feet. Inspection shows the ear to be more or less covered by a scab. This trouble can be corrected by softening the

scab with soap and water and then applying a mixture of 20 parts olive oil and 1 part carbolic acid or cresol. Several treatments are necessary to effect a cure.

INTESTINAL TROUBLES.

Disorders of the digestive organs come from feeding young rabbits too freely on wet and juicy greens, or from too radically changing their diet. Intestinal troubles may usually be corrected by a change of feed. For constipation, rabbits should have more greens and bran mash, and, if possible, more exercise. Castor oil may be administered if necessary. In a case of diarrhea, green feed should be entirely replaced by dry hay and rolled oats or barley meal. Dandelion leaves are recommended as a remedy for a disease of the kidneys evidenced by reddish-colored urine.

MANGE.

Mange is due to minute parasites which burrow into the skin, causing loss of hair and the formation of a scab. Treatment consists of cutting the hair around the scab, softening the scab with warm water and soap, and applying an ointment made by mixing 1 part sulphur with 3 parts pure lard. This ointment should be applied two or three times daily until a cure is effected. After handling a mangy animal, it is advisable to rub the hands with the ointment to prevent their becoming infected.

SLOBBERS.

When rabbits eat too much green stuff they often have indigestion, accompanied by an excessive flow of saliva running down over the chin and throat. A cure can be effected by rubbing fine salt or alum over the wet parts or by bathing them with a solution of boracic acid after they have been washed and wiped, and withholding all food for 12 hours. Milk, grain mash, and rolled oats are suitable for animals recovering from an attack of slobbers. Rabbits fed judiciously are not likely to have this disease.

SNUFFLES.

Snuffles is a very contagious germ disease resembling catarrh, which in the acute form is quickly fatal, and in the chronic form, though less malignant, seems to be well-nigh incurable. The noticeable symptoms are weakness, sneezing, and running at the nose. The nasal secretions are at first watery then thick. At the first indication of this disease steps should be taken to segregate the sick from the healthy animals. If it is necessary that one keeper care for both the sick and the healthy, he should change his clothes and disinfect his hands before attending the latter.

It is better to kill rabbits having snuffles and to burn or deeply bury the carcasses than to risk their spreading the disease through a rabbitry. It should be remembered, however, that the early symptoms of the disease are much like those of a common cold, and while rabbits having these symptoms should be isolated immediately, extreme measures should not be taken while there is any doubt as to the identity of the disease.

Affected animals should always be placed in dry, well-lighted, and well-ventilated hutches, yet where they will be protected from sudden changes of temperature. They should be fed with care; dusty hay should especially be avoided. Every possible precaution should be taken to keep the hutch clean and the feed and water dishes sterilized. If the malady turns out to be only a cold the animals that have been affected may be returned to their regular quarters when fully recovered. Hutches and buildings occupied by rabbits having snuffles must be thoroughly cleaned and disinfected.

SORE EYES.

Young rabbits are sometimes affected with sore eyes, a disease due entirely to insanitary conditions, and not found in clean, well-ventilated hutches. When adverse conditions are removed, it can be cured by using a solution made by dissolving 1 teaspoonful of boracic acid in 1 gill of boiling water, applied cold. Young rabbits should be inspected daily, and the boracic acid solution applied with a small swab of sterilized cotton at the first appearance of pus in their eyes.

SORE HOCKS.

Sore hocks may be cured by treatment with a 1 per cent solution of cresol, camphorated oil, or iodoform, and by keeping the affected animal on clean dry earth, sawdust, or straw until the sores are healed. This treatment is suitable for other sores and also for wounds. The hind feet of rabbits kept on hard floors should be examined once a week. If they become bare, the soles should be greased daily with carbolated oil, petrolatum, or mutton tallow to prevent sores.

VENT DISEASE.

An infectious disease of the external genital organs, known as vent disease, may be recognized by a swelling of the affected parts and a discharge of mucus. Rabbits having this disease should be isolated in clean, dry hutches and treated until cured by bathing with a 2 per cent solution of copper sulphate or by applying zinc ointment or mercurial ointment.

WARBLES.

Wild rabbits are often found having short, thick grubs between the skin and the flesh beneath. Occasionally these parasites are found in domesticated rabbits. They are the larval form of a fly related to the flies producing warbles in cattle, bots in horses, and screw worms in sheep. They may be removed by slightly enlarging their openings in the rabbit's skin with a sterilized knife and drawing them out with forceps. The cavity should then be treated with a 1 per cent solution of cresol.

ORGANIZATION.

Progress in all lines of industry depends very largely upon concerted action. Thus, organized clubs and associations of breeders of all kinds of animals have been formed which enable the members to hold exhibitions and public discussions, to support periodical literature devoted to their interests, and to obtain for neighborhood use breeding animals of a better grade than the average breeder is willing to buy alone. A progressive breeders' association not only helps its members and other breeders connected with it, but encourages other people to enter the industry.

Rabbit producers, appreciating these advantages of organization, have been quick to form local and State clubs, which are usually affiliated with a national association. Such organizations are developing rapidly throughout the country and are helpful in fostering this growing industry.

The formation of boys' and girls' rabbit clubs also is encouraged by the United States Department of Agriculture through its State, county, and local leaders. By this means the members are furnished instruction, their work is supervised, and information regarding breeding stock is given them. Local club leaders keep in touch with the members and advise them as to improved methods for all branches of their work. Members keep an account of expenses and income, and their reports at the end of each year are mutually helpful.

Continued education of the public as to the delicacy of rabbit meat, supplemented by information on the best methods of breeding and raising rabbits, marketing the meat, and disposing of the fur as a by-product, is all that is needed to establish rabbit raising as a flourishing industry.

Write to the U. S. Department of Agriculture, Washington, D. C., for further information about rabbits.

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