

BACKYARD RABBIT FARMING

by

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ACKNOWLEDGEMENTS

This book owes a great deal to our family experience, beginning just after the war. Like many families today, we were living in suburbia and dreaming of a country way of life, and our rabbits were the first step on the long road to a farm of our own. They taught us the first principles of stockmanship.

My thanks are due then to our family team, particularly my father. He is very good with animals and has taught me a lot. Then I would like to thank Derek Sidgwick, his wife Beryl and daughter Anne, breeders of Dutch rabbits and real enthusiasts. May they win many more prizes at shows.

I have been grateful for helpful advice from various members of the Commercial Rabbit Association and I am sure they will help any readers who think of producing rabbits for sale.

To Colin Spooner of Prism Press I owe my grateful thanks for his help and encouragement, at every stage. He is a rare combination of publisher and fellow backyarder.

I. WHY KEEP RABBITS?

Rabbits are a very good means of starting backyarding. If you have never kept animals and have literally nothing larger than a backyard, you can still achieve a certain enjoyable independence by producing your own meat from rabbits. You can rediscover the taste of real meat, produced without the aid of drugs and growth stimulants, such as anabolic steroids, which are fed to some of our farm animals now. Rabbit meat is versatile in that there are many ways of serving it. Your surplus can be exchanged for different produce from other backyarders - once you start, you are bound to meet like minded people. There is great satisfaction in growing your own food and sidestepping the dreary circle of factory farming and supermarket products.

In the other books in this Backyard Series the point has been made that home-produced food saves you tax. If you have not bought the food, no taxed income has changed hands and, if you are clever with your rabbits, much of their food can be found without money changing hands. Some can be gathered from the wild, some may be grown

and then there is the old cottager's standby, the barter system. By avoiding the use of money where possible, you reduce the amount that you need to earn without affecting your standard of living. In these ways you will have beaten the system and done something for yourself.

From the age of two months, a litter of rabbits can be ready for the table - a little longer perhaps on our more natural system, but commercial rabbit keepers produce a 'crop' in nine or ten weeks. These are fed on pellets made by feed firms, but your rabbits can be reared economically on household scraps and greenfood alone. Any walks or expeditions can be given a practical purpose - that of finding fresh grass and plants for the rabbits. With practice you will discover where to look and what they like to eat best.

Rabbit meat is very underrated. It is lean, with very little fat and little waste, and has a high meat to bone ratio. The cholesterol level is low, so it can be classed as a 'health food' if produced on a natural diet. If ever this country goes short of meat, rabbits will be the answer.

Consumption of rabbit meat in Britain is estimated at about 1/2 lb per head per year; in 1950 it was 6 lb per head, so you will see that rabbits have gone out of fashion. We may as well face facts straight away; it seems that myxomatosis, the disease which hit British wild rabbits in 1954, put people off rabbit for good. Ask anybody whether they eat rabbit and usually the subject comes up. It is a pity, because there is no reason why the disease, horrible though it is, should put people off healthy rabbits - and there is absolutely no danger of getting a 'myxi' rabbit without knowing it. In Europe, where myxomatosis also occurred, things are different. The French eat about 14 lb of rabbit meat per head in a year, and the Italians 16 lb.

To me it seems stupid that most of the rabbit meat eaten is imported from Australia or China. And yet an employee of a large firm which buys rabbit meat from big producers told me that nearly all the rabbit meat they handle is exported to Europe. This would seem to work against the possibility of fresh food ever reaching the consumer; perhaps it also explains the unpopularity of this very good meat!

Many years ago, our family decided that we would like to try to produce our own food. We really wanted to live in the country, but at the time we were in the suburbs with a semi-detached house and a garden. So my father decided that the best livestock to start with would be rabbits. These are the advantages we found:

1. Rabbits are small - this is a great help to a beginner! They are easy to handle and usually docile, although they can scratch. Being small, they mature very quickly. A doe produces a litter in one month and between two and three months later this litter will be ready for the table. With larger types of livestock, you have to wait much longer for results.
2. You don't need a sizeable garden to be able to keep rabbits. Hutches can be kept in a small backyard; our coal-man has some, and when I go to pay the bill there are often rabbits hopping around the yard and dozing in the shade. If the rabbits are well cared for, they will not give rise to unpleasant smells. You can still find free food for them on country walks or even in forgotten corners of towns. The quantities of food they eat may seem large at first, but you are dealing with much less bulk than for pigs or goats.
3. The capital outlay, we found, was not too frightening. To find out the current price of rabbit breeding stock, consult the rabbit section of Exchange and Mart, or the specialist magazine "Fur and Feather". At the time of writing, adult rabbits of one of the heavy meat-producing varieties, ready for breeding, would cost about £5 each, male or female.

The hutches will of course cost you less if you can make them yourself. During the war they were often made from packing cases. Making nest boxes and hay racks is a great test of ingenuity and it is somehow most satisfying to make something useful yourself, especially if you can do it from second-hand materials. Add to this the cost of drinkers and food troughs, which can also be made from wood, and that is all you need to start with.

4. The rabbit is an economical producer of protein and the best one for cheap protein. They will, of course, grow faster on expensive commercial food, but the meat will be cheaper and will probably taste better if most of the food is free. A doe can have six or seven litters a year and should raise 6-8 youngsters each time. The number she produces in a year will depend on the breed and the age of the doe, and also on conditions - it is more difficult to

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get them to breed in winter if they are housed outdoors. At a dead weight (dressed) for each rabbit of 2 to 3¼ lb, this means that a doe can produce as much meat in a year as a sheep with one lamb. Backyarders can expect fewer litters than commercial breeders, but even so, the prospects are good! Rabbit meat is also available in smaller quantities at a time than pork or lamb, which can be an advantage. You will not need to freeze it, but it will freeze very well if necessary.

5. If you have a garden, many of your rabbit feeding problems will be solved; they can eat waste vegetables, weeds and anything left over - or you can grow them food. In return, the manure from your rabbits will be a valuable organic fertilizer, to be used fresh or rotted. In some places an interesting profitable sideline is the production of worms for fishermen from rabbit manure.

6. All breeds of rabbit produce fur except the Angora, which bears wool (we will deal with this later). Some breeds have been developed specially for their fur and you can take self-sufficiency a stage further and obtain clothing from the backyard enterprise. We have several pairs of gloves made over twenty years ago from the dense velvet fur of our Rex rabbits. The hair of Rex rabbits is only half an inch long; it is dense, soft and silky.

7. There is a great deal of interest in keeping rabbits. It is a practical hobby with the advantage that it saves money by cutting down your butchers' bills. If you get really keen you may decide to try your hand at showing. In the rabbit world there are real enthusiasts. They meet at rabbit shows, and in the rabbit tent at agricultural shows. A lot of them are townsmen who find in rabbits an outlet for their interest in animals. There is not a great deal of money to be made out of showing, unless you happen to be lucky. But by showing you will get to know other people who are interested, they will see your stock and it will then be easier for you to sell surplus rabbits for breeding.

This chapter would not be complete without considering the other side of the picture - the drawbacks to embarking on a programme of rabbit keeping. What are the disadvantages?

The main problem is one which is common to all live-stock keepers; the very regularity of the job. You cannot go away, even for a weekend, and leave animals unattended. What about the holidays? Whose job will it be in any case to feed and clean out the rabbits? It really needs a family conference to decide how the jobs should be shared. The everyday work can be done by children of nine or ten and they can become very interested in rabbit keeping - we did at this age. But sometimes they get bored with the routine and if you are busy yourself, there could be a difficulty. A sensible rota dividing up the work will perhaps prevent this. As to the holidays, another family might be persuaded to help with the rabbits in exchange for manure or meat.

The work involved is not very much; they can be cleaned out once or twice a week. But of course they must have regular meals and be watched to see that they are in good health; and sometimes they can be allowed out for exercise. The biggest job may well be collecting greenfood if you live in a town, but to us this really was the most enjoyable part. We went off on our bicycles to a Secret Valley, incredibly wild and green. (Our parents must have been good psychologists!)

Mention of cleaning out the rabbits brings us to the problem of smell. Will the rabbits annoy the neighbours or encourage flies? This of course depends on you. There is quite a strong smell from rabbit urine, and if the hutches are left for more than a week without cleaning, there will be a rabbit odour in the air. It is not really unpleasant; the dung pellets are solid, and the wet can be absorbed by bedding. But even with care you may receive complaints when people get to know that you are keeping rabbits. In the book on pigs I suggested a remedy for this, and it should work equally well for rabbits. Give the neighbours some of your produce - preferably some manure for the garden, so that the smell will be spread a little! I know that it is true some people are so far from natural things that they may dislike the idea of rabbits as neighbours; but if you explain what you are doing, they will quite often discover an interest - or their children will.

Perhaps the worst thing about a family livestock enterprise at first, is the idea of killing and eating the animals you have reared. But be assured you will get used to it. It is a problem, but there are ways to minimise it. If you start off with a young doe, rear her and breed from her, she will be the animal you will get to know, and her litters will come and go so quickly there won't be too much bother. There is in fact a succession of baby rabbits; the older ones can fade into the background before being eaten. I have found that with a collection of animals the arrival and departure of individuals is not so traumatic as that of a pet.

Killing and dressing rabbits for the table is an easily acquired skill. There are many countrymen who could show you - many of them are skilled at dealing with wild rabbits. So could many older housewives. With the larger animals there is a trip to the abattoir and you have to pay to get the job done. Rabbits can be killed at home. This is quite legal unless you intend to sell the meat, in which case the premises have to be approved. They do not suffer, and if you have given them a pleasant life, you will have no guilty feelings about it.

I hope that this chapter has made you want to try rabbit keeping; in the following pages we will consider the various aspects in more detail.

2. RABBITS PAST AND PRESENT

The rabbit was originally a Mediterranean animal; possibly Spain was its home. It lived in a warm dry climate and it still prefers these sort of conditions. Wild rabbits seem to be able to withstand drought better than cold weather, and backyard rabbits appreciate a warm dry hutch with no draughts.

It is thought that the rabbit may have moved up into northern Europe in prehistoric times, and after the Channel appeared which divided Britain from the mainland. Rabbits are not native to Britain; they may have come over the water with the Normans, who kept them in enclosures on their manors. There, they were looked after by a man called a warrener who kept away predators from the "coning-erth" and perhaps gave the rabbits extra food in winter when greenstuff was scarce.

These Norman rabbits were untamed, living in a loose sort of captivity. When rabbit meat was needed for the table, the warrener went in with his ferrets and caught a few. This system, first practiced by the Romans, who kept their rabbits in a leporarium, became part of the feudal estate, like the fish ponds which were kept stocked with various kinds of fish and the columbarium where the pigeons were kept. The manor serfs and workers were not allowed to catch rabbits, pigeons or fish for their own use, although no doubt poaching was also part of the system. At this time rabbit was only for the table of the manor house. It was called 'coney' or 'coning' from the French word then used, compare the Welsh 'cwnigen'. Later, the word rabbit was borrowed from the Dutch. In Tudor times, rabbit fur was special, and was used by the nobles to line their cloaks.

Of course, rabbits escaped from their enclosures and became wild, as tame rabbits establish themselves in the wild today if they get the chance. Thus rabbits became part of the countryside, a pest in crops at times, but often the best source of meat for poor people. Until 1880, it was illegal for any-one except the owner of land or his friends, to take rabbits. Even if you were a tenant farmer, officially you had to stand by and watch the rabbits eat your corn, unable to do anything about it. Of course arrangements varied, and depended on the sort of man your landlord was.

The French peasant solved his meat problem by keeping rabbits in hutches, but the idea seems to have been slow in spreading to England. The British countryman dodged land-owners and keepers and snared his rabbits when he wanted them. The punishment was often severe - if he was caught. William Cobbett remarks in "Rural Rides" that 'rabbit countries are the best countries for farm labourers.' He had noticed their under-nourishment in areas of high farming, with few rabbits about. Wild rabbits flourished on poorer land, on the commons and wastes between the villages, and they seem not to have suffered from the enclosures. Hedges and spinneys, planted to enclose fields, provided cover for rabbits and it was not until the nineteenth century that rabbit catching became systematic and efficient.

After it became legal for tenants to take wild rabbits, they set to with a will. The meat and skins could now be sold openly, and on many a small farm the rabbits paid the rent. Some naturalists believe that the wholesale catching of rabbits in steel traps actually increased their numbers and brought about the over-population of rabbits which did so much damage to the countryside in the first half of the twentieth century. The theory is that the traps caught in their cruel clutches many animals, such as foxes, which would normally prey upon rabbits and keep their numbers down to a reasonable level.

During the eighteenth century we once more find mention of rabbits being "farmed" in big warrens. On light, sandy soils which were too poor to grow good crops, the farming writer William Marshall tells us that they were quite

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profitable. Marshall describes an estate on the Yorkshire Woods where there was an artificial warren covering 1500 acres. Before the rabbits were introduced, the whole area was fenced with a wooden pale and artificial burrows were made with an augur to shelter the rabbits until they had time to make their own holes. In winter they were fed with turnips and hay, but Marshall notes that the food was watched care-fully because if it was too rich the animals would scour and die. A word of warning for all rabbit keepers! The problems associated with rich food were another reason for keeping rabbits on the poorer land.

Rabbits from these large warrens were of course for sale rather than for home use; this was commercial rabbit keeping. When they were required, probably when the pelts were in the right condition, they were netted in large numbers. A silver-haired rabbit had been introduced to these Yorkshire warrens and the pelt of this rabbit was dressed as fur and exported, rather improbably one would have thought, to the East Indies. The ordinary grey rabbit fur was scraped off the skin and made into felt for hats; this job was done by a chiffonier. There were markets up and down the country for the sale of rabbit skins and separate ones for the sale of meat. For example, in Yorkshire the skins went to Malton and the meat to York or Hull. So it would seem that the rabbits were skinned and dressed on the farm before being sold.

During the nineteenth century the Industrial Revolution brought a lot of country people into the towns - people who had been used to keeping animals and producing their own food. Many of them must have been unhappy in those narrow streets, but the more adaptable found a way of compensating for what they had lost. They began to keep such things as rabbits and pigeons. This was the start of the Fancy, and also a way to a good dinner.

Rabbits in hutches have been very useful to mankind. In Europe they have been quick to realise the value of rabbits in the backyard. In times of hardship this has warded off starvation, as governments have recognised. In Italy during the war it was compulsory to keep rabbits if you possibly could do so; and the Germans produced plans for breeding millions of rabbits. When Russia was short of food, rabbit-breeding stock was shipped from Britain, because rabbits were the quickest way of producing meat. In the British Isles, the backyard rabbit certainly did us well during the war, even though the only official foodstuff that could be spared for them was bran. In any emergency with a real shortage of food, the best investment would be rabbits.

Commercial rabbit keeping is not our intention, but perhaps we should spare it a passing glance. The huge warrens were the start of commercial rabbits; Mrs Beeton tells us how the tradition was carried on in the early nineteenth century, in conditions reminiscent of the London cow keepers of that time. "Forty years ago there were in the metropolis one or two considerable feeders who, according to report, kept from 500 to 2,000 breeding does. These large establishments how-ever have ceased to exist, and London receives the supply of tame as well as wild rabbits chiefly from the country."

So there is nothing new about factory farming and it keeps on cropping up. During the last few years rabbits have shown signs of going the same way as poultry and being commercialized to a high degree. Rabbit pellets, expensive concentrated food, have made it possible to produce meat for the table in eight weeks or so, instead of the four months that were needed thirty years ago. The modern breeds have of course played a part in this, but rabbits have not always lent themselves to intensive conditions quite so willingly as have chickens. It seems that they like individual attention, and they show signs of stress sometimes, when run in large numbers in wire cages, living on entirely processed food. However, rabbit farms are getting bigger, and most of the official advice you receive, would suggest that this is the only way to keep rabbits - that the backyarder should make his unit a small copy of factory conditions. I would like to suggest the alternative; we can go back to the older methods, with great advantage to ourselves and the rabbits.

Commercial rabbit keeping is now run on industrial lines. For example, as with poultry and pigs, hybrids between various breeds of rabbit have been selected for size of carcass and speed of growth, and also for the size of the litter produced. Breeders producing hybrids usually sell the parent stock of bucks and does to the commercial meat producer. These animals, when mated together, will produce the hybrid offspring which fatten up so quickly. But to obtain more breeding stock, the meat producer has to go back to the supplier. He cannot usually save meat rabbits for breeding, since they may not breed true.

Again, as with pigs, the tendency now, especially with hybrids, is to use white animals - sometimes albinos - rather than the coloured breeds. White flesh is more popular commercially and so are white pelts, because they can be

died to suit the furrier's art, and they are no problem to match. When gloves were made from our home-produced skins, we had to match the pelts very carefully to get two alike, and we need-ed to have plenty to choose from.

Another undesirable development in rabbit keeping, is the factory farming trend towards the use of additives in feeds. Antibiotics are often added to the ration, as are other drugs. In some establishments, a drug to prevent coccidiosis is always fed and it seems a pity that we should have to keep our animals drugged in order to make a living. There are signs, however, that the hazards of such things are becoming-more evident; regulations on additives are being tightened up, and the more obvious pollution avoided.

This of course underlines the great advantage of doing things for yourself. You can produce the food rather more economically than you can buy it, because you cut out the farmer and the butcher. Also, you know that the food you eat is fresh and wholesome and has never seen a drug or supermarket.

3. SOME BASIC INFORMATION

Rabbits are not true rodents. They have two pairs of upper incisor teeth, whereas rats and mice have only one. They are very powerful teeth - a large curved pair and a smaller pair behind for support. The upper and lower teeth of the rabbit meet, and grind each other down. Possibly the worst thing that can happen to a wild rabbit since the gin trap went out is for its teeth to get knocked out of align-, ment because without the grinding action they grow and grow until the rabbit cannot eat and so starves to death. Tame rabbits, especially in-bred ones, are sometimes born with the teeth badly aligned. This is called malocclusion. It can be seen at about eight weeks of age. It is a genetic fault and should be traced and eradicated - that is, don't breed from animals which hand it on to their offspring.

The full dentition of the rabbit goes as follows: 4 incis-ors, 6 premolars and 6 molars in the upper jaw; 2 incisors, 4 premolars and 6 molars in the lower jaw.

The rabbit has large eyes, giving good night vision; much of the wild rabbit's grazing is done at night. Most of the daytime is spent in the burrow, where it is also dark. On average a wild rabbit spends half its life underground. Over the eye there is a third eyelid, the nictitating membrane, which flicks across if the eye is irritated or if the rabbit is nervous.

The range of vision is wide, for spotting enemies; almost all round, except directly behind and a few inches in front.

The feet are very strong, with large claws which are use-ful for digging - although this seems to fall to the female as wild male rabbits have not been seen to do much serious tunneling. In natural surroundings the claws wear down but when the rabbits live in hutches, they grow long and need to be clipped occasionally.

The ears are mobile and independent, like radar scanners. The blood vessels in the outer ear also help to regulate the body heat.

As the rabbit sits up to take the air, the twitching nose is perhaps the best-known thing about it. The wrinkling of the nose exposes a pad in the nostril which is particularly sen-sitive to all smells wafted to it. Rabbits thus take note of enemies, food and each other. They could almost be said to communicate by scent. There is a gland under the chin which produces droplets of scent onto it to mark their territory. The other day I watched a show rabbit, just taken out of its hutch, proceed to lay its scent on a table.

Respiration in the adult rabbit is normally about 45 per minute when resting, but much faster in the young and in rabbits under stress.

Whether the rabbit has a definite mating cycle or whether they mate at any time has been a subject for argu-ment. The old books will tell you that they can be mated at any time if not already pregnant. It seems that there is a pattern of behaviour, but the cycle occurs so frequently that for practical purposes you Can always try a doe with the buck and if you are not successful in getting her mated, the next day could give you better luck. Naturalists report a seven-day cycle - i.e. does are 'in season' at seven-day intervals - but in fact the correct hormone releasing the follicle from the ovary is only produced as a result of stimulation, usually the pre-sence of the buck.

It has also been established that the wild rabbit has a 'close season' when no breeding and therefore no fighting takes place. This is in late autumn and winter and is marked by the virtual disappearance of the testicles in the male. This may be brought about by the shorter length of daylight hours and the lessening of the food supply at the end of summer. Caged rabbits, particularly in sheds, have more uniform conditions all the year round and so they can usually be induced to breed in winter as well; but from October onwards conception rates tend to be lower. Commercial rabbitries lengthen daylight at this time and keep the temperature constant at 15.6 deg C. They also feed the rabbits well. With backyard rabbits, winter production can be a problem, but with fewer litters a year your does will live longer, so why not let them have a rest if they feel like it? When we work with nature, we can afford to do this; there will be no expenses for heating and lighting to keep the temperature constant!

A month after mating, the doe makes a nest with soft hay and she plucks fur from her underside to line the nest. This helps to expose her teats, which are normally lost in the fur. Tame does make a nest in the hutch and they like a quiet dark place - hence the nest box. The babies need a warm nest because they are born so helpless. They are blind, deaf and have no fur at birth. At about ten days they begin to see and hear, and to crawl about the nest. The young are usually fed only once a day, which is surprising. They are born without teeth; at about a week the baby teeth are showing, which are replaced at a month by permanent teeth.

It is very exciting when the young ones first start to emerge at about 2 to 2 1/2 weeks. First you see one little nose at the entrance of the nest box or burrow, and then another. Then, with many false starts, they all coming hopping out into the light. They try a nibble or two of solid food and in a few days they are eating.

It is of great importance to feed the nursing doe well so that she has enough milk for the babies. Rabbit's milk is very high in protein, 12-14% compared with cow's milk at about 4%. To produce this she must have adequate food. The total solids of rabbit milk (the rest is water) have about twice the value of cow's milk, nearly 25%. This rich food takes some producing.

Sometimes a doe, particularly a young one, has a false pregnancy. She is convinced that a litter is on the way. At about eighteen days after the onset of this, she makes a nest. The only thing to do is to wait until she gets over it and then get her mated as soon as possible. The false pregnancy is less likely to happen if the doe is remated while still suckling her previous litter, or just as they are weaned. If she is left without mating for some time, or run with a lot of other females, a false pregnancy may occur. To tell the real from the false when it is possible that she may have in fact conceived, you can gently feel the litter in the abdomen from the outside.

The rabbit has a stomach equipped to deal with large amounts of green food which take a great deal of digesting. It eats frequently when it gets the chance, the new material helping to push things along the digestive tract. Like other grazing animals it chews the cud or has a second go at previously ingested materials in the intervals between eating; for example, when resting in the burrow. This is mentioned in the Bible, but since then it seems to have been forgotten and only rediscovered recently. The subject is perhaps not one for polite conversation, which may be why it was overlooked for so long. Unlike the cow and the sheep, which regurgitate the material into the mouth from the rumen and chew it at leisure, the rabbit produces a special soft pellet, covered in a protein membrane. This is collected from the anus before it and is quickly swallowed. It is very difficult to observe, and you can keep rabbits for years without knowing anything about it. The faecal pellets are hard and different from the soft pellets, which are formed about six hours after the last meal and swallowed about an hour later. About one third of the stomach is filled with them; they soften and dissolve. In the wild rabbit, this arrangement allows the animal to remain underground for long periods without going out for food. It also helps to keep the burrow clean. Rabbits hardly ever, it seems, pass hard pellets underground.

This pseudo rumination has been observed in rabbits as young as three weeks.. It is thought that with fermentation in the gut, the soft pellets provide the rabbit with vitamins of the B complex. In experiments, rabbits with no vitamin B in the diet have been found to be healthy and also to be excreting excess vitamin B, so they must be able to manufacture it.

If rabbits are fed very well and are eating all the time they may stop making pellets, but under normal conditions this does not happen. Rabbits in cages with regular mealtimes may produce fewer pellets than the wild rabbit, but they do use this form of digestion, mostly at night. Even in modern hutches with wire floors and trays underneath

them to catch the droppings, soft pellets are still eaten. Another name for this is coprophagy - but this is out of favour with some rabbit keepers because it implies that the animals eat dung, and this is not really the case.

The coat of the rabbit deserves a mention. There are now three kinds of fur produced by the different breeds of rabbit, as well as the wool grown by the Angora. The normal fur of the rabbit is like that of the wild ones, with long guard hairs and an undercoat of short dense hair. In the Rex variety the guard hairs are absent, and the fur is short and velvety. The satin is another kind, with each hair having a sheen.

At ten weeks of age the little rabbit has its first moult and sheds the 'baby coat'. At maturity it moults again and acquires then what is the prime coat - the one which furriers require. Every summer after this the rabbit will moult. Rabbits are not usually thought of as living in families, but in the wild (as in colonies) a couple of rabbits will mate for several years, sometimes for life. The female digs a new burrow for each litter and the male moves in with her. The young are allowed to remain with them for some time - longer when the breeding season ends; sometimes the father will go out with the children.

There is a 'pecking order' among a group of rabbits, as with other animals, and a powerful buck will possibly have several does. A younger or more timid male may have only one doe or be unable to find a mate. There is a lot of fighting at the beginning of the breeding season to establish who is the boss. When alarmed, rabbits stamp their back feet and make a thumping sound; this noise will carry through the earth a long way and act as a warning to other rabbits. If you approach a hutch suddenly, tame rabbits will do the same thing.

Disease in wild rabbits tends to come in cycles with the fluctuations in population. When the number of rabbits in an area has reached a high level, food is scarcer and the rabbits are not so vigorous. They are thinner, more prone to disease and the does tend to re-absorb the embryos of the next litter so that fewer litters are born and the population falls again.

Myxomatosis has done a lot of harm to rabbit keeping, because as I said before it took rabbit off the menu for a long time in Britain. It was not until yesterday that I saw a news-paper article about a game dealer who said that rabbit is becoming popular as a food once more. At £1.20 each they make a family meal and the dealer said that this was the cheapest meat he sold.

When the disease broke out first in 1953/4, the country was suffering from rabbit overpopulation and the animals were a pest to farmers and foresters. It was therefore policy to encourage the spread of the disease and many people did so. It is a horrible affliction; many are familiar with the sad sight of a swollen-faced rabbit wandering helplessly about. Some authorities state that the rabbit dies in agony, others suggest that the disease itself lessens sensitivity to pain. I hope this is true. Affected rabbits will still eat, and even attempt to mate. The disease only attacks the European rabbit, but of course Australian rabbits were European in origin. It is carried by biting insects such as fleas and mosquitoes, although British mosquitoes do not seem to be very effective carriers. In wild rabbits the carrier is usually the flea, *Spilopsyllus quiculi*, which migrates from dead rabbits onto living ones. This is the only way that a dead rabbit can infect a healthy one.

The fear of the disease is one reason why commercial rabbit keepers like to keep their flock in a shed, with gauze on the windows. I do not think though that it is a good enough reason for depriving your backyard stock of fresh air and sunshine, because there is something you can do. If the disease flares up again in wild rabbits in your area, you can vaccinate your breeding stock against it for only 20 pence each.

Since the rabbit population was seriously reduced in the 1950's by this disease, it now seems to be occurring in sporadic outbreaks. Some of these are man-induced regrettably.

Perhaps we should close this chapter on rabbits in general by considering the hare, which is a relative. Hares are native to Britain; they have always been with us, and always wild and solitary. Their erratic behaviour in the Spring has caused them to be regarded by country people with deep suspicion.

Rabbits belong to children's stories, but hares are part of the folklore; they were witches in disguise, running from mortals. The hare is bigger and rangier than the rabbit, with black-tipped ears which are longer than rabbits' ears. The two do not breed; the so-called 'Belgian Hare' is a true rabbit, though a big one.

4. MAKING A START

There is one way in which you and your family can take a headlong plunge into the rabbit world and begin to find out about it straight away. Go to a local rabbit show and you will find dozens of enthusiasts to talk to. Shows have stars according to their size and importance, but a local 'one star' show will be just as interesting as a bigger one.

Fortunately, there is no danger of the coloured rabbit breeds becoming extinct, as there has been with some breeds of pig until the recent 'rare breeds' revival. Commercial rabbit keepers like those in pigs, prefer white animals, or rather the market seems to demand them. But rabbits are not always kept for commercial reasons. There are fur varieties, kept for the pelt but yielding a useful carcass if not a gigantic one. And also, there is the 'Fancy'. Many of the older rabbit breeds which were developed at the end of the eighteenth century are kept as pets and for exhibition, as a hobby by people who get no reward except the enjoyment that the hobby brings. Of course, if they are successful at shows the value of their rabbits will increase and they will be able to sell their stock to other fanciers.

The drawback to these fancy rabbits from a meat-producing point of view is that the carcass is smaller than that of the commercial rabbit, and the flesh of the coloured breeds tends to be darker. This may not matter if you are going to use the meat yourself -- and the flavour could be more inter-esting.

The choice of breed is wide. The British Rabbit Council has a list of over 30 breeds to choose from. By visiting a show you can see the various breeds and make your own choice. Here are a few of the possibilities:

New Zealand White. This, in spite of the name, is an American rabbit with the acceptable white fur and flesh. It is a big rabbit, adult bucks weigh 9-11 lbs and does 10-12 lbs. Being larger, the does are blessed with 8 pairs of teats, ready to suckle a large litter. This rabbit has round haunches and shoulders with a lot of meat on them. The bones are rather large however, which affects the meat to bone ratio - the worry of the commercial meat packers. It is actually an albino rabbit, with pink eyes. This can mean it is rather sus-ceptible to changes in temperature.

New Zealand Red. This rabbit is smaller than the White and is a reddish colour. The bones are smaller and it is a good mother. For show purposes the breed is kept pure, but commercial breeders often use it with a white breed. The New Zealand of both colours has a national three-star show of its own, so it must have a lot of followers.

Dutch. This is a nice little rabbit, black with a white saddle, often seen as a children's pet (and so perhaps one to avoid for the pot!). The rabbits are mainly kept for showing but although small, about 5 lbs, they have a value in the production of meat. The Dutch matures early and therefore produces meat quickly and the does make excellent mothers.

Californian. Here is another American breed. California seems to be the place for rabbits in America; no doubt the climate is just right. This is a rabbit often seen in Britain now; it was introduced in the 1960% by A.E. Moss. It is a round white rabbit with a black nose, ears, feet and tail. The adult weight is 10-12 lbs and this is another producer of white meat, this time with fine bones.

Rex. This is hardly a breed but rather a variation on several breeds. I have mentioned before the short velvety fur of the Rex varieties. It was a mutation which first turned up in France early this century. Rabbits appeared with no guard hairs (the long ones which project furthest) and no whiskers. The first one to appear was the castorrex, a wild rabbit grey type. After this, by selected matings many colours were dev-eloped. This called for much inbreeding and for a time the stamina of these rabbits was weakened. However it recovered in time and they are more or less as hardy as the rest now. Where the suffix 'rex' came from has been forgotten.

These are very docile rabbits, compact and meaty, and weighing 6-8 lbs. With meat in view, these days they are used for crossing, but if they are bred pure, the pelts are beautiful if taken at the right time. So, if you want both meat and fur, try the Rex varieties.

Flernish Giant. This is of Belgian origin, a heavy rabbit weighing 11-14 lbs. During the war this was a useful rabbit for meat from scraps. A good strain of this breed would be a useful backyard rabbit now.

Beveren. This is another Belgian rabbit. There are white and coloured varieties and, of course, white is more popular for meat production.

Havana. Another Dutch rabbit of a rich chocolate colour. It is small, but very compact and meaty.

These are only a few of the breeds available. If you go to a show or talk to people who keep rabbits you will begin to develop preferences and will gradually be able to decide what kind of rabbits to keep.

When you select your stock, the main things are health and vigour. Good breeders always keep records and it would be a good idea to ask to see the records of the parents of the stock you are buying - look for large families and quick growth. Perhaps even more important than large families is regular families. Regular breeding means everything to the commercial man and he hopes for at least 40 young rabbits in a year from each doe. Backyarders can expect less than this but it is a good plan to buy the best stock that you can get. They will not be forced under your conditions, but they will be with you for a good few years and so the best rabbits will be worth their money.

With regard to health, consult the chapter on the subject for details, but you should be able to tell at a glance whether you are inspecting healthy rabbits or not. Watch out for sneezes and snuffles. I have not spent any time on respiratory diseases in the notes on health because this should not be a problem of backyard rabbits kept in outside hutches. These diseases, such as rhinitis and pneumonia, are caused by civilization. Pigs and rabbits kept in intensive conditions get this sort of trouble but it is rare in outdoor stock. It results from infection and irritation of the nasal passages and lungs; avoid sneezing rabbits like the plague. Rabbits wiping their noses with their paws are pathetic, but these are difficult diseases to cure. Sometimes the air flow in large rabbitries is insufficient and ammonia fumes may build up and lead to this sort of irritation.

The age of the stock you buy will depend to a certain extent on what you are offered. Cheapest would be young rabbits after weaning, say at eight to ten weeks of age. This is really the best time to buy them. They will grow up with you and have time to get used to the food, housing and management you are giving them. This is important because does are nervous creatures sometimes, and they will not settle down in a new home right away. Easier to get hold of might be the usual breeding package of three does and a buck, aged about four or five months - ready for breeding quite soon.

The number of rabbits to start with depends on how much space you have available, but if you are a beginner with livestock it will be wise not to get too many at first. The usual thing is to get the nucleus of three does and an unrelated buck, at whatever age they come. If all goes well this will provide rather more rabbit meat than your family can get through in a year, unless you are very clever at juggling with recipes; but surplus meat can be exchanged for all kinds of goods and services from neighbours.

Pet shop rabbits are not a good idea. Nor is it wise to buy from someone who is giving up in despair! Rabbits have a bad name in this respect; commercial production has been called the eighteen month industry because of the numbers of people who start into it, full of hope, and give up before the end of the second year. I hasten to add that this has nothing to do with backyard rabbit keeping.

It is a good idea to visit the premises of the breeder from whom you are buying, if this is at all possible. Besides having a look at the stock and the records you can also study the management. It is always possible to learn something in this way and breeders in general are usually generous with time and information.

If you are offered accredited stock, this means that you are dealing with a serious commercial breeder. The Commercial Rabbit Association has an Accreditation Scheme, aimed at setting standards for commercial rabbitries. If you buy from an accredited breeder this should safeguard you against getting poor stock. The rules are quite strict and the CRA has an inspector who travels about the country, making sure that they are kept. The first rule is that any stock offered for sale must have been born on the seller's farm. Others concern health, record keeping and standards of management. The CRA keeps a register of accredited breeders.

Another advantage of thoroughly spying out the land is that you will find out what sort of food and housing the

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rabbits are accustomed to. Changes should be introduced as gradually as possible to give the animals time to get used to them.

A young rabbit will obviously get an enormous shock when it is taken away from its home in a box, probably put in a car, and tipped out into a strange hutch at the other end. One way in which you can cushion the shock a little is by giving the rabbits the same food as they were used to at home even if it means buying a few pellets from the owner to start off with. You may have decided not to feed pellets yourself, but change the food gradually. The same applies to the hay and green food - find out what is being fed and change things gradually.

Another point to watch for is the type of hutch floors. A lot of commercial breeders are now using hutches with wire floors and a tray underneath to catch the droppings. These are very clean and odourless but rabbits which are not used to them can get sore hocks on them and can also be made to feel nervous - and, as I said before, does do tend to be nervous. If they are not settled when the litter arrives, they tend to drop the babies anywhere in the hutch and fail to look after them. Newborn rabbits chill and die very soon if they are not in the nest.

It is estimated that one person can look after between 200 and 500 breeding does according to the set-up. Inevitably you may find in such a unit that the individual rabbit does not receive very much attention. Another advantage you will have over the large producer is that you can give them attention; and if you buy them young, they will get to know you before breeding starts.

The returns you can expect will depend on your management and also on the cheapness of the feed. A small amount of rolled oats and some bran may need to be bought, but greenfood should be obtained free, and with luck you should be able to make your own hay. Ask your greengrocer for cabbage leaves and so on; he may be delighted to get rid of them.

It is possible that your surplus rabbits could be sold to pay for the outlay on bought-in food. If the game dealer I mentioned is right, rabbit meat could be in demand soon and if you cultivate an outlet who will take your stock live, and save you the trouble of killing and dressing (and the bother of regulations about the premises for these activities), this could provide a valuable income.

Efficiency on the backyard system will not be so vital as in a big rabbitry - after all, we are trying to avoid stress for the animals and for ourselves, not cause it! But if you are going to do the job it will be more satisfying to do it well. So it will be worth your while to keep records and to chart your progress from them. A good commercial yardstick is the amount of food consumed per lb of live weight produced. This may be difficult to measure if you are feeding green stuff and scraps, but it is comparatively easy to calculate for the pellet feeders.

To measure efficiency, you will need some kind of tally of what you spend and put into the enterprise on the one hand and what you get out on the other. It is interesting to know the average live weight of the rabbits you kill or sell for food, the food costs, and the price of rabbit meat - even if you use it rather than selling it. And if you don't use pellets an up to date knowledge of the price of them is a yardstick against which to measure your own food costs and the effort you put into finding cheaper foods.

A rough guide to success or otherwise with meat producing animals is the yearly margin over food costs per breeding doe. Typical figures in a report I have seen, varied from just under £6 per doe per year to just under £12. Inflation will have altered these figures but the wide variation will no doubt remain; it was according to the numbers of young produced, which varied from 30 for the low profit farms to 50 per doe.

Commercial enterprises have far more overheads than the backyard producer, so you can always take an optimistic view!

Another rough guide - the price of dressed rabbit at the time of writing is 58 pence per lb retail. So a 2¼ lb carcass is worth £1.45. Multiply this by the number of young

Costings for a commercial unit are obviously changing all the time and any figures given are soon out of date. Then again, the money you put into your rabbits will not bear much relation to the capital investment required for the business of rabbit production. It may be of academic interest to note that it can cost £40 per doe to house

rabbits in a new building. Wire cages cost from £3 to £8.

Commercial stock costs from £5 per doe from a reputable breeder; the young rabbits are weaned at about 4 weeks and sold at about 10 weeks, about 5 lbs live weight. They will need 3.25 lbs of food for every 1 lb of meat produced. This is an overall figure to include the cost of food for the parent rabbits. One merchant tells me rabbit pellets are roughly 5 pence per lb, in other words the cost of putting on one lb of meat is 16.25 pence. The price obtained (live) is about 29 pence per lb so the margin is 12 pence per lb over food costs. This is 60 pence per rabbit but margin over food costs is not profit as there are other costs as well.

I know from experience, having done the family accounts for a long time, that slight movements upwards of costs and downwards of returns can squeeze out the profit of any livestock enterprise at any time. Added to this, there is the possibility of disease or failure to breed to contend with. So there is little likelihood of getting rich quick with any type of animal. But I believe the job to be worthwhile for two reasons. Firstly, you can avoid the money economy because you are producing food you can use yourself, more cheaply than it can be produced commercially and sold to you; nobody makes a profit out of you. Secondly, backyard animals, particularly rabbits, represent a means of getting something out of what would otherwise be wasted; scraps, greenfood, lawn mowings - a really sound antidote to our throwaway civilization. If everybody in the country suddenly decided to make use of neglected scraps, the economy would change. It seems to me there is almost a moral duty in this direction.

To get back to our start with rabbits. Another point to remember is that recording is impossible unless you can identify the breeding rabbit. Even if you have only three it would be quite easy to get them mixed up if they were all the same breed and the same age.

Tattoos and ear tags are sometimes used for identification - obviously this is a bigger problem for the commercial people than it will be for you. Rabbit rings are probably the best for a small outfit. The British Rabbit Council supplies rings in different sizes for the various breeds. The ring is engraved with the initials BRC, the year and the serial number. It is slipped onto the hind leg of a young rabbit at about eight weeks and it goes on over the hock and stays on the upper leg. It is quite slack and comfortable, but it won't come off. After about ten weeks the hock has grown too much to allow the ring to be slipped over it. This means that you have to decide quite early in the rabbit's life whether or not it is to be kept for breeding, since only the breeding stock is ringed.

These rings are compulsory if you wish to exhibit rabbits at shows in Britain - on the continent, tattoos are used. Rings were imposed by the BRC to put an end to the confusion and even cheating which had occurred at shows. People would lend their best rabbits to others to show and sometimes good rabbits were stolen. Alternatively the stewards would get mixed up and put the entries in the wrong cages, and without identification marks it would take hours to sort them all out.

Another advantage of rings is that they identify lost rabbits. The BRC is frequently contacted by someone who finds a tame rabbit hopping about. If it has a ring number, the owner can be traced.

When you go to inspect rabbits it will be as well if you know how to handle them. Watch the owners and the judges at shows, to get to know how it is done. They do it gently but firmly, with no sudden movements. Put your hand into the cage slowly, grasp the rabbit by the ears with one hand and put the other hand under the haunches to take the weight.

It will be necessary to make some preparations before your rabbits are due to arrive. Hutches and food supplies should be ready for them. In the next chapter we will consider the different types of housing which can be used.

5. HOUSING

The way in which your rabbits are housed depends on your preference and also on whether you have a garden or a field. I think that it is better to let rabbits graze if you can, but if you have only concrete outside, their greenfood will need to be gathered for them, and they will have to live in conventional hutches.

Keeping rabbits in a field will give you a lot of problems however. Some people run rabbits in a fenced enclosure like a miniature Norman warren during the summer months. The netting has to be buried at least six inches under the soil or they will be out in no time. And there are other problems such as foxes and outbreaks of fighting. It is

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pleasant to keep animals in natural conditions, but giving them a chance to fight each other without enough room for the loser to go away, as would happen in nature, is not a good idea. The same applies to shelter. You can leave an animal in a field without shelter and call it natural conditions, but a wild animal has a much bigger territory and can choose its position according to the weather and the direction of the wind. Having said all this, if you have a bunch of young rabbits of the same age, some netting and pleasant weather, the colony system would perhaps work well for a while.

There is a compromise, which allows the rabbits to graze but restricts their freedom. This is called the Morant Hutch, and if you have a patch of grass, an orchard or a lawn, this is the system for you, in the summer at any rate.

The Morant Hutch is a sort of ark with a covered part for sleeping and a run. Usually the floor of the run is covered with wire netting so that the rabbits can graze the grass through the wire, but they are unable to start digging holes, or escape if the ground is uneven. This fold unit (grazing like this is called 'folding') can be dragged onto a fresh patch of grass every day. In the grazing season much of their food can be provided this way. If you have a field you can fold rabbits for most of the year, but if it is a lawn they are grazing it should be rested in winter. The wartime books about rabbit keeping tell us that you can make rabbit hutches yourself with no previous experience of woodworking; but then, it was an emergency after all! There were more wooden packing cases than there are now, which helped a lot. Our family has always made things from wood like this, but then my father had qualifications in woodworking so this was no problem. But if you have any idea of carpentry at all, a hutch must be about the easiest thing to make.

From the diagram of the Morant Hutch you will see that it is 7 ft long overall, with a roofed-in sleeping section of 2 ft 6 in. Inside this will be a wooden floor. The roof can extend over the grazing area as well; it is usually weather boarded or covered with roofing felt. It is very important to keep rabbits dry and snug, with no draughts in the sleeping quarters. The hut is 3 ft wide at the bottom, but the dimensions can be varied.

One advantage is that it requires no cleaning out. You just move on and leave the droppings to manure the grass. Ideally the rabbits should not go over the same ground twice in a season, but if they are keeping the lawn trimmed they will need to graze it more often. In this case scatter lime lightly over the grass immediately after each grazing.

If you have no grass at all, hutches will have to do. For a backyard unit I think outdoor hutches are the best; but if there is a poultry house or garage available, there may be advantages to putting them inside it. A light, airy shed with good ventilation is suitable but a poky, dark one is not.

We have found that rabbits do well inside or out. You are less at the mercy of the weather inside a shed - it takes fortitude to clean out the hutches with the rain trickling down your neck. A shed also protects the stock from extremes of heat and cold. But well-made outdoor hutches can be very good and you can always choose your day for muck-ing out!

Outdoor hutches need to be protected from the weather and so the roof should have projecting eaves at front and back to keep off the rain and it should be completely weatherproof. The wind is a problem because it changes direction, but try to put outdoor hutches in a sheltered corner. You may not have a great deal of choice of site. But I would still make the point that anybody can produce their own rabbit meat, even in the smallest of backyards. If the rabbits are exposed to fierce sun all day in summer they will be distressed, but you can always rig up some sort of awning to keep off the sun at its strongest. In Spring and Autumn the sun will do them good. The hutches should have a front which is part netting, part solid wood so that the rabbits can shelter behind the solid part if they wish.

Rabbits can still be happy in hutches if you have no land. Many people let them hop about for a change in a corner of the yard when they can spare the time to look after them. They can run about under the hutches - outdoor hutches should be raised off the ground on legs.

Commercial rabbit keepers, who have their hutches in-doors, can lengthen the daylight artificially in winter so that there is no slowing up of breeding. They also keep the temperature at about 15 deg C. Backyard producers need not worry if the number of litters per year is rather below commercial standards, so it's not worth putting up a

special build-ing for your rabbits. In fact, rabbits should be healthier out-side; one of the problems of large-scale indoor rabbit keeping is getting the ventilation right, with consequent respiratory troubles if you don't succeed. The ammonia in the urine can give off fumes in a confined space.

When you are deciding what sort of hutches to build or buy, space, comfort and cleanliness all need to be considered. A doe and litter will need about 8 sq ft, say 4 x 2 ft, or more for the larger breeds. With a big enough hutch, the litter can be left with the doe for a little longer without overcrowding and this can be useful sometimes. If you have a small area of grass, the doe could be kept in an outdoor hutch and the young ones after weaning could be 'folded' on the grass.

A hutch of the size I suggested, made of tongued and grooved deal boards (see diagram) costs about £28 to buy at the moment. Tiers of hutches mean more outlay but are cheaper individually because they share walls. There is one advertised at E40 for a tier of three. Be sure you are buying outdoor quality housing, built for the job; there are cheaper, flimsy cages and wire ones made specifically for indoor rabbits. It is impossible to estimate how cheaply you could make one yourself as it depends on what materials you can get hold of. Study several types before building your own.

Many breeders now use wire cages for indoor hutches because they are easier to clean. Wood may be more difficult to disinfect, but it is far warmer and essential for outdoor rabbits. For this reason I prefer wooden housing. Exterior grade plywood, 1/2 in thick, covered externally with felt is what we bought for making hutches when there was no second hand wood available.

Likewise, wooden floors make for more cleaning out, as wire cages have neat droppings trays. But I think rabbits prefer solid floors and they are much warmer. Wire-floor enthusiasts remind me that rabbits can get soiled on wooden floors, which soak up moisture to a certain extent, and this can lead to sore hocks. This can be true and it is very unpleasant. But I would rather clean them out more often than change to wire, which can also make their feet sore some-times.

If your floors are wet and the rabbits get dirty, try a change of bedding material. Clean them out more often - or make a toilet for the rabbit in one corner! My father, remembers rabbit toilets being suggested many years ago and a recent article in Fur and Feather suggested them again. They consist of a wire-covered hole in the floor, under which is a plastic box to catch the effluent. To begin with, you scatter droppings in the box and round the hole to give the rabbit the idea. Some rabbits apparently use the toilet and their bedding lasts much longer.

What sort of bedding is best? There are several possibilities and you can buy bedding, but I would try to get hold of a free supply somewhere! Sawdust is quite good, but can get into the babies' eyes - wood shavings are rather better. Straw could possibly be exchanged with a farmer for garden produce or meat; or you could make hay in the summer from dried grass and weeds. If it was really good, fine hay it would be best to use it for food, but anything you make which is not too nutritious could be used for bedding. Fine dried grass is the best thing for the nest box.

So much for the floor. The front of the hutch can be hinged, and also grooved so that the whole front lifts out when you want to clean the hutch. There is nothing worse than trying to clean out a hutch through a small door, watched by an uncooperative rabbit. The wire should be nailed to the inside of the door to stop the rabbits gnawing at the wooden corners. Cleaning out, if your rabbits have no toilets, is best done with an old-fashioned coal rake and fire shovel, or similar implements. A three sided modern scraper will cost you about £2.

Nest boxes are needed for doe hutches. These used to be made from margarine boxes, but goods are shipped in cardboard now instead of useful wood. If you can find a box about 15 in square you can cut a doorway in it, 6 in wide for the doe to enter. Some people nail the box to 2 in runners so that the bottom is raised off the floor of the hutch; they can then drill holes in the corners of the nest box for drainage.

Other hutch furniture you will need; a hay rack which saves hay by keeping it off the floor. One inch mesh wire netting is stapled like a pouch onto a square of 1/2 in boarding.

This can be detachable, having a hole drilled in the back by which it is hung from a nail in the hutch. You can then take it out to fill it up.

Feeding dishes and drinking bowls need not be elaborate but watch to see that they are big enough. Glazed earthenware pots sold for cats and dogs will do and they are easy to clean. We used to make wooden troughs for mash, the rabbits gnawed at them but it did them no harm.

Rabbits need a lot of water, especially milking does and in hot weather. Wild rabbits seem to drink little water, but they usually have a choice of succulent foods. With dry foods more water will be needed and with swedes, less. But clean water should always be available. Little pots are not realistic, especially if you are out at work all day and only see the rabbits morning and night. Pet shops supply a plastic bottle which is upended, with a nozzle which goes into the pen through the wire. The bottle is fastened to the outside of the pen. Rabbits use these happily, they prevent fouling of the water and you can see at a glance whether more is needed. Although I am keeping equipment down to a minimum for our backyard rabbits, I feel that this is an item which would be worth buying. A more solid kind of drinker we have made from a large bottle inverted over a shallow tray, with the mouth under water like a poultry drinker. The poultry equipment firm of Eltex also market one of these. The bottle is supported by wire.

An adult rabbit will drink up to half a pint a day. A heavily pregnant doe will need her pint, and when the litter is born, they are drinking and she is producing milk, the family can account for up to a gallon of water a day in hot weather.

It is an unpleasant fact of life that where you are keep-ing rabbits, or poultry, or pigs, the food about is likely to attract rats. Thus it is best to keep foods such as bran or oats in bins with tight lids. This also prevents contamination by cats or dogs, which is important. Tape worms can be carried to rabbits in the droppings of infected cats and dogs and also the fleas which spread the dreaded myxomatosis could just have migrated to a cat or dog from a dead rabbit.

To discourage rats, keep hutches a few inches clear of the wall and keep the whole place as clear of rubbish as possible so that there are no hiding places. Once you have rats it is very difficult to get rid of them.

6. FEEDING

Rabbits need roughly the same constituents in their food as other animals and as we do, with one or two exceptions. They are herbivorous and will eat most greenfood, grains and roots? If you want an easy life, the commercial rabbit pellets are balanced and need no additives and no special knowledge. An adult rabbit will eat about four ounces a day of this concentrated food, going up to about eight ounces for a doe with young. But if as I imagine you would like to find the food for your rabbits yourself, and supplement greens with a mash made from household scraps, you will have to think a bit more about balancing a diet. Briefly, the needs are these:

Carbohydrates. These provide energy. Surplus carbohydrates are stored as fat and if your does get too much of them, they may become too fat to breed. Rabbits will in fact balance their own ration when they can. They will eat more food if it is low in energy and less if it is high - if they are given the choice. The danger here is that a very high energy diet could reduce their intake and they could end up short of other food constituents.

Proteins. In general it is supposed that the ration should contain about 18% protein. These build up the body tissues of the animal. The young growing rabbit is thus the most in need of protein, and the pregnant doe needs extra to produce her litter. This is usually the expensive part of the ration, and the most difficult to provide in a vegetarian diet. During the war, soaked dried peas were fed to rabbits for protein. Unless you grow your own, these are now too expensive. There is a good deal of protein in greenfood and a constant supply of varied greens should produce some of the necessary protein. Good hay is another source; which is why your hay should always be the best you can get.

Fibre. Wild rabbits eat a lot of fibre. Hay provides this but too much can impair digestion. Young rabbits and breeding stock should have a less fibrous diet than older rabbits. Pelleters reckon to include about 14% fibre, but this is a minimum. Adult rabbits can deal with a ration composed of up to 25% fibre.

Minerals. These are provided by greenfood in a natural ration, but they have to be added to pellets. Rabbits appear to need all the usual minerals except cobalt.

Vitamins. Rabbits can make some of their own vitamins for themselves. The habit of pseudo-rumination ensures that vitamins of the B complex which are produced in the last part of the intestines by the bacteria living there, can be used by the rabbit. Vitamin B is contained in the soft pellets; this has been proved by experiment. It seems that they may also make Vitamin C, but backyard rabbits will get plenty of this in their normal diet, so the question is not a vital one.

The other vitamins are important in the diet; A, D (a deficiency of this causes rickets in young rabbits) and E. It has been suggested that coccidiosis may be more likely to attack when rabbits are short of Vitamin E.

So, leaving aside the commercial pellets, how shall we feed our rabbits economically' at the right levels of all these requirements?

If we go back to the wild rabbit, and watch it feed on a bank in the evening sun, the most noticeable thing is the way it hops about, nibbling at this and that. Rabbits like variety and when they are in your backyard it is up to you to provide it. No doubt this preference is nature's way of making sure that all the vitamins, minerals and so on are provided, since different plants will supply different needs. It is also a safeguard against a sudden change of diet.

We have always fed a mash in the morning and green-food at night, keeping the hay rack topped up all the time so that they can have as much as they like. Mash supplies carbohydrate and some protein. The greenfood will have everything in varying amounts. Some people only feed once a day but twice is better. It is important not to overfeed or to let the rabbits go hungry, and it is easier to regulate the diet if you feed twice a day; it need not take long.

If you give them too much, they will leave some - a sign that the ration should be cut down. Always remove stale food. Fermenting and sour food is very bad for rabbits. If a dog gets something undesirable it is sick and that's that, but rabbits cannot be sick. Of course, if all the food has vanished and all the hay, give them a bit more unless they are really fat. Feeding rabbits depends on your observation in this way much more than in weighing out food to the last ounce, in backyard conditions anyway. It is impossible to weigh out the exact requirements unless you know the exact analysis of the food, and that is only the case with pellets - a powerful argument for using them commercially.

When pellets are fed, rabbits from 8 weeks onwards get about 3 ounces per day. Pregnant does get 4 ounces but this is increased to 8 ounces gradually as the pregnancy goes on. How do we apply this to natural feeding? There is bound to be more bulk involved, because natural feeds are rarely so concentrated. As a rough guide, an adult rabbit will eat a portion of mash about the size of a tangerine. This can be made from stale bread, porridge, (oats are good) or boiled potato peelings, anything like that, moistened and then dried off with bran. The mash should be dry and crumbly, not soggy and not dusty. Some rolled oats can be kept as a standby for days when nobody leaves anything for the rabbits. Or you can toast stale bread really hard - they love to gnaw away at it. Neighbours may be glad to give you their stale bread if you are too thrifty to have much to spare yourselves.

During the war, the only bought-in food available for rabbits was bran, which is more fibre than anything else. It was mixed with scraps to feed thousands of backyard rabbits. Bran is no longer cheap since it costs as much as pellets, at £120 per ton! But even so, it is a better buy for backyard rabbits. It will not be fed straight, but used to dry off mash and so it will go a lot further.

The hay should be the very best you can get; with prices as they are, it might be best to try and make it yourself. There can be a lot of protein in well-made lucerne (alfalfa) hay, and this is the standby of the American rabbit industry. If you make hay yourself, turn it often and store it loose if possible. It should be dry, dark green and fragrant; don't store it until it is really dry or it will go mouldy. But don't go too far the other way - beginners sometimes leave hay out in the sun too long, until it is bleached the colour of straw. This sort of hay has lost a lot of its goodness.

Lawn mowings are rather more lacerated than grass cut for hay and so lose more of their goodness, but if they are dried properly this is useful winter food. Do not let them heat up, and avoid them if cats and dogs have visited the lawn.

The odd shower of rain will not spoil your hay irrevocably, but mouldy or dusty hay should not be fed to rabbits. Avoid it yourself if you can; inhaling spores from mouldy hay can lead to a condition known as "Farmer's Lung."

If you need to buy hay, try to get it about July, it is usually cheaper then. You may be able to leave it at the farm until it is needed if there is a shortage of storage space at home. Wherever it is, it must be under cover.

Wild Greens. The main thing is to be able to recognise the common wild plants so that you can select the right ones for rabbits. An illustrated botany book will soon put you right. No doubt you will be as keen as we are on conservation and you will not go into an area and denude it of vegetation.

Many people are against the idea of picking any wild plants these days, but it is a matter of common sense. You will be doing it within reason and for a useful purpose.

During the war, wild green food included young tree leaves and shoots. These would be the natural spring food of the wild rabbits, and if you can provide a few without deforestation it might be a good idea. Sometimes there can be a danger in feeding young oak leaves very early in spring, so only give shoots in moderation. Rabbits love gnawing things, so shoots will please them. Acorns were also dried for rabbit food during the war; fallen acorns were collected and spread out in a shed, and then stored.

With green plants in general though, it is better to avoid the seeds. Sometimes they can be mildly poisonous when the plant is not. Clovers and vetches are an example; avoid their seeds if you can. These are legumes, high in protein and very useful. Vetches are often found climbing over other plants in the hedgerows. Here are a few other useful wild plants:

Coltsfoot. This is a troublesome weed in the garden; herbalists use it in cough mixtures. The yellow flowers appear very early in the spring. The big round leaves are more apparent later. This is the sort of plant that gives the rabbits a change when garden greens are scarce.

Cornfrey. This grows wild and there is also a cultivated sort - see later. Some people say that wild rabbits avoid it, but backyard ones like it well enough. It is a big bulky plant which makes gathering easier! In olden days it was called the bone setters' herb, and was used during the Crusades to heal wounds and to set broken bones.

Chickweed. It is useful because it always seems to be there; it seems to grow even in cracks in concrete, all the year round. It contains a lot of copper, which in ways not fully understood, seems to improve digestion.

Cow Parsley. The Wiltshire name for this is Rabbits Meat, which speaks for itself. Another useful plant, but I was always afraid of confusing it with Fool's Parsley, a poisonous weed.

Docks. These are not eaten much by cattle and sheep and farmers consider them an unmitigated nuisance, so if you see a patch growing on private land you should be able to gather some for the rabbits. Use only the leaves - the seeds are sometimes poisonous. We feed docks mixed in with lush grass, as they will counteract its laxative tendency. The dock is an antiseptic plant and cooling to inflamed skin - remember how it feels on nettle stings; so it is useful for treating ailments too.

Sorrel (sour dock). This is a tasty bite in the Spring. Our ancestors used to gather it for themselves and make Sour Dock Pudding. It is juicy and acid, and must have tasted good after a long winter.

Dandelion. A well known food for rabbits, but it should not be fed in large quantities. When mixed with other foods it acts as a tonic, rather as we mix young dandelion leaves with our own salads sometimes.

Fat Hen. Useful in small doses, this is a common garden weed. It is related to the perennial herb Good King Henry, (is the weed name derogatory?) and used to be grown as a vegetable, so it tends to be more common at the sites of old villages.

Groundsel. This got its name from the Old English "ground swallower" because it covers the ground so quickly. It

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has always been used by backyard rabbit keepers to get their rabbits through the moult. Once again, feed small quantities at a time. Groundsel is sometimes attacked by a fungus and if this happens, don't use it.

Heather. Another astringent plant, eaten by moorland rabbits. It can add variety to the diet if you live anywhere near a heather moor. The young spring shoots are the favourites, and they could be useful when grass is scarce.

Ivy. We have fed ivy leaves in a hard winter when there was little else available, The rabbits liked them, as do wild rabbits. In summer and in the autumn when there are berries on the plants, avoid it; the flowers and berries are purgative -in fact the plant is a strong one and too many leaves are not good for stock. Herbalists give them as a tonic to animals which have just given birth.

Plantain. This little plant seems to grow wherever there is a pathway made by man. If you find clean specimens, collect them for the rabbits.

Shepherds Purse. This again is good medicinally - see later. Again, avoid any plants covered in fungus.

Sow Thistle. This is also called milk thistle because it has a white milky juice in the hollow stem. The flowers are bright yellow, rather like a dandelion, and the leaves are green and although pointed, are not very prickly. Rabbits love them, and as these plants grow to a considerable size, they can be useful if you are in a hurry. But try to get young ones; this year I left one in a corner to see how big it would grow, and by the time my experiment was finished the plant was huge, tough and suitable only for pigs and not rabbits.

Watercress. This is a very good winter salad for rabbits and for us, rich in iron and other minerals. It will sometimes tempt a sick rabbit to eat. Make sure that you pick it from running water and wash it before feeding, because this plant can be contaminated by the cysts of liver fluke, which can attack rabbits and humans alike. The grey water snail is the alternate host to the fluke, which then migrates to the liver of a bigger animal - sheep, cow or rabbit. Wild rabbits on wet ground get liver fluke and it would be a pity to introduce it to your rabbits. Symptoms are anaemia, loss of condition and weight.

These are only a few of the useful plants you may find when out hunting for rabbit food. Perhaps we should now consider the more common plants to avoid. These were taught me by my father, when I was first introduced to the art of rabbit keeping at the age of eight or nine.

Many garden plants are poisonous, but they are not likely foods. Most people would not think of feeding aconite, monkshood, anemone or autumn crocus, but I mention in passing that they are poisonous. So is daffodil - the sheep taught me that.

Buttercups and daisies are best left alone, but one or two in a mixed bunch are inevitable in summer and they will do no harm. They will cause no trouble if dried in hay.

Bluebells should be avoided. Deadly nightshade is well known but this is actually more dangerous to us than rabbits. But this is a plant which is not made harmless by drying, so try not to get it in the hay.

Bindweed. Apparently goats like this plant, but we are always careful to avoid it for the rabbits. The seeds are to be avoided at all costs. Black bindweed is worse than the lesser bindweed.

Celandine is less dangerous in Spring, but more so later. Elder. A branch of this is good to keep flies away from the rabbits in Summer. It is a good insecticide, hence the leaves are too strong to eat.

Foxglove. This is dangerous. The digitalin it contains is used to treat heart complaints in orthodox medicine. We once lost two cows through poisoning and the vet suspected the foxglove leaves which grew in the wall bottoms. Nothing was proved, but it made us very wary of this plant.

Wild Iris. Perhaps we should note that this is dangerous to all animals.

Fool's Parsley. The one I mentioned as being rather like Cow or Hedge Parsley, This one causes convulsions;

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there are little 'beaks' under the flowers if you look for them. Hem-lock is another poisonous plant, rather like the parsleys but bigger and coarser. Hemlock also gives off a nasty smell when bruised. In hay it is not so dangerous - we have harvested it by mistake and it has gone through with no ill effects. Soc-rates finished it all with hemlock, but I hope your rabbits will not do the same.

Henbane is one you are always warned about. I never seem to see it. Animals avoid it as it smells unpleasant. It's a source of the alkaloid hyoscine used in medicine.

Poppies. That poppies produce opium is well known - a well-run rabbitry can do without them.

Scarlet Pimpernel This is so small that it is not likely to be gathered, but it is poisonous.

Lettuce, the story-book rabbit food, rather surprisingly should be fed in strict moderation, since it has a soporific effect similar to opium - although I hasten to add that wild lettuce is much more effective than the garden variety. The substance in lettuce is called Lactucarium and has been used in sleeping draughts.

I have mentioned a few garden plants to avoid and per-haps we can end with a few more. Potato and rhubarb tops are garden waste which would poison rabbits and strangely enough the leaves and stems of broad beans and runner beans are not good for rabbits. But pea haulm is quite harmless.

When finding wild plants to gather there are several hazards apart from being caught trespassing! However the law says in one judgement at least that it is no offence to take wild plants or to trespass to find them. Wild plants become your property when you gather them, unlike cultivated crops, which you cannot pick without stealing. But in spite of this I would feel happier with permission to gather rabbit food from private land, and I would recommend you to get permission before you start. Most farmers will allow you together rabbit food if you ask them.

Another hazard is pollution, which often affects com-mon land these days. Many a roadside verge that fed our rabbits twenty years ago is now contaminated with petrol fumes from the volume of traffic. Choose wide verges and pick your plants near the hedge - and of course, the less fre-quented roads are the best. It is wrong to pull up plants by the roots - rabbits will not relish the soil for one thing, and also you are permanently removing the plant. Leave them so that they can grow again; you will know where to come next season.

Then there are' the chemical sprays which can be deadly for livestock. These can come over hedges from the fields -so watch out for recent wheel marks on crops like half-grown corn. Grassland is not often sprayed wholesale, but patches of docks are sometimes treated. Sometimes the councils spray the verges to keep them in trim - this is a dreadful practice and is being discouraged. This is just as well for the future of our wild flowers.

7. GROWING CROPS FOR RABBITS

It may seem to be rather an effort to set about growing crops for rabbits, but there are many advantages. Pollution from dogs, petrol fumes and sprays makes wild food hazardous in populated areas. And then, the winter months can be diff-icult if you rely on wild plants because most of them are rest-ing then. A garden can provide you with rabbit food all the year round, and not least of the advantages is vegetables for you as well.

If you have a garden, you will probably already be grow-ing most of the vegetables I suggest. If not, why not consider taking up gardening?

Even in a town, you can set about acquiring a garden. There are many neglected gardens about, waiting to be look-ed after! Sometimes they belong to people who through age or illness are unable to continue with their gardening. Such people are often worried about their wilderness and are very pleased to come to an arrangement with someone able and enterprising. They may allow you to cultivate their garden in return for a share of the produce.

Another possibility is the allotment system. Many coun-cils have a policy of providing allotment gardens in towns for people with no land; this is becoming popular again as grow-ing vegetables becomes a necessity, and in some towns there is a waiting list of applicants.

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The Henry Doubleday Research Association has published a booklet dealing with allotments and how to go about finding one. Everyone who really wants to cultivate a piece of land should be able to find one somewhere.

Assuming, then, that we have a garden, the policy needs thinking out. Lawns can be rather a waste of space, but not if they are grazed by rabbits in Morant Hutches. So don't dig up the lawn. If the lawn belongs to someone else and you can't really graze it then save the lawn mowings for the rabbits instead.

An uncle of mine who is a professional gardener is a genius at laying out gardens in a small space. He puts vegetables and shrubs and flowers all together to make an ornamental whole. You can stroll round it all like a pleasure garden, with walks, alleys and arches contrived to make the area appear much bigger than it is, and yet tucked away among it he has a great many vegetables. So you need not dig up the roses - just grow vegetables behind them.

If you live in the country where there is plenty of rabbit food, it may not be worthwhile to grow specific rabbit crops. The waste, outside leaves and tops left over from the vegetables you and your family eat may be quite enough to see the rabbits through. The winter period is the difficult time, but root crops and winter cabbage will fill the gap.

On the other hand, town rabbits will be delighted with things like kale, comfrey or chicory and if you have room to set aside a rabbit patch, it would be well worth the trouble.

If you are a newcomer to gardening, get hold of a good book on the subject and study it from the beginning. Lawrence Hills has written several books on gardening with organic principles which would be useful. From the advice given by organic gardeners you will learn how valuable rabbit manure really is.

On the table of 'possibilities' you can see what is available for each month of the year. I have divided these into two groups, what can be grown for the family and what can be done just as rabbit food. There is no room here to go into the details of cultivation, but perhaps we should have a look at a few of the more unusual vegetables which can be grown for rabbits.

RABBIT FEED TABLE

JAN	FEB	MARCH	APRIL	MAY	JUNE
A -- mainly for you					
Parsnip	Parsnip	Parsnip			Lettuce
Broccoli	Broccoli	Broccoli			
Sprouts	Sprout	Sprout	Sprout	Winter	Carrot
Cabbage	Tops	Tops	Tops	Greens	cauliflower
cauliflower		cauliflower	cauliflower	cauliflower	cauliflower
Celery	Celery				
Perpetual	Leek				
Spinach	Artichoke				
Leek					
B - mainly for rabbits					
Curly Kale	Curly Kale	Curly Kale	Curly Kale	Mowings	
Cow	Cow	Cow	Comfrey	Comfrey	Comfrey
cabbage	cabbage	Cabbage	Dandelion	Dandelion	Dandelion
Fodder	Fodder	Fodder			
Beet	Beet	Beet			Chicory
Sunflower	Mangold	Mangold	Mae,gold	Marigold	
Seeds					

JULY AUGUST SEPT OCT NOV DEC

A -- mainly for you

Lettuce	Lettuce	Lettuce	Lettuce	Artichoke	Artichoke
Beetroot	Beetroot	Beetroot	Beetroot	Parsnip	Parsnip
Carrot	Carrot	Carrot	Carrot	Carrot	Carrot
cauliflower	cauliflower		Swede	Swede	Swede
cauliflower	cauliflower		cauliflower	cauliflower	
Broccoli	Broccoli	Celery	Celery		
Kohl Rabi	Kohl Rabi	Leek	Leek		

B - mainly for rabbits

Mowings	Mowings	Mowings		Cow	Cow
comfrey	Comfrey	Comfrey	Comfrey	cabbage	Cabbage
Artichoke	Artichoke	Artichoke		Marrow	Marrow
Leaves	Leaves	Leaves		Stem Kale	Stem Kale
Chicory	Chicory	Chicory	Chicory		Sunflower
Pea Pods	Pea Pods				Seeds

Artichokes. The one I mean is the Jerusalem Artichoke, which is related to the sunflower. We have always grown these; they are quite hardy and do well in the north. The tubers make a good winter vegetable for you and the rabbits as well. They are almost a substitute for potatoes, although sweeter, and they have about the same food value. Arti-chokes contain about 14% sugar, 76% water and 3% protein. They can be boiled, and we like to roast them in the oven with the joint. Artichokes are left in the ground year after year; just dig up the tubers you want and leave a few for next year. Rabbits like the tubers, but remember to wash them before feeding. Since they are impervious to frost, a great advantage of artichokes is that they need not be taken up and stored.

In the summer, artichokes put up tough, tall stems which grow like the sunflower to six feet or more. They make a good screen in the garden to keep out unwanted views or to divide it up, but they die down again when the frosts come. The young leaves are good rabbit food, and are not likely to cause scour. Artichokes make a change which rabbits appreciate. The tough stems provide something for them to nibble at.

Beetroot. You may not have thought of this as rabbit food, but it can be, especially if a rabbit has lost its appetite. This crop is better harvested in the autumn and stored. It can be left in the ground if you cover it with straw.

Comfrey. This is used by organic gardeners as a source of green manure; they dig it into the ground because it is high in potash. It is easy to grow once it is established as it is a perennial. You can cut it for rabbits, and let it grow again several times during the Summer. It is used a great deal in herbal medicine - ask the Henry Doubleday Research Assn. for details.

Chicory. You can find this now in some seed catalogues for use as a salad plant, to grow in pots in the dark. Chicory for rabbits can be sown in the garden in Spring, and the leaves can be cut for rabbit food about every fortnight during the Summer. The plants will carry on for years; we used to line the garden paths with it.

Dandelion. This is such a nuisance as a weed that there will probably be no need to cultivate it, but people have been known to sow an odd corner. These again are a good tonic and can be cut several times a year, but they are best fed mixed with other greens.

Kohl Rabi. This is apparently grown more in Europe than in Britain. It is rather like a swede, but the flavour is nutty. Eat them yourself as a root vegetable and give both roots and leaves to the rabbits. It is said that they like the green kind better than the purple.

Kale. There are various kinds of kale. Some are hardy and some are not. We have grown all the kinds on a field as well as a garden scale, but some varieties are a bit coarse for the table. This year we have curly kale in the

garden and for small scale growing it beats them all. It has survived a drought and a plague of pests which killed off all the sprouts nearby, and now it is fresh and green in frost and snow. This kind of kale makes good rabbit food, and a good winter salad too, I make a variation of coleslaw with it.

A disadvantage with kale is that it takes up a lot of room. The size varies according to type, but marrow stem kale plants grow to about \$ft on good land, and this kind is not frost hardy, so avoid it for the garden. If you know a farmer who grows kale for his cattle, he might be persuaded to let you have a plant or two a week for the rabbits; they will eat the lot, stem and all. On the other hand, kale is easy to grow and remarkably resistant to disease, so if you have difficulties growing cabbages and sprouts sow a row of early kale. When you thin the plants, give the thinnings to the rab-bits - this applies to all the vegetables.

Lucerne. A legume like peas and beans. It thus has nitrogen-fixing properties which should help the garden. If you have well-drained alkaline soil, it will do Well. It is very good for animals. I once worked on a farm where we grew it for the cattle. You get three or four cuts in the Summer and it can be grown in a plot like grass and made into hay if there is any surplus.

Mangolds. These are not a table vegetable, and are usu-ally grown for cattle and sheep. We have grown them some winters, but it involves a lot of work on a field scale. They are taken up in Autumn and stored in a clamp, an earthed-up heap to keep out the frost, ready for use in Winter. They are not properly ripe until after Christmas and if fed before then, they will scour the animals. Mangolds are resistant to pests, and they are nice succulent food when greens are scarce. They produce a large bulk from a given plot of land. So, once more, there are points for and against them. Beg them from a farmer friend if you can, but they are rather out of fashion now because of the high labour requirements.

Sugar Beet. A type of mangold grown for the sugar con-tent which is about 1 6%. If you happen to live in a beet gro-wing area you may find them on the roads in the Autumn, fallen from lorries on their way to the factory. Odd ones picked up like this are a welcome change for rabbit feeding, but you can't really grow them - it's not worth it. In any case the seed is hard to get, because farmers are only allowed to grow them if they have government permission for a spec-ified acreage - a 'quota'.

Swedes. These are much more useful than mangolds in a garden. They will provide dinners for the family as well as the rabbits, also they can stand frost, and can stay in the ground for part of the Winter at least. When you move them to dig over the plot, they should be stored under cover. The problem with growing swedes is that they are rather suscept-ible to plagues such as the flea beetle, but this varies accord-ing to the season.

Herbs. These can obviously belong to the ornamental part of the garden, or be used to edge the vegetable beds. After years of neglect, herbs are popular again, and you will find them in most seed catalogues (which incidentally are full of helpful advice on gardening.) Herbs can be grown in plant pots or on window boxes if you are short of room. Grow the herbs that you are unable to find in the wild; garlic is an imp-ortant one for health, and I have transplanted wild garlic from the woods successfully.

Storage. Carrots, parsnips, swedes and so on can be taken up in the Autumn and stored for the Winter. This frees the land ready for digging over for the next crop. It also keeps the roots safe from frost, which is more important with some kinds than with others. They are easier to handle and feed to the animals when stored. We cover roots with straw or sacks in a shed, or if there are a lot, as when we grow mangolds, we make them into a "pie," covered with earth. Heap-ed up in sand or soil they will store well, so long as the site is not wet.

A useful trick with cabbages is to leave the stalk in the ground when you cut a cabbage; cut a cross in the top of the remaining stalk, and four small cabbages will sprout from it -not quite crisp and good enough for the table unless you are short of greens, but very good for the rabbits.

A theory which is worth some study is the one about, the compatibility of various plants. An example is planting carrots and onions together, either in alternate rows or adjac-ent beds, because they repel each others pests. Mint is said to keep fly away from beans, and so on.

Then there is the expanding science of biological control to study - useful creatures like hedgehogs eat insect

pests, as do toads. The Soil Association has literature about this, and about other aspects of organic gardening.

8. BREEDING

People who show rabbits are always trying to improve their stock by breeding to fix good points and eliminate bad ones. The backyard producer can introduce new blood by buying a fresh buck occasionally, and if this rabbit is fertile, healthy and of good type, there will be nothing to worry about. Life is rather simpler if you are not trying to breed for show points! However, perhaps we should take a brief look at the terms used by breeders.

Crossbreeding is the use of parents of different breeds. The resulting offspring may show 'hybrid vigour' as a result of their mixed ancestry but as crosses, they may not 'breed true' if used for breeding themselves. Many commercial rabbit producers use hybrids between various meat breeds. Fanciers would not dream of crossbreeding unless they were trying to fix a new type, such as when the various breeds were crossed with Rex rabbits to develop a rex variant.

Pure breeding is using two unrelated animals of the same breed. The best among the offspring of purebred rabbits can be used for further breeding, since they can be relied upon to produce animals similar to themselves - unlike the hybrids.

Line breeding is practiced by the Fancy to try for show points; they use a good buck on a good doe and thereafter on several generations and it all gets rather complicated. This is a dangerous game, because breeding close relations can intensify bad points as well as good ones.

Inbreeding just means the breeding together of related animals to concentrate the genes and produce rabbits that are predictable and all alike. It is again a risky practice in all but the most experienced hands and even then it can cause trouble.

Breeding can start when your animals reach maturity. Normally this will be at about five months for the does and six months for the buck. If in doubt, weigh them - they should be mature when they reach the proper adult weight, which varies widely according to the breed.

While you are waiting for them to grow up, handle them so that they are used to you and used to being taken out of their runs and pens and being put back again. Let them hop about the place if you can be sure that they won't escape.

Put the male and the female together and if the time is right, they will mate. If not, try again about six hours later - the stimulation of the first meeting may have caused the doe to change her mind. The one golden rule with rabbits is that you always take the doe to the buck's pen for mating. Put her in gently, back end first. When the buck has mated he falls over sideways, sometimes with a cry.

The gestation period is 31 days but it can be four days on either side of this. Commercial rabbit keepers are naturally anxious not to waste time and so their does are sometimes palpated - that is, they feel the sides gently to try to detect the embryos and decide whether the doe is pregnant. This should be done gently and takes a certain amount of skill. The doe is handled very carefully because if she is frightened her muscles will tighten and it will be useless to try to feel the embryos.

On the horns of the uterus the embryos are felt as marbles if the fingers explore the outside of the animal. 14 to 16 days after mating is reckoned to be the best time; but it does need practice. You could be handling faecal pellets, or internal organs. The main thing is to be gentle with her.

During the gestation period, watch the feeding. Remember she is carrying young and needs good quality food. The old books are very particular about this; people used to treat animals with great consideration when they gave birth. There isn't much room for this sort of thing in modern farming and so it has gone out of fashion. But no doubt rabbit fanciers still have the time and the interest to make things really comfortable, feed warm bread and milk and this sort of thing. For the last week, they gave boiled linseed in the mash. Plenty of water is always important for does.

Sometimes a doe is restless and off her food just before she kindles. This is quite normal and does not indicate that anything is wrong. In fact, the birth will be easier if she is not stuffed full of food, so it is no bad thing for her to eat less for a short time. She will soon catch up again when she has a litter to feed.

A few days before you expect the litter to be born, the hutch should be cleaned out and provided with a nest box containing fine hay. The mother will make her nest from the hay and from fur plucked from her belly. She will of course use whatever material you provide, but we have found hay to be best for baby rabbits. Anything else is too coarse, because the little ones are so small and have no fur. However full of bedding the box is, she will still arrange it so that the babies are lying on the actual floor, with the nesting material round the sides. This means that a warm floor is essential - a wooden one is best.

Rabbits are best left alone when giving birth. They are less likely to have trouble than larger animals and they clean themselves up afterwards. But things can go wrong if the doe kindles in a nervous state, through having recently been moved or upset in some way. If this happens she may drop the young anywhere on the hutch floor and they can only be saved if you pick them up quickly and put them in the nest-otherwise they will get chilled and die. If they feel cool when you find them, stick them inside your shirt for a few min-utes. (I know an old man who hatched some bantam eggs on his person - an old backyarders' trick.) So, even if they are best left alone, many breeders feel that it is best to be some-where around at birth so that this sort of prompt action can be taken.

When the doe has finished and got over the birth, give her a tidbit to distract her attention while you have a look at the babies; it's exciting to see how many there are. Any dead or deformed ones must be removed. Rabbits are very helpless at this stage - blind, deaf and naked. Handle them gently if you touch them at all, with hands rubbed in the bedding.

As the babies get bigger and need more milk, so the doe will need more food and water. The old rabbit keepers used to give their does raw potato to help the milk supply. Feel gently underneath the doe to find out whether her udder is normal, or whether it is hard and inflamed - the sign of mastitis. If she has this kind of trouble, try to squeeze out the milk and then bathe the udder.

By the time that they are a fortnight old, the babies' eyes should be open; if they are a little sticky, bathe them.

As I said before, the babies will gradually come out of the nestbox, explore the pen and begin to eat solid food. It is quite easy for a baby rabbit to drown in a deep water pot at this stage, so make sure that your dishes are safe - but make equally sure that the little ones can drink; they will need water when they begin to eat solid food.

Weaning, in any natural rearing system, depends on the young ones' progress more than their age. They should be lively, independent and eating solid food before they are deprived of the mother. There comes a stage when they can part without too much regret, or stress as they call it, on either side. The milk supply will be going down and the mother will be glad of a rest. The age of weaning rabbits varies quite a bit, by the age of one month they should be able to look after themselves. Some breeders leave them with the doe until they are two months old and take them from the mother for the table, but this needs a big hutch.

The best way for a backyard rabbit system is probably to leave all the litter together in a run if possible with access to grass, for part of the day at first, until they get used to it, and run them on there for the table with a few household scraps to supplement the grass.

It is possible to remate the doe while she is still suckling her litter. In some rabbitries it is done 3 to 12 days after kindling, but this gives her very little rest between litters. Others remate the doe when her litter is three weeks old.

If you are not desperate to get the last ounce of production from your rabbits, remate the doe at the time she is weaned. This will keep her going nicely without overdoing it. Unfortunately if you decide to give her a rest, she may start a pseudo-pregnancy and you will have to wait eighteen days for her to get over it.

Winter breeding can be a problem with outdoor rabbits; and it is worse in a hard winter. Wild rabbits as we saw have an off season for breeding as the days become shorter. Unless the rabbits are inside a shed, cold winter

days might put them off mating. However, a commercial doe will only last 1¼ to 2 years and yet the life expectancy of a rabbit, biologically speaking, is about 9 years. Commercial rabbits have a short life and a fast one, but your rabbits will last longer. So if you are thinking of giving them a rest, keep them going in the summer and then you need not worry if they miss for a while in the cold weather. When the spring comes they will start again.

With this in mind - although sometimes you might get good results in the winter- I think you would be wise not to start a rabbit venture in the winter months. It could be so dis-appointing.

If you want autumn and winter litters, check that the stock is fit for a start. Keep them warm, and turn the hutch to get as much daylight as possible, with shutters at night to keep out the wind.

Artificial insemination is sometimes used for rabbits, but it is not so common as its use with cattle. It is more ex-pensive than natural mating (whereas with cattle it works out cheaper) and is only used when a buck is to be tested on sev-eral does at once or if there is a problem with fertility.

A hormone has to be injected into the doe's ear to in-duce ovulation and the whole thing seems to require a great deal of skill; so it is not really applicable to backyarding at all.

9. HEALTH

I hope you will not need to consult this chapter very often. If your rabbits are healthy outdoor types with warm, dry hutches, it is not likely that you will.

Wild rabbits are usually healthy, in the absence of some-thing like myxomatosis, as long as their numbers are kept to a reasonable level. Over-population tends to breed disease, due to overcrowding and competition for food.

Backyard rabbits should likewise be healthy. They have none of the fight for survival of the wild rabbit; they will have plenty of room and exercise, a warm dry bed, and a var-iety of fresh natural foods. And also, they will not be suffer-ing from the stress associated with commercial rabbit keeping. Wire cages, artificial daylight, continuous breeding and pel-leted food are no doubt essential to profit from large num-bers of rabbits, but they are also bound to cause stress. Your rabbits will avoid this, which is the great advantage of the backyard system.

Looking through my collection of rabbit books, I find that the section dealing with rabbit diseases has got larger over the years. During the war, rabbits were not expected to ail much. They were needed for the war effort. (My mother asserts that people didn't ail much at that time, either -there must be a moral somewhere.) Intensification in the rabbit industry and new methods have brought problems; if you possess thousands of rabbits you are obviously going to panic at the least sign of an outbreak of anything catching -hence the blanket antibiotic treatment.

All the same, you may be unlucky enough to get some trouble occurring with your backyard rabbits. It is very good policy to get to know your vet, and to be on good terms with him. Vets are never too busy to advise people who are really interested in their animals, however small the animal or the enterprise. Listen intelligently and glean knowledge. Vets are usually happy to explain what they are doing, and why.

Let us consider a healthy rabbit. Its eyes are bright, its coat glossy and smooth. The ears are warm, neither hot nor cold. The droppings are firm but moist, an important point to watch. If the rabbit is scoured or constipated, something about your management is wrong. The first job is. to put it right.

This is the whole foundation of keeping healthy animals. Study them every time you go to see them; subconsciously you will be checking the signs of health. By watching them you will get to know how they behave when they are well and happy and minding their own business. This is normal behaviour; any departure from it means a danger signal. The more you study the stock, the earlier the signal will reach you -- and this means the difference between failure and success very often in treating ailments.

When anything goes wrong, the tendency now is to treat with antibiotics to suppress a specific organism. Sometimes you may have to do this, but to my mind it can be the wrong approach.

Why did that organism manage to get a hold? For ex-ample, the bugs which cause coccidiosis are often present in healthy rabbits; something goes wrong and they see their chance and attack. The point to watch is what has gone wrong with your management. Put that right, and you will have solved the problem.

Commercial rabbit keepers, understandably nervous, are more inclined to kill the off-colour rabbit and so remove the potential source of infection than to try to cure it. No doubt you will rather try to cure a sick animal; you will be prepared to spend a little time trying to find a cure- although let us hope your cases are few. The cure will not necessarily be ex-pensive, because some of the best treatments are free for the gathering. But they take time and patience, as do many of the wise old recipes.

Scouring. This is probably the most common reason for rabbit losses, especially among pet rabbits. Bad diarrhoea can soon kill a rabbit; and they scour easily. Avoid overfeeding -this is the main cause where children are involved. They kill their pets with kindness quite often. Frosted greens in winter can cause stomach troubles. See that the frost has melted from any green food before the rabbit gets hold of it. Ferm-enting food in any form is equally bad, so beware of heated grass cuttings. Remember that, unlike the dog, the rabbit cannot be sick and get rid of unsuitable food that way.

When your rabbits scour, find the cause. Hold an inquest in the family if necessary; it is vitally important to find out what has happened.

At the same time, treat the rabbits immediately. Give them no food but hay and water, and plenty of dry bedding. Give a handful of blackberry leaves if you can find some -these are an old country remedy for scour. Or feed a little Shepherd's Purse, rabbit keepers used to hang up bunches of this plant to dry in their sheds, so as to have a supply handy when needed. This sort of treatment is safe and slow. It will not act quickly like the wonder drugs, but persevere and you should succeed. Other astringent or binding plants include burnet, plantain, cleavers - you will gain experience of what works best and where to find it.

It will of course help the cure if you have discovered the source of the trouble and removed it. If the scours are persis-tent one remedy you might try is slippery elm powder, usually obtainable from health food shops. Parsnips are soothing in action and might be good when the rabbit is recovering. It is common sense to choose the right foods and avoid laxative and strong herbs for a while; unless you think an infection is involved, in which case a mild laxative is a good idea to begin with in order to clean out the system.

Constipation. This is less likely with rabbits but it can happen in winter when green food is scarce. Once again, find the cause. Dandelion, groundsel and fresh young grass are good laxatives. Castor oil is the dose when something stronger is needed. The amount is one teaspoonful for an adult rabbit, half for young ones.

Parasites. Rabbits are not particularly prone to parasites, but some do occur and it is possible that you could buy in stock that was infested, or your rabbits could pick up some-thing from a neighbours cat or dog.

Tapeworms are rare, but they can happen. There are two types of roundworm, but they do not often give trouble. If you suspect worms - symptoms will be thin, unthrifty rabbits even on good food - feed plenty of garlic. The wild garlic that grows in woods ("ransoms") is popular with wild rabbits.

Fleas are more common, but they are not always found on rabbits. They usually live in the ear; besides being an irrit-ant, they can be dangerous because they migrate from dead to healthy rabbits in the wild and carry the virus of myxoma-tosis. Domestic rabbits don't often catch this disease, but it can happen when it is rife in the wild population. A dusting with insect powder should get rid of fleas. Lice are less usual; the old-fashioned remedy is a little sump oil.

Canker of the ear is an unpleasant thing sometimes seen in rabbits. It is a brown scab, accompanied by swelling and inflammation. It is caused by a mite. Look for it if your rab-bits scratch their ears a lot, or shake their heads, or carry their head to one side. The chemical treatment for canker is benzyl benzoate, given at about five-day intervals. Or there is a proprietary brand of canker treatment called Otodex. If you prefer herbal treatments, apply neat witch hazel extract, with cotton wool. During the war they used to soak afflicted ears with sump oil. To finish

off, they dusted with flowers of sulphur. Whichever treatment you use, try to soften the deposit in the ear and then the next day gently remove it. Keep on treating until you are sure it has all disappeared, the mites can be very persistent. Canker is contagious, so it would be well to clean and disinfect the hutch if you do have a case.

Sores. Once again, find the cause if your rabbits have sores. If there are several rabbits living together it could be the result of fighting. The most common place for sores is on the hocks, due to wet or unsatisfactory bedding or floors. Change to a softer bedding and clean out the cages more often if you see sore hocks; sometimes wire cages will cause this. Apply soothing ointment - although they tend to lick it off again. Antiseptic plants such as white clover should be included in the feed.

Sneezing and Colds. Are the living conditions wrong? Dusty hay can bring on sneezes, for the rabbits and you as well. Cold damp weather may have the same effect. Respiratory diseases are a bugbear in indoor rabbitries, but your outside rabbits should be able to breathe freely. Garlic and onions should be good treatments, as for human colds. I mentioned snuffles when talking about buying rabbits. It would be a pity to buy in pneumonia or the dreadful rhinitis, but this is unlikely if you deal with a reputable breeder. The more serious or persistent snuffles will need vet advice, but do try to find the cause if you can. Violent changes in the weather may affect the rabbits sometimes.

Coccidiosis. This is a problem in commercial rabbitries, where it can quickly spread. There are two types, intestinal and hepatic, which means affecting the liver.

Intestinal coccidiosis. *Elmeria perfoliata* and *Eimeria magna* are the organisms responsible. In some circumstances they will attack the intestines of the rabbit, but they often live in the gut without doing any damage. Nobody seems to know exactly why; but it is suspected that a rabbit under stress is more likely to be attacked. The disease is spread in droppings and dirty bedding. If your rabbits suddenly stop growing, suspect this. It is difficult to describe specific symptoms; scour isn't one of them, but it may well occur during an attack because other bugs will creep in to take advantage of an unwell rabbit. Sometimes the attack is fatal, sometimes not; but they don't do well after it.

In the Liver. In this case the organism responsible is different - *Elmeria steidae*. With this kind the rabbit usually dies before you know that anything is wrong. If you open it up, you will find white spots in the bile ducts of the liver. Large producers usually do a postmortem on a dead rabbit. If you study the bodies of healthy ones you will get to know what to look for.

If you are alarmed by an outbreak of something like this the vet is the best person to advise you; he will probably pre-scribe antibiotics. Herbalists give garlic for coccidiosis, but first of all they give a laxative to clear out the intestines. The hutches should be thoroughly cleaned to get rid of the infection. If you want to fumigate, burn cayenne pepper. This will purify the place without leaving residues of poison for the animals to pick up later.

Enteritis. This is a similar disease in that the organisms are often present in a normal rabbit. When an attack occurs, the intestines are inflamed, but backyard rabbits shouldn't be troubled with it very often unless their diet becomes unsuitable for some reason. Animals on 'high-pressure' fast growth diets are more prone to this disease. Rabbit keepers who use pellets tell me that the composition of the pellets they buy seems to vary from batch to batch, and the sudden change from one sort to another will occasionally set up irritation in the intestines. Think of it as an internal irritation, and if your rabbits get it - find the cause. Dry bread with a little milk and hay is the usual backyarders treatment; follow this with a soothing, healing herb such as comfrey if you can find one.

Dystokia. This is the proper name for difficult kindling, which again is not very usual, but perhaps I ought to mention it. It is obvious that if a doe shows all the signs of being about to produce a litter and nothing happens, she will need help and you should call the vet. But don't panic too soon. Sometimes she will be restless, start to make a nest and so on quite a time before she produces the young ones; so give her time to do this and don't breathe down her neck too heavily. On the other hand, if you see her actually strain with no result, get help. A dead baby or a very big one can cause an obstruction in rare cases, but in general the rabbit has less problems than other animals in giving birth.

Claw Clipping. This is necessary when the rabbits are confined and cannot use their claws as they would normally

do, to keep them worn down. When they get too long, clip the claws with strong nail clippers or pliers. There are side-cutting pliers for this kind of job. You have to hold the nail clear of the fur and take care that it is not cut too short. Avoid the quick, the red centre of the claw. Done properly, it should be as painless as nail cutting is for us.

10. HARVESTING THE WILD RABBITS

Wild rabbits are on the increase again in many parts of the country, to the dismay of those who would like to see them exterminated as a species. Many rabbit keepers have no time for wild rabbits and say that they should be stamped out, as do many farmers. When numbers reach plague proportions, rabbits are undoubtedly a pest. Despite this, they have a place in the countryside according to long tradition, which is respected by most countrymen. Many of our ancestors will have had good reason to be grateful for the rabbit, and many country dwellers have told me that they like to see a rabbit or two about; the fields seem empty without them. So rabbits have some friends.

If you have rabbits on your land it will be up to you to keep the numbers at a reasonable level, because if you let the numbers build up too far, you are likely to be unpopular with your neighbours and the Ministry of Agriculture, who will ask you to do something about them. Therefore it would be sensible to provide yourself with a few dinners, and thereby rule out the gassing of rabbits in their burrows, a method popular with the authorities.

Harvest rabbit was the traditional farmhouse dish, because the young rabbits had grown up by then. Also, many were shot when the corn was cut. Winter rabbits are best if you want to use the skins, as they will be moulting in the summer. There used to be hats in our family made from wild rabbit skins.

There are more ways of catching rabbits than by gassing them; these date back to the days when hungry labourers risked a great deal to provide a rabbit dinner for the family.

Dogs

Gypsies and poachers have always kept dogs bred for the purpose of catching rabbits quickly and quietly. The lurcher is the rabbit dog, and this is not a breed nor any special cross, but simply the name of the job, from the Romany "lur" - to rob. Some say a whippet or a greyhound cross is best. One of the first lurcher crosses was the Smithfield Collie which was a greyhound crossed with a sheepdog. This was a wonderful animal which apparently combined the virtues of both parents; it stole rabbits and also herded cattle to Smithfield from East Anglia, its home.

These dogs can be trained to bring back a rabbit to your feet, alive. They can be taught to catch rabbits by throwing a stuffed rabbit skin for them to retrieve, or being taken out with an older dog who knows the ropes - for example, the mother can be worked with her pup. A man I know was doing this training one dark night, and when he threw the skin, there was a squeak and his dog brought back a live rabbit; so he knew that the trick had worked! Sometimes a young dog will race alongside the rabbit, not knowing what to do next.

Snares

Feeding them meat encourages them to hunt, and you can use the dog to provide its own dinner.

Catching rabbits by stealth in this way can be brought to a fine art; the dogs know not to bark, and they used to be chosen for their nice quiet colours. Nowadays, when rabbits are considered a pest and it is easier to get permission to go hunting for them honestly, the possession of a lurcher dog is not so damaging to the reputation as it once might have been.

For a long time after the onset of myxomatosis, there was no rabbit catching, except to put them out of their misery. Waves of the disease sweep over odd areas now at intervals, but each time the resistance of the animals seems to be better so that it would seem that there will always be healthy rabbits about for a dinner if you know where to look for them. And it seems that lurchers are still available too. They are advertised in various papers and present prices seem to range from about £7 for a young puppy of working parents to over £50 for a fully trained young dog of one of the larger crosses, such as the greyhound x deerhound.

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These can be bought in country ironmongers' shops, although the old-timers would have scorned to buy one. They made them in the long winter evenings from six or eight strands of brass or copper wire with a cord at the end. For each snare two pegs are needed - making pegs from ash or hazel wood was another hobby. To buy, snares cost about £6 for a hundred.

It is a quick and clean death if it works; if not, the snare is cruel. Fred Archer says he thinks the snare is the most humane way of catching rabbits, if visited often, so that any animal not dead can quickly be put out of its misery. I am not so sure.

Go out with an expert if you want to learn how to set snares in a rabbit run. You can see the little pathways that rabbits make in the grass, often by the side of a wood or a hedge. Choose a place between two "pads" or places where rabbits alight; they tend to follow in the same footsteps every time. The wire is set about a hands breadth (4 in) from the ground and rubbed in the earth first to get the human smell off it. The cord is pegged down firmly at the end with a big peg and a smaller one is set under the side of the loop to position it.

The pear-shaped noose tightens when the rabbit goes into it, it is smoothed out every time after use to make it run smoothly. New wires are passed through the fire to discolour them because they are too bright.

Trapping

The gin trap was the worst way of catching rabbits and it is now illegal. There is an approved, more humane trap. They are advertised at about £3 each, but few people seem to trap rabbits now.

Netting

The long net is another way of catching rabbits, a poach-ing way originally, but also used by keepers as a form of control and by farmers who sold rabbits at market in order to pay the rent. A keeper told my father that they had once caught over 400 rabbits in one night. Gamekeepers caught rabbits regularly to provide meat for the dogs.

The net is about 100 yards long and about a yard high. It is set up in place with the aid of willow sticks which are pointed so that they can easily be pushed into the ground. The net is staked out overlapping the ground a few inches, so that the rabbits cannot escape under it.

Long nets are now made of plaited nylon, and some of them are intended for netting fish as well, and these cost £24. Rabbit nets cost about £5 per 25 yards, so a 100 yard net could cost about £20.

This job is done at night when the rabbits are out of their holes feeding. The net is set up very quietly between the rabbits and their holes and then they are herded into it, and of course on the alarm they will naturally bolt for the burrow. You need a lot of people at this stage, rising out of the ground to walk the rabbits up to the net, or a very good dog that has been trained for the job.

Ferreting

Ferrets were used by the Romans for catching rabbits. They are a sort of partly domesticated polecat, of uncertain disposition and unpleasant smell. There are people who keep ferrets as pets, and they will tell you how delightful and affectionate they can be. Like cats, ferrets are fed on bread and milk, or rabbit! They cost about £3 to buy.

"First" said a poacher of my acquaintance, "get to know your ferret. Let him run about all over you and learn the smell of your hands" - but remember that the dear little creature may bite. The idea is that when you put your hands down a rabbit hole to pull out the ferret, he will know you and will not bite your fingers. This poacher said that he has felt a ferret take his finger into its mouth, realise who he was, and let go without biting.

Small ferrets, often females, are sometimes used loose, put in to bolt the rabbits out of the hole. This must be done quietly as the rabbits will not come out if they have heard you stumbling around above them. When they do come out they are either caught in a purse net, which is a sort of net bag with a draw string, or they are shot by

waiting guns. These nets cost about £3.50.

Bigger ferrets, often the males, which are called dogs, are usually used on a line, a long string like a lead with knots in it at yard intervals, so that you know how close you are to the ferret. If there are no rabbits down the hole you are investigating, the ferret will come out again, but just in case there are, look at his claws for evidence of rabbit fur. In this case the rabbits are dug out, which the men think is a fine sport. It sounds like hard work to me. They don't dig the whole tunnel, but make trial borings here and there.

Ferreting is done in the winter, because in spring and summer there are nests of young rabbits about, and the ferret will probably eat the baby rabbits and lose interest in the proceedings. If a ferret is vicious, or if it is likely to kill and eat the rabbit before you can get to it, there is a special muzzle which can be fitted.

Shooting

If you are a good shot this is probably the best way to kill rabbits; they never know what hit them. But shotguns emit a spray of pellets, and if you are too far away or if your aim is bad, it is easy to fill your quarry full of lead without killing him outright. Another disadvantage is that guns are dangerous things to have about and must be treated with great respect. They should never be loaded until you are actually going to shoot. They must be kept out of the reach of children and locked up so that there is no danger of their being stolen.

The 22 rifle is a deadly weapon and it is hedged about with regulations. You will need a firearm certificate for it from the police, who will want to know the exact details of your weapon, why you need it, and where you propose to use it. Ammunition is monitored too. You can only keep a certain amount, and a record is kept of where and when you buy more. This is a good weapon for shooting for food, and useful in the right hands.

The usual gun for shooting rabbits is the 12 bore shot-gun, or perhaps the 410 if you want something lighter. There is a certain recoil from a shotgun which can be a nuisance until you get used to it. 12 bores can be deadly at short range but they are not so likely to raise such a state of nerves in the police as are rifles and pistols. Licences used to be bought at the Post Office, but not any more. The police issue them now to anyone with a reasonable case for wanting to shoot and the cartridges are easily bought at gunsmiths or ironmongers. To buy a gun you have to produce a shotgun certificate, and if any gun is stolen, the police expect to be informed immediately.

To shoot rabbits with a shotgun you need to know their habits and be good at creeping up, "gliding with stealthy tread" to get within range. In our part of the world, a dry-stone wall gives good cover. My father used to squeak by sucking the back of his hand noisily and the rabbits would come towards him out of curiosity.

In "The Gamekeeper at Home", written in 1878, Richard Jeffries gives a lot of good advice about shooting, and tells you a few poacher's tricks as well. "If you pause, and keep quite still, which is the secret of all stalking, he will soon begin to feed, and the moment he turns his back towards you, up goes the gun".

Other Ways'

There are several other chance ways of taking rabbits, but you cannot really rely on them - although they are more likely to work in cold weather, when all wild animals seem to be slower in their reactions. Sometimes a rabbit can be mesmerized into freezing where it is until you can pick it up. This is how stoats catch rabbits; they exercise a fatal fascination. Sometimes a rabbit can be picked up when a stoat has done this and engaged the rabbit's attention. Very rarely, you can be lucky enough to walk through a field and pounce on a rabbit before it knows you are there. Jeffries says of this, "Occasionally a labourer, crossing the meadows with a slow step, finds a rabbit sitting among the grass or in a dry furrow. Instantly he throws himself all a-sprawl on the ground, with the hope of pinning the animal to the ground. The maneuver, however, frequently fails". A favourite trick of village lads was to set up a dead rabbit in a lifelike position, and then induce their victim to stalk it elaborately.

The best naturalists are the best at catching rabbits as a rule, and the easiest way to learn is to go with an experienced countryman when he sets out to find a dinner.

11 THE HARVEST

If you keep pigs or sheep for meat, you really need a deep freeze. Unless you are prepared to eat salt meat like our ancestors did for months on end, freezing is the only way to cope with the amount of meat you get in the way of pork or mutton. Rabbits are more useful in this respect. No electricity is needed, none of the gadgets of civilisation need come between you and your rabbit dinner. One rabbit provides a good meal for a family and you can kill and dress them in ones, just as you need them. That is why Italian and Russian governments saw the rabbit as a means of warding off starvation. Every family can produce its own meat, as and when needed.

Another advantage over the bigger animals is that the killing and dressing is simpler. It is illegal to kill pigs and sheep at home, but rabbits and poultry can be done without the journey to the abattoir and its attendant fee - provided the meat is for your own use and not to be sold. I go into the regulations later. If you keep poultry, you will probably be used to killing and dressing them and rabbits will present no problem. If not - don't worry; somebody will help you until you get used to it.

Select one rabbit from your first litter and isolate it for one day, with no food but plenty of water. This is not cruel and it is important - especially the water. Without water the meat could be tough.

The rabbit is killed by dislocation of the neck, as with poultry; death is instantaneous. Take the back legs in one hand and the back of the head with the other, stretch out force the head back and clown with a quick jerk. Let a countryman or a poacher do it for you until you get the knack.

Next, hang it up, either on two hooks at shoulder height, a leg in each hook, or from a nail with a piece of string round each hock. Tame rabbits are usually skinned first and the in-sides removed afterwards. The old rabbit keepers used to wait five minutes after killing to give time for the blood to drain to the head, before they started skinning.

If you don't intend to keep the skin, you can pull it off down to the head and then cut off the head, skin and all. But if you want the skin, remove it completely before cutting off the head. Commercial rabbit keepers tend to remove the head before skinning, but their methods are geared to dealing with large numbers of rabbits at a time and some of them have special rooms for processing and packing.

To skin, you need a sharp pointed knife. If you do the job while the carcass is warm the skin comes away more easily but you can do it when cold if this is more convenient. However, the guts should come out as soon as possible and it is usual to skin first.

Start at the hocks and cut round each with the point of the knife. Take care not to break the skin. Slit down the in-sides of the back legs to the vent, cut round the tail and pull the back end of the carcass out. Slip the skin off - it will peel off like a sleeve. The legs are slipped out of the skin and then cut off below the knee joint. Take action with the skin straight away if you want it since they go smelly very soon if they are left lying about.

You are still working upside down on your rabbit which is suspended by the legs. To take the insides out, slit the abdomen down the middle from the vent to the chest cavity. Great care must be taken not to puncture the intestines, or the whole thing will get very messy. Put the two fingers of your free hand in the hole already made near the vent and pull out the skin of the abdomen with them, in front of the knife. Guide the knife down with these two fingers and you should avoid the intestines.

The guts should come out whole in one go. The stomach, intestines, vent and bladder must come out - don't spill the remaining urine from the bladder. The gall bladder must come out too; it's under the liver. If you like a clean sweep, take out all the internal organs; but often the heart, liver and kidneys, which are all edible, are left in the body cavity.

When you have finished, the rabbit should be put in a cool place to set. Now you have what used to be known as Ostend rabbit. This was because the London market used to be supplied with dressed rabbits from Ostend in Belgium, whereas now they are from China and Australia.

Cooling bins are used for rabbit carcasses in commercial units. Where large numbers are handled they are put

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into iced water and when set, they are drained and packed. There is no need to speed the setting process for home consumption -unless you need a dinner in a hurry for unexpected guests!

You may feel that this job of killing and dressing would be better done at one time, particularly if you have to ask someone to kill the rabbits for you (and it is no shame to do this; to tell the truth I get out of killing things whenever I can.) Having found your poacher and lined him up, it might be easier to get him to do a whole litter for you rather than to come along every time you want a dinner. This is where freezing comes in useful! Rabbit freezes well. The whole carcass can be put into a polythene bag, or the rabbit can be jointed and frozen on a tray. It is usual to joint into eight pieces, 4 legs, 2 chest and 2 back pieces. The meat keeps quite well for 6 to 8 months in the freezer.

The value of rabbit meat is surprising, if you are new to it. It is fine white meat, similar to chicken with a mild, pleasant flavour - much better than broiler chicken. Backyard rabbits taste better than commercial ones to my mind, and since they have no fat, are extremely versatile and good for children and invalids.

The protein percentage of rabbit meat compares favourably with most other kinds of meat; it is somewhere between 20 and 21 per cent, and only chicken is higher. Pork is about 13 per cent protein.

The fat at about 4 per cent is rather less than for any meat except chicken, and the mineral content is the highest of them all. It's a pity that rabbit meat isn't more popular because it is obviously very nutritious; and produced in the backyard way, economically sound. It can be argued that to get the most out of farm land, grain should be grown for human consumption rather than for processing through animals. We would thus miss some savoury dinners, but even accepting these arguments, a case can be made for the production of rabbit meat, not from pelleted grain but from green food and scraps. It makes good sense. The one drawback is that we are not now used to rearing our own animals for food and it is easier to let the professional butcher do the messy bits. But this means a loss of control over what we eat. It must be better to overcome our natural reluctance, learn how to kill rabbits neatly and then have the satisfaction of eating food we have grown ourselves, free from agribusiness and as far as possible from pollution.

It is not likely that your rabbit meat will be tough. Provided that you don't take too long to screw your courage to the sticking place, the rabbits should be killed while still young; well grown, but not too mature. This is another advantage of freezing - the whole litter can be done at the right time. Commercial meat breeds of rabbit are ready for killing at about 4 1/2 to 6 1/2 lbs live weight, which when fed pellets, they reach at 9-11 weeks of age. They actually mature at about 20 weeks for a doe and a month later for a buck so they are killed well before maturity. I don't suggest that rabbits fed on greens, hay and mash will be ready so soon, but they will be much cheaper! During the war, rabbits took about 20 weeks to fatten on this diet, but meaty, faster growing types of rabbit have been developed since then. Backyarders today might expect their rabbits to be ready somewhere between these two extremes. But the main cause of toughness in meat is age, so don't leave them too long. If you need to eat an old rabbit, cook it accordingly - slowly and for a long time.

The meat also varies according to breed. Our rex rabbits were similar as meat whatever the colour (we had mainly Havana and Sable) and of course we thought that the meat was the best of all the breeds, although it was rather dark in colour. There is an Ermine rex in which is united the advantages of fine grained delicate rex meat and the desirable whiteness. But these rabbits are rather slow to put on weight compared with the breeds which are kept purely for meat.

Backyarders, who have more time than businessmen, can afford to wait that bit longer for rabbits to be ready for eating. So that in our conditions, we can keep old-fashioned breeds such as the English, a delightful spotted rabbit, and the Chinchilla, which makes good meat given a little time. We are now so used to 'instant' everything that we tend to be impatient, and to buy time even in farming.

Whatever breed you choose, you will be aiming at a rabbit weighing about 5 or 6 lbs before killing. When skinned and dressed, this should give a carcass of about half the weight, which is a reasonable meal for a family.

If you get carried away by enthusiasm for rabbits and find yourself with more on your hands than you can comfortably eat, freeze or swap, the surplus can be sold and this will help to replace any cash outlay on the rabbits. Small numbers of rabbits can be difficult to sell but if you have a regular supply, however small it is, the

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Commercial Rabbit Association should be able to help. These surplus rabbits will be sold live. This producer association is stronger in some areas than others. If there is a pick-up point near you, it will be a simple matter to take your rabbits there for collection. The present price is about 29 pence per lb live weight; so a 5 lb rabbit would fetch about £1.45.

Failing the CRA, you may have a local packer who would take rabbits. For example, in our nearest town there is a firm of poultry packers. They find that there are few rabbits in this area, but say that they will pack rabbits if they are offered a regular local supply.

The packers are very definite about their requirements. They want a plump, healthy rabbit of the proper shape, weight and age. Let's face it - they are expecting a pellet fed rabbit. They want a meaty, not fat, rabbit of 4 to 6 lbs live weight. Livers have to be good (no nasty spots). Your rabbits may conform very well if you have gone into one of the usual commercial breeds, which would be wise if you intend to sell surplus. The main drawback would be that naturally fed rabbits would probably grow more slowly.

The other problem of course would be continuity of supply. Rabbits breed more easily in the summer, which means that there are more for sale then, so the prices tend to be lower and the packers more choosy although the standards are high all the year. But they are less likely to welcome new suppliers when they are already overloaded.

If you have got quite good at producing rabbits, the re-wards for selling to a local butcher may be worth having, since rabbit meat is showing signs of becoming respectable once more. Unfortunately, you cannot sell dressed rabbit yourself for human consumption unless you are licensed by the Local Authority under the Food and Drugs Act 1955. The premises must conform to the standards of hygiene laid down in the Food Hygiene (General) Regulations 1970. If you consider going into this further, contact the Public Health Department of your local council.

12. USING RABBIT MEAT

How then shall we cook our fresh, home-produced meat? Most of the recipes in established cookery books are for wild rabbit, but the only difference is that you may need less cooking time for young tame rabbit - and you won't need to soak the meat in salt before cooking, to whiten it. Always eat rabbit fresh; it should never be hung like hare. If you can't deal with it fairly soon, freeze it until you can.

If you are interested in cooking you will probably have some recipes of your own, or invent them. In consultation with our family and Mrs Beeton I have collected a few ideas for cooking rabbit which might be of some use. The high protein and low fat content mean that a small portion contains a lot of nourishment, easily digested. It is also very adaptable.

Roasting. This is the traditional way in which to cook a young rabbit. The thing to remember is that because there is little fat on the rabbit you must be careful that the meat does not go dry in the oven. We usually tie a piece of bacon fat to the back, and cover with greased paper. While roasting (it takes 1 to 1¼ hours) we baste it about every quarter of an hour or so, tipping over it the fat which has run off the bacon. Of course the surplus fat in the tin has to be poured off before you make the gravy; it also helps if you take off the bacon and paper for a few minutes at the end to allow the roast to get nicely brown.

A roast rabbit can be stuffed - with sage and onion, or thyme. Some people boil the heart, liver and kidneys, chop them up and add them to a thyme and breadcrumb stuffing, added to which are lemon juice and seasoning, plus about 2 oz suet. Like chicken, rabbit is pleasant served with bread sauce.

Rabbit Pate. This is another thought. Once again the lack of fat can be noticeable, so belly pork or fat bacon can be added to give the right consistency. This is the answer to the question of how to dish up rabbit so that everybody can enjoy it, whether they have a prejudice against rabbit or not. The Victorian habit of dressing things up for the table in a lifelike manner with their heads looking out over the dish gone out of fashion, thank goodness, and we no longer need to be reminded of what our victims looked like in life; but with rabbits and guests, it is sometimes a good idea to take the disguise further than usual. I remember hearing of a wedding reception where

the vol-au-vent was praised exceedingly; only nobody knew it was rabbit. (The bride wore an 'ermine' cape - Ermine rex.)

There are several ways of making pate, with more or less seasoning as you prefer. The older recipes tend to call it paste. The general method is to simmer the jointed rabbit in water for about half an hour. When it's cool, all the meat is taken off the bones and minced or chopped fine with pork or bacon (say 1 lb to a rabbit). Seasoning is added, and wine or sherry. Suggested additions are thyme, which is often used with rabbit meat, parsley, garlic, mace, lemon, bay leaves and juniper berries. The mixture is left to stand and then cooked slowly in the oven for about 2 hours. To prevent it burning or drying, it can be steamed in a covered bowl on top of the cooker. After cooking, the pate is weighted down overnight to give it the necessary solidity.

Rabbit Pudding. This is really like steak and kidney pudding, a family filler for cold weather. Plenty of onions are needed for this and sometimes mushrooms and tomatoes are also added. The rabbit is cut into small pieces and put into a basin lined with suet pastry. Each layer of the ingredients is sprinkled with flour, salt and pepper; the basin is sealed with water and the pastry lid is sealed. This is covered with greaseproof paper and steamed in the traditional way for about 2 1/4 hours. It should be served with thick gravy. Once again, you need not say what it is! To make the 'suet crust' you will need:

8 oz flour
4 oz shredded suet
salt and pepper,

Rabbit Pie. Another good old English dish. This time the rabbit is served up in short crusty pastry. The rabbit is simmered first (after being divided into joints) for about 1 1/2 hours, with salt, pepper and any other seasoning you like; use about 1 pint of water and about 1/2 pint of this will be used as stock for the pie. For short crusty pastry you need:

8 oz SR flour
2 oz margarine
2 oz lard
teaspoonful salt
2 tablespoons water to mix

Some recipes, including Mrs Beeton's, have forcemeat balls included in the pie. These are dropped into the pan when the rabbit has been boiling for a while. To make forcemeat balls, mix together 6 oz fresh breadcrumbs, 3 oz suet, thyme and parsley, seasoning, lemon juice and an egg. When it is all well mixed, roll into balls.

Boiled Rabbit. This sounds rather horrible, but it may not have been too bad. Mrs Beeton suggests it in her list of economical little dinners for February, and as she describes it, smothered with onion sauce, it was probably quite good.

Curried Rabbit. As for any curry, the meat is lightly browned in butter along with some chopped onions and then simmered slowly, with curry powder added to taste. We always put garlic in curry and I notice that in 'Captain Tongue's Recipe' Mrs Beeton does the same. She suggests the rabbit is simmered in milk to make this curry. The other thing she adds, which I would not, is ground cloves. If you make curries you will have your own favourite ingredients; we like cooking apple in ours. Serve the curry in the centre of the dish, with an edging of boiled rice all round. Ordinary rabbit was hardly the thing for a Victorian dinner party, but curried rabbit seems to have been acceptable.

Even if you are not keen on curry, rabbit can be served very successfully with rice in the same way that chicken can. It can be jointed and cooked in a variety of sauces, some-times with a little pork to add richness. One recipe suggests simmering joints of rabbit with onions in cider for about an hour, after which you add raisins, sultanas and prunes.

We haven't fried rabbit, but they say it can be very good. Here is what Mrs Beeton has to say on the subject.

Fried Rabbit.

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Ingredients. 1 rabbit, flour, dripping, 1 oz butter, 1 teaspoon minced shallot, 2 tablespoons mushroom ketchup.
Mode. Cut the rabbit into neat joints, and flour them well; make the dripping boiling in a frying pan, put in the rabbit, and fry it a nice brown. Have ready a very hot dish, put in the butter, shallot and ketchup; arrange the rabbit pyramidically on this, and serve as quickly as possible. Time 10 min-utes. Average cost - from 8d. per lb. Sufficient for 4 or 5 persons. Seasonable from September to February.

Note. The rabbit may be brushed over with egg, and sprinkled with breadcrumbs and fried as above. When cooked in this manner, make a gravy in the pan, and pour it round, but not over, the pieces of rabbit.

13. FUR PRODUCTION

You may have made up your mind against fur production; it could be argued that a fur coat is out of place in a back yard. There is certainly an image of slightly decadent luxury clinging to fur, even now, in some parts of the world. But there is also the frontier man, Davy Crockett sort of warm fur cloth-ing with no pretensions whatever so if the image bothers you, think of Davy Crockett.

Most of the published material about curing skins says -don't. (but if you must, they add, do this or that). The reason is that curing furs is a skill like many another, presumably once known to mankind in general and now something of a mystery to most of us. Experts have heard so many wails of anguish from enthusiastic amateurs who have expected to get professional results at their first try, and failed, that they are wary of giving advice. But if you approach the subject in an enquiring frame of mind, and learn from your mistakes, there is no reason why you shouldn't acquire skill in the job yourself. What we did was to send away the most valuable rex skins to be cured professionally after we had air-dried them. We would have been too annoyed if we'd made a mess of them. Any ordinary skins, wild rabbit, or less than prime tame ones we have cured ourselves. You can certainly see the difference! But a hat or a collar on an anorak can be made quite well out of an amateur job; gloves or a coat are better done professionally unless you get very good at it. It depends perhaps on whether you are likely to open fetes in the garment or dig snow in it.

It seems a pity not to use the rabbit skins you produce, even though there might be a sale for them; prices are not very high as a rule and there is a satisfaction in making your own clothes. The main thing to watch is the moult; don't kill a rabbit while it is moulting if you want to use the fur, because it will look raggy and will also go on moulting for ever. You will shed hairs over everything. It is easy enough to check the rabbit for moult. Run your hand over the coat and examine the skin at the bottom of the hair; if you see patches of new fur growing through, the pelt will be useless.

The best, prime coat comes when the rabbit first reaches maturity at about five months, depending on the time of year. Pelts are best in the winter months; the moult usually occurs in summer. If you intend to use the skin, set to work on it immediately.

Commercial producers often sell raw pelts to furriers to dress - they are able to supply them in large quantities. This is a fickle trade, depending a lot on fashion, but quite a lot of fur is used for children's toys; and they are grinding it up now to put into animal feeds! Sometimes these pelts are stored in a deep freeze until collection.

The first stage is 'air dried' and this is a better condition in which to have your pelts- they will then keep. When we sent away skins for professional curing we air-dried them first. We nailed them to a board, or you can put them on a wire stretcher. They finish up dry and crackly after this treatment.

The next stage is the cured pelt, which you can achieve at home - but they will not then be saleable to a manufacturer; remember that once you dress a pelt you will have to keep it. The profession insist on dressing their own.

First of all, be sure to skin the rabbit as soon as it is killed. Any slight decay can cause the fur to moult later.

When you have parted the skin from the rabbit, cut off the vent and the head from the fur with sharp scissors and slit the legs and the belly so that the skin lies flat, unless you are using a wire stretcher, which you slide into the skin as it is.

For the flat method, tack the skin out on a board or the side of a wooden box. Use drawing pins or tacks and get it quite smooth, with no wrinkles or tucks. Put a tack at each corner first, as near to the edge as possible. Stretch it slightly but not to more than natural size - although this might be rather bigger than you expect it to be. Things to watch at this stage are any folds, where moisture could remain and decay set in, and any bits of flesh left on the skin, which should be scraped off with a knife before stretching.

A wire stretcher can be made - imagine a large hairpin -from No 9 gauge wire, about 27 ins long. For this, as we saw, the pelt is not opened flat. Pelts are put on the stretcher fur side inwards, and fastened at each end with a clothes peg. At this stage flies must be kept away. Put the stretched skin in a warm, airy place to dry.

The stretcher is quick, but I think the board does a better job. On the board, the tacks should finally be only about one inch apart. The pelt will be nailed fur side down, so that you can see what is happening to the skin side. This is when you can remove any fat or flesh still sticking to the but don't pull it off; use a blunt knife.

Don't be tempted to put the pelt out in the sun, leave it to dry naturally in the shed, even if it takes a couple of weeks.

When this stage is completed you have a pelt which will keep. The urgency is over and the next stage can be left until you have time to attend to it. The choice is now yours; whether to sell the pelts, to get them dressed professionally, or to dress them yourself. If they are valuable, think twice! Meanwhile let us press on with our skins - we can always use them for boot linings, if nothing else. If you store air-dried pelts, don't fold them or roll them or they may crack. Store them fur to fur or skin to skin.

The next stage is called 'fleshing'. The large pieces of fat have been removed from the skin before drying, but now every last trace of tissue has to be scraped off the underside of the pelt. This is the tricky part for the amateur, but it must be done before the pelt can be made soft and pliable -and it must be done without cutting the skin.

The old books tell you to scrape the pelt while it is still on the stretching board, but most modern methods start with a wettened skin. The one rule is not to start with a dirty skin.

Take the dried skin off the board or stretcher and soak it in half a bucket of soft water, to which a handful of salt has been added. Let it soak until it is quite soft. This may take two days; some people add detergent as well; to remove the fat. After this, the pelt is wrung out and put on a board, fur side down, and carefully scraped. Professionals move the skin over a fixed sharp knife and peel off the tissue like peel-ing an orange. If you start with a sharp knife you may well cut the skin; perhaps a blunt one would, be safe. Sometimes a pumice stone is used, starting at one corner and holding the skin down with one hand, to get the peeling effect. The skin is thinner in some places than others, noticeably on the tail.

Take your time with this job. If the skin dries out while you are working on it, soak it again because when it is wet the tissue will peel off more easily.

After this comes dressing. This is done by soaking again, in a different solution this time. There are several recipes, some of them rather complicated. If you want to chicken out at this stage, Mr Sandford in his 'The Domestic Rabbit' says that there are a few professional skin dressers who will do the job for you for a moderate fee.

Recipe for solution: to about 5 litres of water add 60 g salt, 30 g potash alum, 1 g soda ash per litre.

The skins are soaked in this for a day or two and then drained. Some people wring them out, but this may wrinkle them. They can be put in the spin dryer for a short time.

After drying, the skin is made supple. Once again there are several methods. In one, 1/2 oz mild soap is dissolved in boiling water; then hot water and 1/4 oz neatsfoot oil are added to make the mixture up to a pint. It is shaken up into an emulsion and when it has cooled a little, the skin is put into it and worked about vigorously. It can be worked and left and worked again - the more the better. Leave it over-night in the emulsion and the next morning,

rinse it well under the tap - no wringing. Then it is hung up in a warm place to dry.

The last stage is to clean the fur. This is done on a large scale in a big drum of sawdust which is shaken mechanically. Some people shake their furs for hours by hand, two to four hours at least, laboriously shaking the fur in a container with sawdust to which has been added a substance called Drum-gloss.

To avoid all this work (for after all you have already put in quite a lot of time on your skin), there is an alternative method using fullers earth. The skin is put into a box and shaken up with fullers earth, left for an hour or two and shaken up again. Then it is taken out and the fullers earth is shaken and brushed out of the fur.

So there you have it - a rabbit skin, glossy, supple and ready for use, I hope. Apart from toys and slippers, you need rather a lot of skins before you can make a garment. While you are waiting for them to accumulate, store the dressed pelts in a cool dry place. Roll them if necessary, but don't fold them. Place fur to fur in a bundle.

If you want to grow your own fur coat, matching skins with some breeds may mean that you need a great many, from which to make a choice; but with white and plain coloured skins, fewer will do, although they have to match in length and density as well as colour. A full length coat of average-sized skins will need up to 40 and a short coat about 22 skins, but you can make a cape with less than 10, or a waistcoat. There was a book which might help if you can find a copy called 'Furcraft for Beginners' by Marion Darley and published by Fur and Feather. This book tells you how to make toys and gloves from rabbit skins.

14. SHOWING

If you would like to get involved, join the club of the breed of your choice, or let your children join - these clubs are particularly kind to young exhibitors. In this way your knowledge will quickly build up. Breeding for showing can get very complicated and, in fact, it can be well out of the realm of self-sufficiency, but there is still an element of back-yarding about it. Very rarely do you find a large producer who exhibits rabbits. The Fancy are dedicated and extremely knowledgeable, but they are nearly always 'in a small way' with their livestock.

A book about rabbits is hardly complete without a mention of showing because the Fancy forms such a large proportion of rabbit keepers. You may not wish to show your backyard rabbits but if one day you produce, by chance, a fine specimen of your chosen breed, and you have an element of competition in your system, then you may find yourself trying your luck at a local show - and why not? Regulars are always pleased to see new faces.

First of all, study the standards for your breed; the various points are given in the appropriate breed handbook. Then, if a winner turns up, you will at least be able to recognise it. For example, there are many rules as to how the black colour should be arranged on the Dutch; the black on the nose should be clear of whiskers and so on. Of course the general conformation and condition of the rabbit counts, but it is born with certain colour markings and these are very important in showing. I recently visited a Dutch breeder and he showed me what he fondly hoped would be a future champion - a tiny rabbit three days old.

The English is a spotted rabbit, but any old spots will not do; they must be arranged in a definite way, and they should be as perfectly round as possible. The English rabbit's nose should have a butterfly mark in black on it, the famous 'butterfly smut'.

Not long ago I dropped in at a rabbit show in a strange district, not knowing anybody. Within five minutes I was deep in conversation about rabbits. Once you have asked a question of a fancier, it is very difficult to get away.

At this show, the conversation turned to feeding and the younger people admitted, almost sheepishly, to feeding pellets because they save so much time. But they all still use plenty of hay. It appears that pellets are not always the fool-proof consistent feed that they should be; there can be great variation from one batch to the next and exhibitors have found themselves in trouble, with scours breaking out just before a show. (To be fair to pellet manufacturers, in an effort to keep prices down they have to hunt about for their ingredients and although the final analysis of the food turns out the same, they are often forced to use varying ingredients to arrive at it, and the rabbits notice these changes.)

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It is when the talk turns to breeding that it gets really involved, as I said before. You are basically trying to breed from animals which complement each other; for example, if your doe has a certain fault, say her spots are not round, then your chosen buck will be particularly strong on that point. With luck, you may manage to breed a rabbit that shows the good points of both parents.

There are those who say that it is not possible to combine showing with the commercial aspects of rabbit keeping. This may be so for the extremists of either persuasion, but I see no reason why a certain amount of showing should not be combined with useful rabbit keeping. Treatment of doe and young ones can be just the same as for ordinary rabbits, but if one of your ducklings should turn into a swan, so much the better.

Show rabbits are perhaps weaned a little later than usual at, say, six or eight weeks, but this depends on the breeder. The old hands have their pet systems. I think that the litters from 'fancy' rabbits tend to be smaller, so that fewer and bigger rabbits will be weaned.

Rabbits which are to be shown should be handled regularly, and taken out of their hutches frequently and put on a table. They soon get used to this and as they have to sit quietly on the judging table for quite a while when they are shown, it's a good thing for them to do.

They are usually kept in hutches on their own, separate from others but able to see them. Often show rabbits live in outside hutches, although they may have shutters up on a cold winter night. Plenty of bedding is given to keep them really clean - the younger fanciers like wire floors for the white breeds for this reason. It is difficult to keep a white rabbit snowy without a lot of attention. Groundsel and chicory are fed to get the coat into its prime. The old guard used to give their rabbits special food before a show; dark secrets were whispered behind locked doors. Like old-fashioned farmers, they believed that their animals benefited from warm food, and who is to say that they were wrong? Although of course they were only luke-warm at most; to give hot food to an animal is cruel. The mashes were made from barley meal mixed up with hot boiled linseed, and dried off with bran. Linseed (from flax) is a very oily substance and gives a shine to the coat. Cattle exhibitors used it a lot.

Commercial breeders send their stock all over the country in cardboard boxes these days, but fanciers stick to the wooden traveling boxes with ventilation holes and a leather strap. The latest gadget in this line is a travelling box which doubles as a cage for the show. The side lets down to reveal a wire front.

Exhibitors are always grooming their rabbits. They brush them regularly, which keeps the fur soft and glossy and also acts like a massage treatment to prevent flabby rabbits. This was probably more of a necessity when they were giving all those high-powered mashes! But a really good show rabbit is bright, alert, fit and obviously proud of itself. It seems that grooming can do a lot to produce this feeling of well being.

Nearer to the time of the show, when the rabbits are nicely out of the moult, the old fanciers used to stop feeding mash and replace it with whole oats and soaked dried peas. And some fanatics gave their surprised animals a raw egg just before the event.

Rabbits can get rather dirty at times; I have mentioned the problem of keeping the white breeds clean. Stains can be removed with cornflour, brushed in and then out again - a sort of dry shampoo. Fanciers 'wash' a scruffy rabbit by grooming it vigorously with wet hands which have just been washed in warm water containing mild soap plus a little glycerin. (You can't actually bath a rabbit.) They go on grooming with their hands until the rabbit is perfectly dry again, and shining clean. Then the fur is polished off with that final blessing - a silk handkerchief.

There are disqualifications to watch for when showing rabbits. Such things as ill health, crooked legs, sore pads are obvious ones. There are also some colour faults, varying according to breed, and also odd-coloured eyes.

Another reminder; if you want to show, the rabbits must wear the official British Rabbit Council rabbit rings. No other identification will do in this country. So if you think of showing a youngster, slip a ring onto its leg before it gets too old, just in case it grows up into a handsome show rabbit.

15. ANGORAS

Angora rabbits have a long history. They are one of the old-est breeds and it is thought that they were kept for wool in Roman times. For hundreds of years, breeders in France have kept them and exported some of the wool to Britain, often in a yarn which was a mixture of Angora and sheep's wool.

Most Angoras you see are white, but they can be in any of twelve colours. The wool can be as long as six inches, with feathery plumes on the ears and feet called 'furnishings'. They seem to be particularly docile, sweet-tempered animals.

Do you feel that you would like to keep rabbits and not necessarily kill them (although the odd dinner might come in handy)? As a backyarder no doubt you would like to keep them for practical reasons rather than just as pets. In this case Angora rabbits might be a possibility.

People who keep Angoras say that hard work is involved. I think that they refer particularly to keeping them in show condition. There are two ways to keep them; for show, in which case the coat is kept at full length, and for wool. Keeping a show coat clean and free from tangles is quite a job. Ordinary working Angoras, called 'woollers', are relieved of their wool every three months or so and consequently their coats are short, although they too have to be kept clean for the production of high grade wool.

Since about 1920 Angoras have been kept in Britain, and since then they have made a name for themselves at shows, where they are always a great attraction. Show-coated Angoras are groomed with a pair of bellows or a vacuum cleaner. Air is gently blown through the coat to straighten out the tangles. These rabbits are kept in roomy hutches with wire mesh floors to keep them clean and hay is fed in racks to prevent it getting into the coat.

Angoras can be clipped or plucked, in America plucking seems to be popular but in Britain they are usually clipped with sharp scissors. As it comes off, the wool is sorted into grades, which depend on the staple length, the degree of cleanliness and matting, and the fineness, which varies on different parts of the animal. Sandford lists eight grades for Angora wool.

Clipping is the quicker method - a rabbit can be done in under half an hour. But the highest grades of wool are usually plucked, and plucking is the method used in France. It is done when the wool is 'ripe' and at this stage it is already coming loose and does not take much detaching. The wool is pulled away gently with one hand in the direction in which it grows, while the other hand holds the skin to stop it stretch-ing. Plucking is often done over a period of days, since all the wool may not be ripe at once. The rabbit sits quietly during the operation, which is quite painless. When the wool is plucked, the oil gland at the base of the hair comes with it and this apparently imparts more 'life' to the wool. The rabbit is left with rather more wool when clipped than when plucked, but it is said that plucking results in quicker growth.

American Angoras are bigger than British ones and they tend to yield more wool. In Britain you can expect perhaps 9 oz of wool per year; not much perhaps, but if it's mixed with sheep's wool it will go further.

You can sell the wool when it's sorted into grades, but it may be more interesting to use it yourself. Why not learn to spin? A spinning wheel is a beautiful thing to have and may already form part of your equipment. However, they are ex-pensive; a good one may cost over f. 100. The best way to learn is with a spindle, one of Man's oldest tools.

For thousands of years, before the invention of the spinning wheel, clothes were made from yarn spun on a spin-dle. A simple one can be made by sticking a knitting needle through half a potato. I bought a wooden one which cost just over f. 1. There is now a revival of interest in old crafts such as spinning and weaving, and plenty of information and advice is available. Eliza Leadbeater of Cheshire gives lessons and advice and sells equipment; see the end of the book for her address.

Spinning is basically a twisting of the short fibres to form a long continuous yarn, which can then be knitted or woven into a garment. Sheep's wool has to be carded before spinning to get all the fibres to lie parallel, but with Angora wool, all you need to do is to fluff it up a little. It can be spun with fluffing. The mass of wool is held in one hand, with the end joined to a yarn already on the spindle. With the other hand you set the spindle whirling and then reach up and pull down the fibres gently. The spinning action twists them into a yarn.

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There are several Angora breeders who spin their own wool, and you may be able to see them demonstrating at some of the bigger rabbit shows.

Vegetable dyeing is another gentle art that some people practice on Angora wool. Common plants such as black-berries and marigolds can be boiled up and used to dye your wool; usually the yarn has to be mordanted to give a base for the dye to stick to. Traditional mordants were salt and rusty nails. Alum and chrome are two chemicals which can be used, but beware of poisonous chrome. Different plants need different mordants, and changing the mordant with the same plant may change the final colour. There are several books available on the subject of vegetable dyeing and they should be studied before you embark on a dyeing project.

Much Angora wool is knitted up into fluffy baby clothes, but of course the more sheep's wool you use with it, the further it will go. Knitting is another good old-fashioned art, and not to be despised! In all there are plenty of skills arising from the keeping of Angora rabbits to keep you busy and interested for a lifetime.

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Growing Food

Grow Your Own Fruit and Vegetables L.D.Hills, Faber.

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Recipes

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Angoras from A to Z R.G.Hodgson, Clay, Ontario 1975.

Spinning and Dyeing the Natural Way Ruth Castino, Evans Bros 1965.

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Useful' Addresses

British Rabbit Council, Purefoy House, 7 Kirkgate, Newark, Notts.

Commercial Rabbit Association, TynIng House, Shurdington, Cheltenham, Glos.

National Angora Club, 4 Linden Road, Earby, Colne, Lancs.

Eltex Ltd., (for equipment) Dept 47, Eltex Works, Worcester.

The Soil Association, (for advice about organic gardening and farming) Walnut Tree Manor, Haughley, Stowmarket, Suffolk.

Eliza Leadbeater, (Spinning) Rookery Cottage, Daleford Lane, Whitegates, Northwich, Cheshire.

Henry Doubleday Research Association, Convent Lane, Bocking, Essex.

Practical Self Sufficiency, Broad Leys Publishing Co, Widd-ington, Saffron Walden, Essex.

BACKYARD DAIRY BOOK Andrew Singer and Lan Street

BACKYARD POULTRY BOOK

Andrew Singer

BACKYARD BEEKEEPING Bill Scott

OTHER BACKYARD BOOKS

Backyard Sheep Farming

Ann Williams

Backyard Pig Farming

Ann Williams

Backyard Fish Farming Paul Bryant

Backyard Farming Ann Williams

This book is written as propoganda and its aim is to provide enough basic information to encourage readers to begin home dairy produc-tion. Thousands have reduced their dependence upon factory food by growing their own, or keeping chickens. Backyard Dairying is a further step towards self-sufficiency.

Contents

1. Why start?

2. Basic Economics

3. Which animal

4. Making a start

5. Feeding

6. Milking

7. A cow

8. Dairy products

9. A little technical information

10. Cream, butter, cheese and yoghurt

References and Bibliography

"The chapters dealing with goat management are most convincing"-Undercurrents

"A very useful book'--Sunday Times

"It is remarkably clearly written and will be welcomed by many questing clients in a prac-titioner's waiting room"-Veterinary Record

WILLIAMS, Ann - Backyard Rabbit Keeping.txt

Copiously illustrated

The author of the Backyard Dairy Book brings the same treatment to the subject 'of domestic poultry keeping. This book will appeal both to the absolute beginner and the experienced backyarder keen to try out new ideas,

Contents

Stage One: Making the big Decision

Chapter One: Why keep chickens?

Stage Two: Planning and Preparation

Chapter Two: A little technical background

Chapter Three: Which system to use?

Chapter Four: Which hens to buy?

Chapter Five: What to feed them?

Chapter Six: Confining and housing them

Stage Three: Your Chicks Arrive

Chapter Seven: Rearing chicks into layers

Chapter Eight: When to re-stock?

Chapter Nine: The harvest--eggs, meat etc.

Chapter Ten: Diseases and problems

Stage Four: Other Poultry

Chapter Eleven: Ducks

Chapter Twelve: Geese

Chapter Thirteen: Turkeys

Chapter Fourteen: Guinea Fowl, Bantams and Pigeons

"Andrew Singer's comprehensive manual deals with all aspects of poultry keeping and is a must for all potential poultry keepers before making a start'--Undercurrents

Lavishly illustrated

Illustrated by Keith Spurgin

A basic introduction to the gentle art which removes much of the mystique surrounding it. Part one explains the life of the hive and bee, part two describes the equipment and materials, and includes a design for a D-I-Y hive. Part three covers potential problems and their solu-tion. The final section looks at the harvest and what can be done with it. Bill Scott is author of our very successful book, Food for Thought, and runs a wholefood shop in Truro, Cornwall.

"To be a successful beekeeper with a happy colony and plentiful harvest, you will have to invest time, effort and knowledge, and that's what this book can give you even if you are a complete novice'.--Here's Health

"Unhesitatingly, I would say this book is a must for anyone contemplating keeping a hive or two of bees. Its simple clear style inspires confidence right from the start. The basics of beekeeping are explained in the clearest possible way and it even includes a section on making your own equipment."-The Soil Association News

PRACTICAL SOLAR HEATING Kevin McCartney

Even in a climate such as ours up to 50% of our domestic water heating could be supplied by the sun. So far only cost has postponed the widespread use of solar energy in homes throughout the country. Now, however, the rocketing price of conventional energy sources has made solar water heating economically competitive. Furthermore new plumbing materials and techniques now make do-it-yourself installation quite feasible, thereby greatly reducing the capital outlay.

This book has been written by a researcher at the Architectural Association who has designed, built end monitored numerous installations over the past five years. It is the most authori-tative, thorough end inexpensive account yet

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to appear and many of the suggestions and precepts were tested during the successful installation of solar panels at Prism Press.

Contents

1. Solar Energy--what is it, why we should use it and how.
2. Basic Principles--Absorption, heat loss, greenhouse effect, heat and temperature, heat capacity and reaction time, tilt and orientation angles.
3. Solar Collectors--Function, types, surface finishes, materials, insulation casing and glazing.
4. Storage Tanks--Hot water cylinders, galvan-ised iron and plastic tanks, heat exchangers, cold feed tanks, expansion tanks, pressurised tanks and insulation.
5. Circulation--Thermosyphoning (gravity) and forced (pumped) circulation, pump and pipe sizes and materials, pipe lagging and controls.
6. Mounting the collectors--location, building permission, fixing over existing roof, removing roof and fixing collectors under glazing bars, wall collectors and free-standing collectors.
7. Choosing a System--Step-by-step guide to variations in methods of connecting collectors to storage tanks, frost protection and temperature boosters.
8. Plumbing for Solar Systems--Plumbing without blowtorch, compression fittings, pipe types. With a blowtorch, capillary fittings, low-cost plumbing.
9. Swimming Pools--Types of collector required, size, location and mounting, insulating the pool, effectiveness.
10. Examples--commercial, council and D.I.Y. installations.
11. D.I.Y. Collectors--Detailed plans for two types.
12. Installation Guide--step-by-step instructions. 13. Survey of Manufactured Collectors.

KEEPING WARM FOR HALF THE COST John Colesby & Phil Townsend

The complete guide to home insulation. The aim of this book is to show people how they can cut their heating bills in half and recover the initial cost within three years without going to extremes.

Contents

Why Insulate?
Basic Principles
Draughts
Roofs
Walls
Floors
Windows

Where Does All This Lead?

"To the best of our knowledge there are few such books about, and the authors have made a good job of presenting what could be a most involved textbook as a readable and concise layman's guide"--Building

Illustrated by over 100 line drawings 96 pages 8 1/2" x 5 1/2"

FOOD FOR THOUGHT

A Fresh Food Cook Book
Bill Scott & Marilyn King

"It would make a wonderful gift for anyone new to vegetarianism, or it would be greatly appreciated by the experienced cook, as so many of the recipes are really new and unusual, and even someone who hates cooking should find it delightful just to browse through and enjoy"--Vegetarian

"It is beautifully printed and designed with lovely illustrations and a lavish sprinkling of foody quotes from quite eclectic sources"--Gay News

"The co-authors, who mix the ingredients of imagination and charm with a nice dash of humour, give delicious, mouth-watering recipes from all over the world"--Woman Journal.

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