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Scientific Rabbit Breeding

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SCIENTIFIC RABBIT BREEDING

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CHAPTER I.

INTRODUCTION.

The prime object in writing and publishing this little book is patriotic—that through it the Texas Military College may help many men, women and boys too find a really effective means of service. First, direct service to their country and the present and future world civilization, by increasing the supply of available meat for food and fur for clothing. Second, indirect service—that is, by adding to the world's wealth through enriching themselves.

The one who studies this treatise carefully will see how the supply of the best food and clothing may be increased more rapidly through Commercial Rabbit farming than practically any other way; and at the same time find that there is possibly no other business enterprise in America today where one may enter so easily and not only make a living, but actually accumulate wealth.

And let it be said here that the accumulation of wealth is a genuine service to the world—that the man who, by industry and good judgment, amasses a fortune in some creative enterprise is as truly a valuable citizen as the soldier who fights for his country's liberty. Too much condemnation cannot be heaped upon the head of the man who, by questionable business methods, graft, or any other parasitic practice, gets wealth for himself at the expense of his community. Many fortunes have been made this way but the time has come in the progress of civilization when the man who makes his money by crooked methods must not be allowed to enjoy the fruit of his chicanery. Yet we must bear in mind that the world is in the habit of paying for service rendered, and if a man goes through life without accumulating any property, the presumption is that he has not been worth much to his age, or else he would have been paid for his service. Certainly, there are notable exceptions to this rule in the men who deliberately choose a profession that merely affords a living, such as the ministry; or who, by unfortunate family experiences find it impossible to get a start; or who by unfavorable circumstances fail in business. Yet, set this down for yourself now and plan with it ever before you—that if you live and die poor the presumption will be that your lacging in one or more of the following essentials of success: First, Industry—are you too lazy to work? Second, Business Judgment—can you tell a good proposition from a bad one? Third, Thrift—can you save for in-

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vestment, or must you spend all you make for present indulgencies?

It is, therefore, the hope of the author that those who read this book may have opened to them a business enterprise that may either be used as a side line whereby their earnings may be doubled, or by devoting all their time to rabbit farming they may become independent and substantial business men, and that they may be looked upon in their home communities as real financial powers.

Rabbit farming is a dignified business. It is not a pet stock enterprise, nor child's play, though remarkably young boys may make big success at it. There was, a few years ago, in this country an artificial boom in the Belgian hare industry, and we heard of vast fortunes being made; the author heard of one man who was said to have made $132,000 in three years. The boom stage has passed, and Commercial Rabbit farming has settled into a steady business as dignified as cattle raising, cotton farming, or banking. So pay no attention to some firms who may hold out the allurements of $25,000 or $50,000 a year profit if you buy stock from them, but enter the business with a settled conviction that you can make good money out of it—that $5,000 a year is no beyond your reach.

In many countries the Rabbit Industry has long been a recognized business. In France before the war 80,000,000 rabbits were sold through the public markets, which is probably not half the number raised and used. Australia exports annually over thirty-six million head. While in America the industry is in its infancy and of course the greatest fortunes will come to those who start in the business before it is crowded.

The United States Department of Agriculture is just now beginning to encourage the industry. We quote from Agricultural Bulletin Number 496: "Rabbits, which have formed a valuable source of food in Europe, may well be raised more extensively in America. The business of growing rabbits may be carried on by youths and aduts not engaged in military service. The animals may be raised in back yards of cities and towns, as well as on the farms. The Belgian Hare breeds rapidly, matures quickly, and produces a palatable and highly nutritious meat. The cost of production is less than that of any other meat, not excepting poultry. Practical experience has demonstrated that rabbit meat can be produced in unlimited quantities at a cost of about six cents a pound; and by utilizing lawn cuttings and other vegetation that would otherwise be wasted, the cost can be made even lower."

The comparative profitableness of the Rabbit may be illus-

trated by a trade the author made a few weeks before this writing. A man came up to the College breeding hutches with a yearing steer to exchange for Rabbits, and was well satisfied when he got one ordinary, unregistered, four-months old doe for his steer. Remember that it took a cow a whole year to raise that one steer and that he had already eaten many times his weight in high-priced feed; while the doe, when taken out of her hutch, left five brothers and sisters just as valuable, all of which had been raised on a few handfuls of oats and hay, and that their mother was close by in another hutch with a new litter of seven little fellows two weeks old, each one of which will in a wonderfully short time be worth another steer.

There is real money, and a goodly amount of it, in Rabbit farming. But let everyone who would enter the business be sure to give it the proper thought. Read and study carefully the following pages; then get good stock. Cheap breeding stock will prove very expensive, even if you accept it as a gift. Put your Rabbit farm on a scientific basis. Do not use haphazard methods, but study carefully every detail and you may soon be independent, and be recognized in your community as a valuable wealth producer.

CHAPTER II.

HISTORY OF THE COMMERCIAL RABBIT.

The Commercial Rabbit is fast becoming an important source of meat supply for civilized man, as the wild hare and rabbit have always been for man in the earlier stages of civilization. No attempt will be made here to give a learned scientific discussion of the rabbit, but a practical guide, with sufficient scientific data to lay the foundation properly for real scientific results in the breeding of rabbits.

No complete history of the Commercial Rabbit can be written, for the early breeders were not educated men, nor did they realize the future value to the world of the work they were doing. No history is ever recorded unless the men who make it or see it made are educated men, and men who realize at the time that the work thy are doing will bear valuable fruit for future generations. Neither of these conditions were met in the early stages of the rabbit industry, as the breeding was begun and carried on for centuries by the peasants of Western Europe.

Man has always domesticated the meat animal when his meat supply, the wild animal, began to be scarce. As population became denser wild animals became fewer and meat harder to secure. Primitive man killed his wild meat, ate what he wanted, and left the other to rot. When this became harder to get he thought more of saving for future use what he did not want immediately; so, steps were taken to preserve it. Thus the art of drying and curing meat was developed. When, in the chase, certain animals were captured alive, they were saved alive for future use by tying or fencing, while the ones killed in the capture were used for immediate needs. Some of those kept in captavity would bring young and man got the idea of raising his own meat so as to have it handy.

The first animals thus domesticated were naturally the larger ones, as cattle, for they were the first to become scarce and, furnishing a larger amount of meat per individual, were first thought of in this connection. But as the habit of domestication became fixed, and the smaller animals became scarcer by man's closer occupation of the territory, he naturally turned to these smaller animals and added them to his herd.

In Western Europe the larger wild animals became too scarce thousands of years ago to supply the populace with meat, but the small wild hares and rabbits were still abundant. They, of course, gradually became scarcer and three or four hundred

years ago the peasant, who had always depended considerably upon this for meat during the Fall and Winter, began to domesticate them, just as, thousands of years before, the early civilized man had domesticated the cow, sheep, and dog.

This domestication was not confined to any particular country, but was carried on simultaneously by the peasants of all the countries of central and western Europe. It was the wild rabbit, rather than the hare, that was found the most susceptible to this process of domestication. While the Belgian Hare was the first of the species of Commercial Rabbit to be thus raised for meat, it must be remebered that the Belgian Hare is not a hare at all, but a rabbit. The name "Belgian Hare" has been given it in the English speaking world from the fact that it was first imported to England from Belgium, and the standards of the present Belgian Hare were developed in England for a century or more previous to 1889, when its characteristics were officially standardized. Soon after this it was imported to America and the English Colonies.

Now the work of these English Fanciers, for they were Fanciers—not commercial breeders—was in some ways very valuable. A fancier, by the way, is one who breeds for showy marks, while a commercial breeder is one who breeds for intrinsic value of fur and meat. In two respects the fanciers have benefited the industry—in one way they have injured it. They bred for a smaller bone. It is meat we want, not bone. Then they improved the color and texture of the fur. And be it remembered that beauty is the primary element in the demand for clothing.

The fancier, however, has also sought for slender, racy appearance in the Belgian Hare, and made him smaller than necessary, thus affording less meat. A Belgian Hare weighing over 8 pounds would, even today, be thrown out of the show ring.

The English fanciers, during the century of development, did not produce their own meat, but bought their rabbit meat from the continent, while they developed their strain of Belgians for beauy as pets. During this time they added to the richness of color. So, in the standard today we find the English mark of Rufus Red, and the breed is known as the Rufus Red Belgian Hare Rabbit. These fanciers, it might be added, were wealthy hobbyists, not peasant commercial meat producers.

It was natural that the raising of rabbits in America should come later than in Europe, for we were in a more primitive en-

vironment. Up to a few years ago the wild rabbit was abundant, but as our population became denser the same primary reasons that caused the rabbit to be domesticated in Europe worked in America to encourage its breeding. And the extreme high price of meat in the last few years has laid the foundation of a great commercial rabbit industry.

In America there have been a few real fanciers engaged in raising commercial rabbits, but the majority of those who are only fanciers have turned their attention to rabbits other than those of recognized commercial value. There are many of these fancy rabbits, such as the English Lop-ear, the Dutch, the Havana, the Polish, etc. However, it was to be expected from the practical nature of Americans that the industry in our country would devolep along the lines of real efficiency in supplying the demand. And this is what has been done.

There are three standard breeds of Commercial Rabbits: the Belgian Hare, imported from England, and possibly improved on in America; the New Zealand Red Rabbit, said to have been brought from New Zealand first by a sailor, but really, we do not know when it came or how it was started. It is distinctly an American product, at least in its commercial value. It is larger than the Belgian, thus supplying more meat with less cost for feed. The Flemish Giant, possibly a cross between the old gray Belgian and the Russian white rabbit, is a still heavier rabbit and is bred for the largest possible size. It is either gray, black, white or mixed, and does not yet breed true to color, because of its hybrid oirgin. There is a strong tendency now, however, to establish a steel grey standard, and we fear that weight may be sacrificed to color in future standards of this breed.

This is a mere sketch of the history of Commercial Rabbit breeding. It is evidently in its infancy in Americ and holds great commercial possibilities. Anyone wishing to get into a movement that is on the rise, and one that bids fair to a tremendous future in supplying the world with its meat and fur, will make no mistake in studying and raising the Commercial Rabbit. New breeds may be developed, and some breeds that are now mere fancy pet stock may be developed into valuable commercial stock. The field is broad and promising; let us have more breeders of this new meat and fur-bearing commercial animal.

CHAPTER III.

LAWS OF INHERITANCE.

In order to get results in any field of activity it is necessary to understand the fundamental laws of nature as they operate in connection with that particular field. In breeding rabbits we have to do with life, and life is no simple matter. We cannot produce life, and yet, life is produced under our hand by combining certain life forces. The success we have with this production—the degree of improvement we make in the stock we are breeding, will depend on the wisdom with which we combine the life element. Therefore this is not merely a question of passing interest but of vital importance to the success of our undertaking.

The more one knows about the scientific laws of life and the channels through which life is transmitted, the greater success he can make in the development of any form of life. It is really worth while for one to make a close scientific study of the laws of inheritance, the method by which types are transmitted, and what are the scientific results of certain combinations—in fact, of all questions along this line. However, the scope of this guide will not permit a very lengthy discussion of these subjects

It is, however, absolutely necessary for any kind of success to understand a few of the more fundamental scientific laws of inheritance, and therefore we will give them in as clear and brief a way as possible. If you would become a great producer, study further along this line and you will find it profitable as well as exceedingly fascinating. And let us add just here that a lack of scientific knowledge along these lines is the greatest handicap to commercial rabbit breeding, as but few people in the industry have any real scientific knowledge of the fundamental laws of inheritance. Some very fine results have been attained in spite of the lack of real knowledge, but it has been a case of "main force and awkwardness."

Some very fine mineral deposits were found by the pioneer prospector with pick and shovel, and practical experience. But the real work of revealing the mineral wealth of the earth was not accomplished till the sciences of Geology and Mineralogy were brought to the aid of the prospector. Neither will the highest possibilities of commercial rabbit farming be realized till a thor-

ough knowledge of the scientific laws of inheritance are coupled with the practical experience of breeding. To accomplish this the Texas Military College established its department of scientific rabbit breeding. It is hoped we can in part do for the rabbit industry what the State Agricultural colleges have done for other kinds of live stock.

LIKE BEGETS LIKE. Of course, we all understand that to produce a result we must have a cause, and that like causes produce like results. Nothing will appear in the offspring that was not in the parent, either actively manifest in the life of the parent or dormant in the blood. Traits of character or physical attributes may sleep for generations and then crop out. But nothing crops out but what was in the blood of the parents.

It is extremely important, if you would improve your stock at any point, to know your different breeders so as to be able to select the best ones for the results you want. For instance, if you want to improve color: you may have two specimens of nearly equal color; one may even show a little better color, yet his parents may be decidedly poorer in color than the parents of the other specimen. For best results you will select the one with good color whose parents were good in color.

Nothing may be expected in the offspring that is not in the blood, and any trait in the blood may be expected in the offspring.

TRAITS TRANSMITTED AS UNITS. Another fundamental law, a knowledge of which is necessary to real success, and one of which most practical breeders are ignorant, is that traits of character and types of life are transmitted as a unit, not as a blend. The life of any individual animal is an organized unit, but it is composed of hundreds, yea, literally thousands of traits, and each trait is a unit to be figured with alone. For instance, the circulatory system, consisting of the heart, arteries, veins, and blood, may have hundreds of different strong points or weak points. The heart action may be good or bad, the blood may be rich in certain elements and poor in others. And so on ad infinitum.

Now this law is that each definite trait unit is transmitted to offspring as a whole. In creating a new life, the life germ from two distinct lives are brought together. The life substance from each of these two individuals contains all the peculiar traits and types of the life from which it is thrown. Nature's miracle of

reproduction follows from the combination under the proper circumstances of substance representing these two lives. The life resulting from the combination, the young, has certain traits and types. These he has gotten from his parents. But each parent has just as many types as the young can possibly have; so he cannot take all from both parents.

The problem is the same as if 200 marbles were thrown into a box from two distinct piles, and then 100 of them taken out to form a new pile. The problem would be simple if we could use as an illustration two liquids which would mix readily, such as wine and water. A pint of wine mixed thoroughy would give a uniform result any time you dipped a small portion from it; but should you mix 10,000 marbles from a hundred different kinds and stir them, then take out two handfuls you would certainly not expect each handful to represent the same proportion from the original source.

In this respect animal life is like the marbles—not like the liquid—and each parent brings to the combination many combinations from ancestors that have never expressed themselves in his own life; they have been dormant in his development, but may be transmitted and become effective in the developing life of his offspring. And the fact of first importance is that these traits are transmited as units, not blended.

In making the fact clear, let me appeal to your observation. You have doubtless noticed a large family of children, one of whose parents had black hair, and the other red. Some of the children's hair was as black as their father's, while others inherited the red of their mother's. None of them had the perfect blend. So, for instance, if you want to produce a rabbit with ears exactly 4½ inches long you would not select one with ears 5 inches long and another with ears 4 inches long and expect to to get 4½-inch ears. Some of the young ones would develop ears 5 inches long, and others 4, while, of course, there always would be some variation as there always is in nature, but not an exact blend.

There are certain results that apparently contradict this unless subjected to thorough scientific analysis; the scope of this guide will not permit their discussion. The breeder should recognize the established law of inheritance as above stated, and seek for results by combining known traits either in the indi-

vidual or his sires, and not count on getting the logical effect of a blend.

ACQUIRED CHARACTERISTICS NOT INHERITED.—Here is one other law of inheritance that has practical results for the rabbit breeder, as well as breeders of other live stock; only those characteristics that are natural, rather than those that are acquired, can be transmitted to the offspring.

Tha old question of how many generation would it take to breed a tailless rat by cutting off the tails of all new-born rats could only be asked in an age of ignorance of this great law. You can easily breed a tailless rat; however, not by cutting off the tails of the breeders, but by selecting the rats with the shortest tails to breed from and repeating the process till the result is obtained. Were this not true, the man who had accidentally lost an arm would have one-armed children. You can breed o any type you wish, for life is infinite in its possibilities; but you must go at it in the right way. And that way is to take for breeders those which show naturally the greatest tendency towards the type you want, not by trying to train the individual to what you want and then expect it to transmit its training.

A very perfect illustration of the right and wrong method in this respect in the effort made for centuries by the French and Chinese to change the size and shape of their ladies' feet. For some unaccountable reason the Frenchman and the Chinaman both got the idea centuries ago that a woman with a small foot and high instep was very beautiful. The Chinaman tried training the foot, and for centuries the baby girl had her foot bound and forced to conform to this standard of beauty, but each generation the work had to be done all over, as there never was any perceptible lessening in the natural size of the foot. The Frenchman, however, just followed the Cinderella fable and picked as his wife the smallest footed woman. If there were any old maids in France they were the ones with the biggest foot and lowest instep. All with the result that the French woman is known the world over for her small foot and high instep.

Should you wish healthy stock, do not select as breeders those who were naturally weak and had to be doctored to keep healthy. They may be healthy now, but more than likely the children will have to be doctored more than their parents, for it is natural that a weakness should increase, rather than diminish.

If you want a strain with smooth, glossy fur, do not pick your future breeders when they are little and groom them each day; they may have smooth, shiny fur when grown, but will not start a strain with improved fur. Just be careful to pick only those as breeders which, without any artificial coaxing, have fur nearest approaching the type desired. Repeat that for a few generations, and you will see a marked improvement.

I have seen in a rabbit breeder's guide elaborate directions for fixing up with wax and tape a young rabbit's ear that does not set right, and making it grow in the desired shape. That is all right for the show room for that particular specimen, but if bred, the young from it will show the same tendency to irregularity in the ear as though its parent's ear had never been forced to grow into the correct form.

There is a lesson in this in handling disease. Disease is **not** inherited. The constitutional weakness that may have caused the parent to acquire a certain disease is most certainly transmitted. And if the disease has weakened the vitality of the parent, the offspring will be diseased from birth.

VARIATION THE LAW OF NATURE.—One may ask if we can not modify an individual and have the effect transmitted, how are we ever to start anything new? Nature has answered that question by having never made any two specimens of anything exactly alike. It is only man-made machinery that produces duplicates.

A mere suggestion as to the cause of this may be gathered by a closer study of the above section on unit transmission. Whatever be the cause, the fact is universal. All Nature's myriad variety of plant and animal life may not have been developed from one original life germ by natural and sexual selection. The God of Nature may have done it some other way, but the more one studies the law of variation in all life forms, and the infinite possibilities that lie in that variation when combined in the increasing geometric ratio that is necessary in sexual reproduction, the more fully one realizes that universal evolution is by no means out of the realm of probability, to say nothing of possibility. The Almighty Creator of the universe certainly could have used that method if he had chosen.

Just look what man may do! For instance, he may take just two average dogs and from that one pair he may breed a dog

either large enough to ride upon or small enough to carry in his vest pocket if he will persistently, generation after generation, select the largest or the smallest for future breeders.

By realizing the opportunities made possible by variation, the commercial rabbit farmer may recognize to what extent the breed can be improved. If scientifically handled, this industry may, in the future, solve the world's meat problem. Space, which in man's earlier experience was an absolute handicap, has already become his most valuable possession. Already the commercial rabbit has shown his ability to produce meat and fur in less space than any other known animal. And the industry is yet in its infancy. Let breeders realize the possibilities before them, and plan scientifically for the largest results.

CHAPTER IV.

WHO SHOULD RAISE RABBITS AND HOW TO START.

The question of who should raise rabbits can be answered very simply—all those who want to make money and who have a few feet of ground space at their disposal. For be it remembered that rabbit farming is a business, the main purpose of which is to make money, and in scarcely any other business can one make a living more easily. Some space is necessary, of course, but this need not be a great amount, nor particularly located, as is explained in the chapter on Housing.

One essential to success in the rabbit business, as in any undertaking, is that the one who succeeds must love the work. So one who does not love to work with live animals must cultivate a love for them before he can really succeed. This, however, is not a difficult task. All healthy, well-kept stock, in clean surroundings, is attractive. What can be more pleasant to work with than a beautiful thoroughbred rabbit! It is a pleasure to watch them grow, and the more you work with them, developing a strain of stock that will not only make you money, but will improve the general breed of rabbits, the more you will love the work.

It is presumed that most of those who begin raising rabbits will be people of limited means, and consequently will do their own work, attending to their rabbits in person. However, some men and women of wealth, because of their desire to increase the world's supply of food and fur, and to become real producers, will invest in rabbit farms. Such men will, naturally, have other pressing duties and cannot attend personally to the needs of their stock, but must delegate this work to some one else.

Just in this connection, let us state a general essential of success in any undertaking, especially true in rabbit raising. One of the world's greatest financiers was once asked how it was that he could invest in so many different enterprises and make a success of all of them. His reply was to give two rules that he always followed. First—he never invested in any enterprise unless he was in position to shape its policy if he wanted to do so. Second—he never put money into a business until he had first gotten the consent of his mind to take the active management

of it if it showed signs of failure. By these two rules he always succeeded.

Now, to the man or woman of means! You may safely invest in rabbit farming and be a producer worth while, and get some one to do the work for you. But the time is likely to come when your personal attention at feeding or breeding time will be required to make a success of the enterprise. So get the consent of your mind before you go into the business that if all does not go well you will take hold of the active management and make it go, for it certainly can be made to succeed, and you can do it.

To the professional man with regular office hours—to the laboring man with regular working hours—the rabbit industry offers a peculiarly attractive field for spare time early in the mornings and late in the afternoons. If worked properly, the side line may bring in more revenue than the main day's work.

The housewife who would like some time in the mornings and evenings out in the open with beautiful live things will find that by careful management she can increase both her pleasure in life, and her pin money. Poultry has long been the forte of women. The breeding of rabbits is just as attractive and requires less work and may be made far more profitable.

Especially do we want to emphasize that rabbit breeding is peculiarly suitable for the school boy. First of all, every boy ought to have some business of his own—one that he is responsible for, in order that he may learn business management by managing. No boy can spend his entire leisure time in idleness or worthless play and expect to develop into a successful business manager when he is a man.

My young friend! Do you expect to be a successful business manager in after life? If so, as a boy, you should develop resourcefulness and get experience in business management; and nowhere can this be done better than in raising rabbits. Get a trio, build three hutches, and plan and manage the business. Then when you want a few extra dollars for circus day you will not have to ask for them.

Parents all want their boys to have good business judgment, but often forget that the only way to acquire anything is by exercising the faculties. They do all the managing for their sons in a business way, allowing them no opportunity to develop initiative in a business enterprise—no opportunity to gain invaluable

experience by actually managing a business all their own; and then are surprised when a boy reaches manhood if he does not blossom at once into a successful business man.

Give your boy some business all his own—one that may be managed on a small scale, yet one that, if managed with energy and business sagacity, may grow into a big money-maker; turn him loose at it, possibly advising him here and there, but let him manage it.

No business under the sun can afford such a combination of advantages for the boy in training and possibilities in money-making as commercial rabbit farming. While he should realize emphatically that he is not raising pets, but breeding live stock for the commercial market, still the rabbit will call out those admirable qualities in the boy's nature that attachment to animals always calls forth.

Then the scientific knowledge the boy gains from first hand contact with actual life will be wholesome as well as highly profitable in his educational development. The facts of nature, the laws of inheritance, and the necessity of strict observance of the rules of purity will all be indelibly impressed on his mind, and can but result in building a stronger and better manhood.

HOW TO BEGIN.—As soon as you decide to enter the business of commercial rabbit farming, get some young stock of the best possible blood.

Do not wait till you think you have mastered the details of the business before getting stock. Get some rabbits and then study with the rabbits before you as an object lesson.

Do not make the mistake of trying to start with too many. A trio is an abundant supply for a starter, as there are many things you must learn and you will doubtless make mistakes. If you start with too many you cannot study each specimen as you should to learn the lesson it would teach. If you should try to start with more than three you will be tempted to sacrifice quality for quantity; you will buy cheap ones in order to get several. Learn now, once for all, that cheap stock is not worth raising. It is much better to invest all the money you have for this purpose in two or three fine blooded specimens, than to buy fifty ordinary ones. Get fine stock, and then your young ones will be fancy animals. Remember, it does not take long to build up a herd. One doe will raise at least 25 young ones a year, so in

a short time you can have a large herd. If you invest in standard rabbits, bred and tested by a standard breeder or in a standard institution, your herd will be something to be proud of, and will be a big money maker; while if you buy cheap stock from an unreliable breeder, you will neither make money nor have stock that you will be proud of.

Now, one other point of advice. Buy young stock. It is all right to buy a full grown doe, but if you will put the same amount of money into young stock you will get two advantages:

First, you will get better stock for the money. As an illustration of this, we have now in the college hutches a litter of seven, three months old. They must now be separated, necessitating the building of seven new hutches. This is the finest pedigreed blood and at seven months old we would probably ask $50 each. Rather than build seven new hutches we might today take $40 for a trio of these fine young rabbits. That is an illustration. Consider it and think what you would gain by paying $40 for three young rabbits which in three more months might cost you $150.

Buy the best stock you can possibly afford, and remember in paying the same price to a reputable breeder you get finer stock by buying young than you do by paying the same money for mature stock.

The second advantage of starting with young stock is that you actually, by experience, learn the ways of rabbits before they are ready to bring on new litters; and for the beginner this is important. Do not be impatient and spend a few dollars for mature stock. If this is the best you can do, wait till you can buy high grade young stock. It will not take long for them to mature; you can almost see them grow. In a few weeks they will be ready to present you with large litters, and then you will be thankful that you spent sufficient money to get good blood.

CHAPTER V.

THE HOUSING PROBLEM.

The question of housing is the real problem in rabbit culture. Little actual space is needed, but this space should be properly arranged. The home of one rabbit is the hutch—a group of hutches is a rabbitry.

As is stated elsewhere in this book, more and better meat can be produced in less space with the commercial rabbit than with any other animal. But this space absolutely must be arranged with three essential principles in view all the time. These principles are: First, cleanliness. Rabbits will not live and thrive in filth. Second, sun-tempered air. It is not necessary to have the direct sunshine in the hutch; in fact, during hot weather any direct sunshine except early morning and very late afternoon sun is detrimental. The nest box should never be directly in the sunshine. Sunshine easily destroys fancy coloring. But the hutch must be arranged so as to have plenty of air for ventilation, and this air should come freely from nearby sunshine.

The third essential is to keep the hutch dry and free from drafts. Wet floors breed all kinds of trouble, and while the rabbit will thrive in most severe climates, he cannot stand a draft.

There has possibly been more written about housing than all other phases of Rabbit Craft combined. Most treatises contain drawings and descriptions of model hutches. They are fine for the man who planned them, for he was considering the exact location of his property. But for you they can be used only as suggestions of what you ought to have. Scarcely two people in America have back yards located exactly alike, and if you want to start in the rabbit business get the fundamental principles of the hutch down thoroughly and then work out the details to suit your location.

So we prefer not to give elaborate descriptions of any model rabbitry, but merely to impress upon you the essentials, and then offer some suggestions. With this knowledge, if you have sense enough to make a success of the business, you can arrange your hutches to fit into your present premises better than we could suggest one plan that would fit anywhere approximately, and nowhere accurately.

The fundamentals (get these now and always remember them) are: First, arrange your hutches so they may be easily cleaned, and then keep them clean. Second, arrange them so they will have plenty of ventilation with sun tempered air. Third, build and place them so there cannot be a draft striking the rabbits; keep them dry. We have repeated this because we want you to keep it in mind at every step of the construction. The individual hutch may be as small as 2 feet wide, 4 feet long, and 2 feet high. It is better if it is 3 by 5 feet; larger than this is unnecessary, unless you want to turn several litters together at weaning time. Then a room 10 to 12 feet square is not out of place.

The commercial rabbit has been bred in confinement for hundreds of generations and will not do well turned loose in the yard like chickens. Outdoor runs any size you wish to make them are all right, provided you do not keep them constantly on the same ground; if you do the germs of cocidia will develop and kill them.

The first commercial rabbit brought to the college was purchased from an exhibitor at the state fair. She was a bred doe, and we had no hutches built. We simply took an old goods box about 2 feet wide and 2 feet high, and 4 feet long, knocked off one side and put 1-inch poultry wire over this. We then turned it bottom up on the garage floor, took an apple box about 12 inches high and 12 wide, by 14 inches long, and cut out a good size hole in one end and turned it bottom side up under the big box as a nest box; we turned up the edge of the box each day and swept it out and disinfected it. And we raised a fine little bunch of nine babies.

Hutches may be stacked on top of each other, two three, or four high. Two high is the most convenient. The bottom one should be at least one foot from the ground or it will be damp they should be solidly closed on three sides, or else you will have drafts. The front should be built of 1-inch poultry wire, or else you will not have the proper ventilation. This front, of course, should be hinged, that you may be able to clean out the hutch and attend to the rabbit. The long side had better be the front; otherwise it will be more trouble to clean out and keep dry, and you may neglect it. In making the wire door, nail the wire on the inside of the frame, as rabbits are rather bad to gnaw at the door frame.

We have hutches built out under the oaks of the campus for summer, and others inside the buildings for winter. We keep some rabbits outside all the year, and some inside; though the greatest number are outside in summer and inside in winter. This is done simply because it is almost impossible to keep them dry and free from drafts if they are outside in winter, and to give them proper air for ventilation if they are kept inside in summer.

The hutch floor may be covered with shavings, sawdust or straw. These materials absorb the filth, and by using them you may not find it necessary to clean over twice a week if only one rabbit is in a rather large hutch. Some breeders make a practice of placing an open box about a foot square and three inches high, partly filled with sawdust in one corner of the hutch. Most rabbits will learn to use this box for a toilet; thus the labor of cleaning is lightened. The nest box should be a foot square, with a hole in one end. It should have a hinged side or top, or some other arrangement for easy and thorough inspection. It should have a top on it, for two reasons. First, the rabbit may have proper exercise in jumping up and down. Second, that the mother may get out of reach of the young ones when she does not want to nurse them. As a rule, rabbits only suckle the young twice a day—early in the morning and late in the evening.

If there is no top to the nest box, a shelf should be built. It is a good idea to put a hurdle in the hutch for young rabbits 2 to 4 months old—jumping this will give them the proper exercise for development.

Much has been said in the last few years about self-cleaning hutches. These are all right if you want to build them. You do not need any elaborate specifications. I will give you the principle, and you can construct them any particular way you wish. The principle is that of the double floor. The floor upon which the rabbit lives is level, but made of 2½-inch strips with from one-eighth to one-quarter inch cracks. Under this is a second floor, very steep—2 to 4-inch slope to the foot. The filth, falling through the cracks of the first floor, rolls down this floor and out of the hutch. Self-cleaning hutches will be found the most economical in the long run, as they will save a great deal of labor.

If the one-floor hutch is used the floor should be made tight, out of matched lumber and a slight slope, so that water will

drain out; though rabbits should not be forced to live on a steep hillside. If you use the self-cleaning hutches a trough can be constructed that will catch the filth from two or more hutches and water can be run down through the trough to wash it out

Each hutch should have built into it a hay rack, as hay should never be thrown down on the floor of the hutch. This rack may be constructed of any kind of wire; one-inch poultry wire may be used if the rack is not too deep. Care must be taken not to build the rack so that young rabbits can crawl into it.

The hay rack should have a strip in the bottom, an inch or more thick, so the fine particles of hay will not fall directly on the floor where filth can seep into it. It should be built V shape, narrow at the bottom. The top may be opened and exposed to the outside of the hutch; then it will not be necessary to open the door to feed hay.

Feeding vessels should be heavy, stone or wood, as rabbits will turn over light ones or knock them about in their play. They should not be permanently fastened, however, as they must be taken out and disinfected.

In starting your rabbitry be sure to build so it can be enlarged. No industry increases as rapidly as commercial rabbit farming. A large industry can grow quickly from a very small beginning. If you do not build so as to be able to add to it, you will be surprised how soon you will have to tear down and rebuild.

CHAPTER VI.

FEEDING AND FOOD VALUE.

The most fundamental key to scientific life building is the proper knowledge of food value. Your success or failure will depend upon the way you feed. Other things are necessary helps but feeding is the real thing; for the food is what makes the rabbit. Every atom of its little body is changed frequently. There is not one single atom in its hair, flesh, or bone that it possessed a few months ago. Then what is that eight or ten pounds of flesh, fur and bone? It is simply the digested food that you have given.

In raising rabbits, as in any stock farming, you are creating life. The wonderful problem that is given you is to take a gallon of oats, a bunch of hay, and a jug of water and so mix it as to form a rabbit. Fascinating! Well, what could be more interesting than to thus manipulate that oats, hay and water, and watch it develop?

In raising rabbits the breeder is more surely the architect of the body and life than in almost any other form of stock raising. For the rabbit is confined to the eight or ten square feet of his hutch home, and is helpless in your hands; he can eat only what you give him. If you don't give your poultry a well balanced ration they will rustle for it, but your rabbit is confined and cannot do that.

It is true you cannot make a rabbit by any kind of chemical or mechanical combination of your oats, hay, and water without nature's life spark, and you cannot create this life spark except by growing it from other life, as the housewife continues her yeast by taking a pinch from the old to grow the new. But remember also that this life spark cannot develop in the body and life of a rabbit without your building it out of food. The life spark of the baby rabbit is, as it were, the scientific crucible in which you mix and burn the food, creating the live, growing, beautiful thing that you call a thoroughbred rabbit.

Bearing this in mind, one begins to realize the supreme importance of knowing what to feed and how to feed it. That is how to give a scientifically balanced ration in order that the proper results may be obtained. Poor stock, properly fed, may

make very attractive animals, but the very finest blooded stock, improperly fed, will only produce the shabbiest scrubs at best.

The first principle of a balanced ration is a varied ration. Above we used, for purpose of illustration, oats, hay, and water. Now, the author has actually produced fair specimens of rabbits with absolutely nothing but these three, yet no one diet, even the best balance ration, when constantly fed, can give satisfactory results.

Variation is the law of life. All animal forms have been evolved because life has, instinct in it, the law of variation. The principle means by which this variation has operated is that the very conditions of all wild natural life is such as to force it to feed on a variety of things. There is not found in the natural state a sufficiency of any particular food for any one animal to live simply on it alone. So in the wild state the rabbit, like all other animals, fed on a variety of things, and for the best results this same variety must be kept up in captivity.

While variety is essential, there is a reason why it is essential, and this reason must be understood, or else one might be satisfied with a mere variety without any consideration as to what that variety is. The reason for it is very simple: The completed rabbit that we wish to build has fur, flesh, fat, and bone; these differ in constitution and, as they must all be built out of food, that food must contain elements from which each may be properly built.

The scope of this treaties will not allow a full discussion of food analysis, nor does the practical breeder need it. What is needed, and what we will give, is a very concise statement, so as to illustrate the essential importance of scientific feeding, and then, rules for practical guidance, naming the foods, and methods of feeding that we have found best.

The body of an animal contains five elemental substances—water, ash, protein, fat and carbohydrates; and to give a balanced ration means to give food that contains the proper proportion of these five elements, that they may be built into the body. The following is simply a general analysis of some of the most common food used in the rabbitry. Alfalfa contains about eight per cent water, nine ash, fourteen protein, sixty-six carbohydrates, and two per cent of fat. Carrots, eighty-eight per cent of water one of protein, one of ash, nine of carbohydrates, and a mere

fraction of fat. While oats contain nearly eight per cent of fat, seven per cent of water, and fifteen per cent of protein.

However, what we as rabbit breeders want is practical results in building life, and not chemical analysis; yet, without chemical analysis as a guide we would be lost in a maze of guesswork. So below will be found a few practical rules for selecting the proper balanced ration with its administration.

First, feed regularly, twice a day at about the same time, giving a smaller feed in the morning than at night. One feed a day will prove successful when time for two cannot be found. This should be a good strong feed at night.

Second, feed some grain once a day. But only the amount that will be eaten up clean in about 20 minutes. If the rabbit leaves some, feed less next time; if she eats it up clean in less than 15 minutes, add a little more next time. Grain may be fed twice a day, but once will get just as good results. Give them all they will eat but do it so they will always be hungry for the next feed.

Oats and cracked barley are possibly the best all-round grains; a mixture of cracked corn, milo, and wheat is good.

Third, feed hay at least once a day—and do not put it down on the floor, for them to step on and mess up. Dry hay is the only food that may safely be kept before them all the time and it is best to let the hay rack get empty before the next feeding time. Alfalfa is probably the best all-round hay.

Fourth, green food. This will be found to be one of the very best feeds, as well as the most economical. Any green thing may be fed except cabbage leaves and peach branches. There are only two rules to follow. First, be careful not to feed too much, especially in the spring when you first begin using it, and most especially with the young. However, if you will use judgment and give some dry feed, a little grain and hay, your expense during the spring and summer will be reduced to a very low minimum. The second essential thing to notice in using green feed is that it must not be wet, or going through the heat decomposition. Garden scraps piled into a basket and set till you use them up will heat and be poisonous to your rabbits. Potato peelings should be boiled before using.

Fifth, mashes. A frequent use of mashes will be found very beneficial if care is taken not to make it sloppy. Wheat bran

mash is excellent, especially in cold weather, made with warm water. A good mash is a mixture of bran, barley meal and a little linseed meal; care must be taken not to feed too much linseed meal, while a little will be found to be a most excellent tonic, especially for show animals.

Stale bread is good if not moldy, and, softened with milk, is most excellent, especially for young or suckling does. If you will toast the bread (be careful not to butter it) and then crumble it and soften with whole or skim milk you will have a splendidly balanced ration. Milk is good used sparingly. Oatmeal is fine.

Sixth, salt and water. Fresh water should be given twice a day—once a day in very cold weather, using warm water; never water that has been frozen. While water is essential it is still more essential that it be clean, and that all water dishes be kept perfectly clean. Use water dishes that can be freqnently scoured.

Give your rabbits salt. Rock salt may be used by sticking a piece in the wire netting or suspending it from a string tacked to the top of the hutch; or spool salt may be nailed to the side of the hutch. Never allow rock salt to get down on the floor and get dirty. Really, the safest way is to sprinkle a little table salt over the grain or mash two or three times a week.

CHAPTER VII.

MATING AND CARE OF YOUNG.

There are several very important things under this heading that may be plainly and briefly stated. Many volumes have been written on the subject, and our purpose is to state simply those things that must be known and followed to assure success.

HAVE A DEFINITE AIM. Nothing can be accomplished without a definite aim. Study the chapter on standards, then compare it with your stock and arrange clearly in your mind the strong and the weak points in your stock, and set about breeding the different specimens you have in such combinations so as to increase the good points and to diminish or eliminate the weak ones.

The most essential thing is to get high-class breeding stock to start with, or with which to improve the stock you already have. Do not think that any kind of new blood introduced into your herd will improve it. Get the best, and to do this you must pay a good price, and demand a high scoring record.

Do not buy the first rabbit offered you just because you are offered a pedigree with him. The right kind of pedigree is worth something, for it shows that the specimen is well bred But there are rabbits on the market carrying regular pedigrees which pedigrees are not worth the paper on which they are written, for they simply recite the names of their sires for three generations, which may not cover but a couple of years. And what does the name Bill or Sallie signify? Or they may be mongrels with high-sounding names. Such pedigrees are usually as worthless as the scrub stock to which they belong.

If you get a pedigree, demand that the sires and dames appearing in the family tree are shown to be worth having their blood preserved, and their names recorded. Demand that the pedigree show either registration numbers or prizes won.

The best way is to get stock from a reputable breeder who knows the science of breeding, and whose standing is such as to assure you good stock. If you are just beginning, buy a pair, or a trio. If you already have stock, write the breeder from whom you expect to buy a description of your stock, with its strong and weak points. Tell him where you want to improve it, and leave

to his judgment the stock you need. But be sure you are dealing with a man, firm, or institution who will not take this opportunity to ship you what he wants to get rid of rather than what you need. Do not expect to get this high-class blood for a mere song.

The Plan of Mating.

In building to your ideal stock the blood of the father and mother are both equally important. However, if you wish to improve a herd you already have, the quickest and cheapest way is to buy the highest grade stud buck available and breed him to your best does. In breeding for shape the doe is possibly the most important factor. In color, however, the buck controls at least two-thirds of the strength.

Do not breed rabbits till about mature, 7½ or 8 months old for Belgians and New Zealands, and 11 or 12 months for Giants. Breed only stock that is perfectly healthy at the time, not even having a cold. Do not breed when molting (shown by roughened hair and patches coming out).

Select the specimens that you wish to breed, take the doe to the buck's hutch—never otherwise—and watch them carefully. Sometimes she will not receive him; then try her over again every other day till she does. Be careful, however, to watch, standing at a respectful distance and making no noise. It will take only an instant, and if the service was effected while you had your back turned you would not know that she was bred, and would likely keep trying her till she injured her future litter.

You can easily know when the service is effected, the doe will raise her hind quarters, and the buck will fall entirely over sideways, his hind feet slipping out from under him. Let her rest a few seconds, not long enough, however, for a second service, and gently remove her to her own hutch. Try her again in a week and if she will not take the buck she is most certain to be bred.

Sometimes a doe, especially a young one, will refuse the buck. She will continually run away from him or hug the floor. Let her remain for six or eight minutes, then take her out and try her another day. If this is repeated several times without effect feed her on soaked peas or oats that have been soaked for twenty-four hours and then dried in the sun.

If the buck shows low vitality beat a raw egg in milk, and

give him a third of it. Do not try a doe to two bucks in succession. The second buck may smell the odor of the first and fight her. Sometimes they will fight anyway; when they begin this separate them immediately.

A young buck should never be used over twice a week and in his prime not over three times. Care should be taken that the does are not too fat. Rabbits over three years old are not good breeders, fatten the old ones and send them to the meat market. If, however, you have a fine old specimen and want another litter, mate the old one with a young one just coming to good breeding age.

THE TIME OF BREEDING. Rabbits will breed all the year, though it is sometimes very difficult to get results in the fall, which is not the natural breeding season. Beginning with a doe 8 months old, she can be made to bring four litters a year all right; some recommend only three, and others have gotton five or six satisfactory litters a year. It will take 30 days to kindle from the day of breeding and if the mother is properly cared for she may be bred again when the litter is 4 or 5 weeks old, letting the young ones stay with her for two weeks longer. This will give four litters a year and two or three months' complete rest during the extreme winter in Northern climates, or the midsummer and early fall of southern climates. Careful attention should be given to the feeding of the nursing does—milk-producing food, mashes, oatmeal and bread and milk should be alternated with the regular diet.

CARE OF THE YOUNG. A few days before kindling the doe will prepare her nest and she should have perfect quiet and plenty of clean straw. A few hours before kindling she will pull fur from her body to line the nest and wrap the babies. Sometimes a doe will be found who will scatter her young over the hutch, or even eat them. This is due to her being too fat, the body creating a superabundance of heat. Rarely the cannibal tendency becomes a habit, which may sometimes be offset by placing a piece of bacon in the hutch to satisfy the abnormal craving for meat.

The young ones should not be touched for the first day. On the second day, either remove the doe gently from the hutch or give her a tempting feed to center her attention, and carefully examine the nest for dead ones. If she has over eight live ones, kill the smallest for the rabbit has but eight teats and while

the writer has raised eleven from one litter, more than eight cannot be raised satisfactorily, and six is better.

If you have an extra fine specimen and want to breed for the show room or to get extraordinary breeding stock, take all but three away, either killing them or giving them to a nurse doe (some common specimen known to be a good mother, which kindled the same day), being sure to wrap the babies in the foster mother's own fur to kill the scent of their true mother, or she will not own them).

They will get their eyes open in about nine days, and in about three weeks will begin to run around over the hutch. Keep strong grain out of their reach for a while. Do not wean them under six weeks—eight is better. They should then be taken away from the mother, that she may prepare for another litter. If raising for the market, put the young ones together in a small hutch and give all the food they can handle, so as to market them at three or four monts old as friers. (See chapter on housing).

LINE AND INBREEDING. Inbreeding is breeding close relatives promiscuously, and should never be done. Line breeding is breeding father to daughter and mother to son, which may be done successful, but should only be practiced if there is some very desirable trait which you wish to make permanent in the strain. Brother and sister should not be bred for the best results. If the stock is perfectly healthy and normal, even this may be done without very bad effect. But the perfectly normal animal is rare, and inbreeding always exaggerates any defects. Do not trust to getting unrelated breeders merely by buying does from one breeder and bucks from another. The writer tried that once and bought cousins from breeders living over a thousand miles apart. Rabbits are now shipped all over the United States. Buy both buck and doe from the same breeder, provided he has the proper backing; he will ship you strains he knows will be the proper matings.

Be careful not to breed a fine specimen to a common mongrel, or the high standard of the best specimen may really be materially lower. This looks strange but is scientifically true.

Handling the Young After Weaning.

If you have an ear marker, so as to identify the different litters for future breeding stock, it is well to put several litters about the same age into a large run where they can romp and play, thus getting better development. At 4 months old, the bucks must be separated from the does.

The inexperienced breeder may have some difficulty in telling the bucks and does apart. There is no way to know except to look. Turn the specimen over on its back and press the organ open with the thumb and finger. The male will appear round and the female with a slit.

Young bucks must be separated and placed to themselves in a hutch at about 5 months old, or when they begin to fight. Young does raised together need not be separated till bred.

Handle your young rabbits as much as possible. Old ones, too, for that matter. you will find two advantages in this; first, you can watch closer for the first symptom of disease and then later on when it becomes necessary to handle them in mating, they will not be wild.

CHAPTER VIII.

DISEASE.

Rabbits may be raised in larger numbers in smaller space and kept freer from disease than any other commercial animal. Should one who is contemplating entering the commercial rabbit industry glance over an ordinary guide and see the long list of diseases to which rabbits may become heir he would probably be discouraged from ever attempting to raise them. The fact is rabbits may be kept healthier with less effort than any other domestic animal. Notice that we said kept freer. Unless rabbits are properly cared for they will contract more diseases and die more quickly than almost any other domestic animal.

Prevention.

In raising any animal, the thing that should be studied is how to prevent disease, rather than how to cure it. The beauty of of rabbit breeding is that the rules for prevention of diseases are very simple and the virtue of it is that when properly followed they will almost absolutely prevent all form of diseases. These rules are:

First.—House them properly, giving (a) sunshine, (b) freedom from draft, (c) freedom from dampness, (d) avoid extreme heat.See chapter on housing.

Second.—Keep clean. While cleanliness is next to Godliness everywhere, in rabbit culture, **cleanliness is success.** See chapter on housing.

Third.—Disinfect. At least twice a year thoroughly whitewash the rabbitry inside and out, nest boxes and all. To the lime water used in whitewashing add a little salt and a small amount of some good disinfectant. Now while this whitewashing is necessary as part of the scheme of disinfecting, it is only the beginning. A good germ killing disinfectant must be selected, and this must be used thoroughly at least once a month.

Take a good strong disinfectant and mix it about 1 part to 40 parts of water, and spray it in all parts of the hutch, especially in the fartherest corners, where the most dampness is shown when hutch is cleaned. Then, once a month disinfect thoroughly all feed and water vessels. If vessels are such that

they may be scalded all right. But washing with warm water will not do—they must be scalded. If you cannot scald them, dip them in the above solution of disinfectant. This does not take the place of the ordinary daily cleaning. No food or water should be put in dirty vessels always clean them out if dirty before the daily feeding, and then once a month disinfect thoroughly.

Now, before beginning to raise rabbits, make up your mind that you will strictly observe these three rules. If disease should develop in your rabbitry, the first step to take towards effecting a cure will be to take the diseased rabbit entirely away from the proximity of all others, for every rabbitry should be provided with a base hospital, for sometime you will be careless and let disease creep in, or you may buy infected stock. The first thing you will naturally do when you take a sick rabbit to the hospital is to see that it is the proper place for your patient, that it is clean, disinfected and dry. Then why not observe these three rules in your entire rabbitry and be practically free from disease?

While prevention is what you should aim at, you may have sick rabbits; then the next most valuable rule to observe is—treat the ailment in time. Do not let the disease develop into a serious case before you begin treatment. Most diseases, it is said, may be prevented; now we add that all diseases may be cured if proper treatment is begun in time.

Always keep on hand a variety of standard remedies, so that immediately upon the appearance of the first symptom you may begin treatment without the loss of a moment's time. When you are careless and expose your rabbit to a draft, and it sneezes for the first time, give a little snuffle medicine right then. Do not put off till tomorrow, or till you are sure the rabbit has snuffles.

SNUFFLES.—This is the most common and contagious of all rabbit diseases, and positively volumes have been written on it. It is not only contagious but the tendency toward it is inherited by the offspring of a specimen suffering from it. It is a chronic cold. Live arguments have been held by rabbit breeders as to when the cold ends and snuffles begins. It is true the cold may develop into catarrh, or influenza, or into snuffles. If the former is developed, a thin, transparent fluid comes from the nose; if the latter, the discharge will be thick and white, or yellowish. The thing you want to do, of course, is to cure it before either

is developed.

The first symptom is sneezing. When this occurs, other than from dust or dry hay, the rabbit has caught cold. It has caught cold from one of two reasons. It has gotten wet or been on a cold damp, floor and been in a draft. Correct this at once and administer a cold or snuffle cure. If you have none on hand, make it, using Eucalyptus oil as the most important ingredient, mixing it with spirits of turpentine oil or wine of tar, and spray the nose. Keep the bowels open with castor oil.

COCCIDIOSIS.—This is the cholera or black plague of the rabbit family, and but very little is scientifically known about it. It was the disease that brought to a sudden end the Belgian Hare boom of some 20 years ago; rather the spread of the disease in a fatal epidemic in practically all the rabbitries was the cause of quitting.

The disease is the infection of a minute parasite of the animal kingdom, a protozoa. It is not a bacteria of the vegetable kingdom. A rabbit may be infected with this little pest and be healthy enough not to allow it to multiply in its system; hence the rabbit may apparently be healthy, yet at the same time it may transmit this disease, and another specimen that does not have the same resisting power take it from the apparently healthy animal, and its system being less able to resist, the disease gets the upper hand and develops.

The first noticeable symptom is refusal to eat, and constipation. Of course, this may be caused by other things. If this is accompanied by swelling around the eyes, and a puffy, bloodless condition of the sexual organ, coccidiosis is most probably the trouble.

No cure has been found, and almost certain death when the disease is well developed, though as stated, a few of the germs may live in a healthy rabbit for years and never be able to multiply sufficient to develop any symptom. The best remedy we have found is to put a little coperas in the drinking water. A dose of castor oil, or some turpentine in melted lard.

Prevention is the only sane way, and this may absolutely be secured by perfectly clean hutches, good disinfectant frequently used, plenty of ventilation, and some sunshine in the hutch. The disease is almost always developed in the hot months of summer and early fall. Keep your rabbits in a cool place with early morning sun and fresh cool water three times a day, and you will

not be likely to have it developed.

EAR CANKER.—This is a very common disease and possibly the easiest of all to handle. It is caused by a microscopic parasite that gets into the ear and causes a scab in which it rapidly multiplies. The symptom is a thick, yellowish wax in the ear. Examine your rabbits frequently for signs of this. At the first appearance put a few drops of olive oil, oil of camphor, cotton seed or cocoanut oil. If the discharge is bad, clean it out with a dull instrument, possibly softening it with luke warm water, before applying the remedy. It can be cured with one or two applications.

DIARRHOEA.—Watch for this especially in young stock when green feed is being used. It is caused by too much green feed, or feeding wet or partly decayed green stuff or sloppy food. If the droppings appear soft and cling together, put on dry feed. If this does not cure at once give a little laudanum or powdered cinnamon.

POT BELLY.—Young rabbits fed too much green feed, or overfed, will develop a bloated condition of the stomach caused by gas accumulated from undigested food.

Take all food away from them for 24 hours, then change to a mild, dry food of milk and bread. Or, if no green food has been used previously a little will now loosen up the stomach. Give good dose of castor oil. Colic constipation may also be cured with castor oil.

SLOBBERS.—This is acute indigestion, occurring almost altogether in young rabbits. They have eaten too soon or more than their stomachs can digest. The undigested food causes a saliva in the mouth that runs out and wets the under jaw and breast. Give no food for 12 hours and then rub table salt in its mouth, around its lips and jaws. Then be careful with its diet, as you should have been before, for this disease is caused by an under-nourished condition of the system, due to lack of proper food. You will notice it almost altogether among the young of does which are poor milkers.

ABSCESSES and PARALYSIS.—An abscess is a large lump appearing on some part of the body, while yaralysis is loss of control of the hind quarters. Now they seem to be entirely different but caused by the same thing; a bruise or lick. This may be caused by running into the nest box and bumping some part of the body, jerking around and striking something when suddenly

scared, or jumping off the next box.

For paralysis there is no remedy. The abscess should be let alone till it gets somewhat soft, then make a rather large cut, remove all the puss and puss-pocket if possible and wash out with peroxide of hydrogen, and rub on a little salve.

BOILS and SORE HOCKS.—These are the same things, and are caused by bad blood, which results from wrong feeding, usually too rich a diet. Boils should be opened as soon as matter can be squeezed out, cutting the hair away clean. This should be repeated several times, each time using a few drops of peroxide and some salve.

Sore hocks is where the whole underside of the hind leg becomes infected. This starts with a little boil on the hock and as it bursts and spreads its infectious matter, others appear till the whole hock is a mass of sores. Apply a good salve and tie the leg up so it cannot be licked off, changing every few days. Put the patient on sawdust floor or deep straw and keep the hutch clean —as you should have done before.

VENT and VENEREAL.—Both these affect the sexual organs and are very contagious, so if there is the least affection of the sexual organ never breed the specimen. Their similarity, however, ends here as the former is an external disease acquired by sitting on filthy floors and may be cured, while the latter is internal and no attempt should be made to cure it. If you are in doubt as to which it is watch the specimen urinate. If the operation causes marked pain and effort, knock it in the head at once.

Vent disease is shown by the sexual organ, becoming inflamed and swollen. Bathe good in luke warm water and apply a good ointment or salve. It is caused by filthy hutches. Keep them cleaned, as we have already once before remarked.

Swollen teats should be gently rubbed with oil or salted butter.

ADMINISTERING MEDICINE.—Catch the rabbit by the neck with the left hand,, turn it over on its back and place under the left arm, then your right hand is free to work.

Always handle rabbits by getting a firm hold of the fur and skin of the neck just back of the ears. Never lift them by the ears nor try to hold them any other way than above.

In giving medicine that requires swallowing, open the mouth by pressing the thumb and finger between the jaws back of the teeth and force well down, into its throat and hold still until it is swallowed.

CHAPTER IX.

STANDARD.

In the scientific breeding of any animal the standards toward which the breeders strive must be kept clearly in mind at all times. If this is not done, the mating will be haphazzard and the results disappointing.

In looking over a litter of young rabbits 3 or 4 months old, when they should be separated, the breeder is confronted with the problem of which ones to sell, which possibly to eat, and which to set aside for future breeding stock. Of course, if he is selling for breeding purposes and is an honest breeder, he will use the same care in selecting the one to sell for this purpose as for those to place in his own breeding hutches.

To the uninformed the litter of six or eight rabbits may all look alike, but when the breeder has studied standards, and keeps them clearly in mind he may pick as breeding stock young ones which have certain characteristics that will cause an improvement in the quality of his stock.

This handbook is prepared especially for the scientific breeder of commercial rabbits for commercial purposes. So we shall not devote any space to the special preparation of stock for the show room; yet the standards of the show room are the standards which the breeder must keep before him if he would produce the highest grade of stock, even if he only wishes to sell commercial rabbit stock.

This is true because the standard that has been adopted for the show room, or in the ring for any stock is the standard of highest efficiency for that breed of stock. Now it is true that sometimes a special fancy mark that has nothing to do with the real quality of the stock is chosen as a standard of judgment in the show room. This, however, is a fad, and will not stand the criticism long, but must soon yield its place to some mark that signifies real efficiency.

The standard in the rabbit is just as important, and has accomplished as much towards the improvement of the stock, as the standard for cattle. No one can walk through the aisles of a fat cattle exhibit and fail, as he looks at the splendid results that have been attained, to realize that marvelous things can truly be accomplished with animal life by adopting standards of real effi-

ciency, and scientifically breeding to these standards. The magnificent cattle found on the registered stock farm has but a faint resemblance to the scrub stock of the pioneer American farmer; neither do the best pedigreed rabbits of today resemble the wild hares and rabbits that were caught and tamed in Western Europe two or three centuris ago.

In cattle raising today there is no tendency to adopt a fancy mark as a standard that bears no significance in real efficiency. In general this is also true in scientific rabbit breeding, yet it is a lamentable fact that in certain circles of rabbit breeders there is an effort to get fancy and showy results at the expense of real efficiency. While this is unfortunate for commercial rabbit farming, it is, however, very natural, for scientific rabbit breeding was developed, not through commercial channels, but through the effort of the pet stock fancier. And be it recognized once for all that it is high time for commercial rabbit farming to be entirely and eternally divided from the pet stock fancy. Commercial rabbit breeding and marketing should have no more to do with poodle dog raising and the breeding of that freak—the flop-eared rabbit, or the delicate white toy rabbit than the breeding of standard Hereford cattle should be associated with raising canary birds.

Commercial rabbit farming is a dignified business that has for its purpose the supply of the world's needs for meat and fur, and not a hobby to be used as a pastime. So let's continue to eliminate from the rabbit standards any tendency to breed for mere fancy and develop that type of stock that will be the most prolific in yielding meat and fur.

At the present time there are three well recognized, and fairly well standardized breeds of commercial rabbits. There are dozens of other breeds of rabbits, some of which give promise of real commercial value, and may later on take their place with these three; however, the majority of these breeds will likely always remain in the pet stock fancy as mere toys. We have nothing to do with any of these fancy breeds and wish to encourage only the scientific breeding and improvement of stock of the Belgian Hare, the New Zealand Red Rabbit, and the Flemish Giant.

The standards given below are those which are best recognized today, and which, in our judgment, conforms closer to the standard of efficiency than any that have been proposed.

BELGIAN HARE RABBIT.—Shape: lengthy slender.

back slightly arched, good length to head, tail straight, chest muscular. Score ---------- 20

Color: a dark cherry or Rufus Red, uniform over the entire body except belly, which is golden or creamy color. Score ---------- 20

A rich black and wavy ticking. Score ---------- 10

Feet and legs good length, solid color. Score ---------- 10

Ears five inches long, black lacing around the tips, thin, good color, and firmly set. Score ---------- 5

Carriage. Score ---------- 5

Weight, 8 lbs., firm and solid. Score ---------- 15

Eyes: large, rich hazel. Score ---------- 10

Fur, rich and close set. Score ---------- 5

NEW ZEALAND RED RABBIT.—Head: shapely, color, matching body. Score ---------- 5

The first noticeable syptom is refusal to eat, and constipation. Ears, erect. Color, matching body, free from black lacing. Score ---------- 10

Eyes, large hazel, small white eye circle ---------- 5

Color, reddish buff, free from black hair, or light buff with reddish cream belly. Score ---------- 30

Shape: Medium length and bedium broad fore and hind quarters; doe well developed. Score ---------- 10

Weight: Three months, 4½ lbs.; four months, 5 lbs.; five months, 8 lbs.; twelve months, doe 12 lbs., buck 9 lbs. Score ---------- 20

Legs and feet, strong and straight; color same as body. Score ---------- 15

Condition: full coated and solid flesh. Score ---------- 5

FLEMISH GIANT RABBIT.—No satisfactory standard has yet been worked out for this class of rabbit, though they are now one of the most profitable commercial breeders. The main point to breed for is size and, roughly speaking, the following weights should be aimed at: Buck at two months, 4½ lbs.; three months, 6 lbs.; four months, 8 lbs; five months, 9 pounds; six months, 10 lbs.; then he gains one-half pound per monts till at full maturity, fifteen months, he should weigh 14½ lbs. Does at two months, 5 lbs.; three months, 7 lbs.; four months, 9 lbs.; five months, 10 lbs; six months, 12 lbs.; seven months, 13 lbs.; eight months, 14 lbs. These gain about one-half pound per month till full maturity at twelve to fifteen months, when they should weigh about

16 pounds.

In selecting the proper standard for breeding stock the best way is to have a competent judge take all the available stock that is well pedigreed and score each specimen according to the above standards, and then select the highest score for the breeders. Now the scoring alone will not do, for in breeding ordinary stock one will frequently be found that will show up well on the score card, yet it will be an accident if any of its offspring will equal itself. To illustrate this: the writer, some time ago, purchased a very high scoring New Zealand doe. She was a beauty and scored wonderfully near the 100 mark. Nothing could be found of her pedigree; it was possibly thrown away on purpose, for as a single specimen she was excellent. She was bred four times to the very best blood, and from no litter did we get any single specimen that would have scored 60. She was evidently nine-tenths common utility stock and by a freak of atavism she herself got the traits of the one-tenth, but her offspring were scrubs.

So in selecting breeding stock, know that the stock is good back to the fourth generation.

Now, on the other hand, pedigree is not sufficient. For example: We have in the College breeding hutches one fine illustration of this. There is a litter of seven, six of them scored above 90, one fell below 60. The litter was sired by Lake Barney, a son of Frisco Boy, and the dame is Ferrell Fox, of the very best blood in America. Now if you had bought from us, demanding the best pedigreed stock we had; we could have shipped you that scrub and given you as fine pedigree papers as you could have gotten in America.

The point is this: Buy your breeding stock from a reliable breeder, one who knows scientific breeding, and one with sufficient standing to insure your being treated as fair as a banking institution could treat you—a breeder with standing and reputation at stake. He cannot afford to give you bad blood. Then buy the best stock and don't be satisfied with knowing it has good blood, but demand its registration, and that you be furnished its registration score to prove that the specimen you buy is up to the standard that its blood justifies, thus insuring you against getting the runt of the litter.

CHAPTER X.

MARKETING.

As it is the chief purpose of this book to enable the reader to make money raising rabbits, the question of a market is of prime importance. A great many men have succeeded in organizing a successful industry, and in solving the problems connected with production, who can not market successfully the product; and consequently they fail. Genius in production is of no value in the commercial world unless it is associated with marketing ability. Every industry that has had a successful career has had behind it a salesman of ability. Fully ten times more failures in business have been due to bar marketing facilities than to any other one cause. Many farmers are scarcely making a living because they are deficient in marketing ability. Of course, they know how to sell their main money crop of corn, cotton, wheat or tobacco; but they do not have the ability to turn the by-products of their farming into cash to the best advantage. No great manufacturing plant could keep out of the bankruptcy courts twelve months if its management paid attention only to the main products and let all by-products go to waste.

Now what we mean by marketing ability is the ability to get every possible product of the industry into marketable form, find a market for it, and get the most money out of it. Your doing this means your success; your not doing it means your failure. Then the first thing to be considered is the problem of turning every possible product of the rabbit farm into marketable form. There are four things that should be marketable from the rabbitry. First—your finest young stock should be made to bring you a fancy price as future breeders. You may need them your self to enlarge your herd; then buy them yourself at their highest market value. And just here let it be said that no man can be a success in a large way without being a careful bookkeeper. So when you take one of your does and put her in your breeding hutch, place over to the side of sales a good round figure, then treat her like she had cost you a big sum of money. If something goes wrong with with her, do not say, "Well, she did not cost me anything. I will trust luck for her to get along all right." But reason this way—that she has cost you a high price, and that you can't afford to take a chance, and hence take all the pains

and effort necessary to make her a great producer for you.

Then, second—there will be your surplus bucks and culls. These should be sold in the meat market. If you have a family you can sell them to yourself for your own table and thereby serve on your table the best known meat. But be sure to keep books so you will know where you are.

Third comes from the fur. Any one who kills a dozen or more rabbits during a year and does not market the fur will miss a very commercially valuable by-product. In dressing your rabbits, hang them up by the hind feet or get someone to hold them for you; cut the skin around the hind legs just below the feet, split the skin down the inside of each leg till the splits meet under the root of the tail, then start the hide off all around and pull it off over the rabbit's head like pulling off a stocking by taking hold of the top and pulling it over the foot by turning it wrong side out, frequently using a sharp knife to insure as little of the fat and flesh clinging to the hide as possible. Then cut the side open by splitting down the belly and tack on the wall with the flesh side out to dry, putting it out of reach of dogs and cats. After they are thoroughly cured pack them tight in a box with moth balls and ship to a reliable fur dealer. There are many who make a specialty of handling rabbit fur. If you do not know the address, write to some rabbit magazine or large breeder, enclosing stamped envelope and you can readily find a market.

Few people know the immensity to which the rabbit fur industry has grown. Millions are used for felt hats and some of the most attractive furs on the market are rabbit hides sold under other names. England alone in 1910 imported over 80 million rabbit furs.

Another profitable side line is the manure from the rabbitry Instead of raking it out to fall around the hutches and accumulate filth, either catch it in something as you rake out the hutch or sweep and take it up, throwing it into a large box or protected corner. If you have a garden sell it to yourself in the spring as the highest grade of fertilizer, or your neighbor will pay you well for the privilege of hauling it off.

Creating a market for rabbits.—Your main interest, of course, will center in the market for your rabbit. About 20 years ago in this country there was what is usually known as an abortive boom in the Belgian hare industry. A few men made big fortunes selling breeding stock at fancy prices, and then the bottom

dropped out. There were two reasons for this. First, the advertising was not sufficiently extensive and scientific to create the demand, and rabbit meat was not appreciated at its true worth. We might also add that at that time the world's supply of meat was adequate for the demand. Now it is wonderfully scarce.

The nutritive value of rabbit venison has been well established and doctors and sanitariums are recommending it very highly By scientific analysis it has been proven to be the most nutritive of all meats. Rabbit meat contains 83 per cent of net nutriment while beef yields only 55 per cent, mutton 65 per cent, pork 75 per cent, and chicken 50 per cent. This information has been broadcast over the country and now any intelligent person is anxious to secure rabbit venison at corespondingly high prices, comparable with its nutritive value. If your community has not been educated to demand rabbit venison it is because there has not been a supply. Dress a few nice ones and carry them into your leading hotel or restaurant as samples, and soon all you have available for meat will be in demand.

Your highest price should be gotten for your breeding stock and your main money revenue should come from the sale of your young blooded animals. This market you will have to create by advertising. If you are near a large city the leading Sunday paper will be a fine medium for advertising your breeding stock; or certain poultry and farm journals, or the popular weekly and monthly magazines.

An advertising campaign, however, is very expensive, and expense is necessary to get results. The greatest fortunes in America have been made by successful advertising campaigns, and also thousands of dollars have been appropriated to advertising that, for the lack of pulling power, utterly failed. It takes careful study to put into an advertisement that indefinable something that causes it to get results. This takes careful study, practice and expense.

THE SURE ROAD TO SUCCESS.—Buy the best blood you can get from a reliable breeder—one whose backing is such that you are sure his rabbits are good—get registered stock if possible—registered by a reliable Association or Institution. Buy from a breeder who will guarantee to buy back your young ones at good prices. Now, you must not depend upon this market, but while you are making money selling back to this breeder, begin cautiously to create your own market. Begin advertising on a small

scale, studying the results, changing your advertisement and experimenting. Enlarge your campaign as results become satisfactory and soon you may have an independent business that may grow to stupendous proportions.

Sell your breeding stock from 6 to 8 months old. In shipping, take an ordinary orange crate or box about that size. Nail a tin cup or can in it for water, place plenty of good clean hay in it for bedding and feed, and finally, nail slats across the top. Have separate compartments if more than one is shipped. Two four-months-old does which have been raised together may be shipped in the same compartment. Avoid shipping in either extreme hot or cold weather. If you have carrots to put in for food water is then not necessary.

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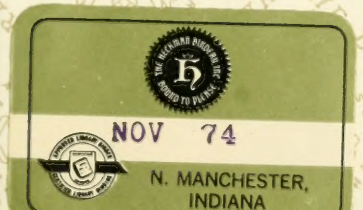

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