













SOME YOUNG BLACK AND SILVER FOX.

# FUR FARMING

A BOOK OF INFORMATION ABOUT  
FUR BEARING ANIMALS,  
ENCLOSURES, HABITS,  
CARE, ETC.

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BY  
A. R. HARDING

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*C. R. Harding.*

## INTRODUCTION.

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**E**VER since Columbus discovered America, furs have been an important article of commerce, but at the rate of the catch during recent years, the supply drawn from the natural sources — forest, field and stream — will soon prove inadequate if not entirely depleted in some species.

Less than 30 years ago, there were countless thousands of Buffalo upon the Western Plains. Where are they today? In the 70's and early 80's they were slain by tens of thousands by hide and robe hunters. Does or does not such a condition face some of the American fur bearing animals at the present time? Many hunters and trappers must think that the supply will not long be equal to the demand, judging from the hundreds of letters written the Editor of HUNTER-TRADER-TRAPPER, asking information about raising fur bearing animals.

This work has been hastily gotten out to meet this demand, yet the sources of information from which the work has been gathered, are authentic. Much of the habits, nature, etc., of the various animals has been furnished by Mr. E. Kreps, a trapper of wide experience. Facts have also been furnished by those that have to a certain extent followed "Fur Farming" and as well some information has been added from the United States Government Bulletins.

A. R. HARDING.

Columbus, Ohio, April 1, 1909.



# FUR FARMING.

## CHAPTER I.

### SUPPLY AND DEMAND.

**F**OR years there has been a belief that the supply of fur-bearing animals would soon be inadequate to the demand. This belief is well founded and is apparent when the fact is known that the natural haunts and homes of the fur-producing animals are becoming less each year. The draining of swamps and marshes is destroying the homes and breeding places of muskrat and to a certain extent coon and mink. The saw mill and clearing of the land is rapidly lessening the natural resorts of coon, bear, wild cat and opossum in the South and Central States, while in the North, marten, fisher and lynx are being deprived of their natural homes.

Beaver and otter do not like civilization and leave on signs of man and his works. This is especially true of beaver; otter linger in waters fringed with timber longer even if settled.

Some animals, it is true, do well in fairly thickly-settled sections. Among animals of this

kind are red fox, skunk, mink and muskrat. Yet no fur bearer can hold its numbers against the ever-increasing number of trappers and the persistency with which they now seek the fur producers.

North America furnishes a large per cent. of the furs of the world—foxes, mink, otter, beaver, skunk, marten, lynx, coon, opossum, muskrat, wolves, etc. Considerable quantities of fine furs are still secured in parts of Russia, in Europe and Siberia in Asia; Australia furnishes great quantities of opossum, while from parts of South America, the trade in chinchilla is large. Yet North America has been for centuries, the great fur-producing continent and now that trapping is being pressed harder than ever and the natural haunts of the animals are becoming less each year, the question is,—where will the future supply come from?

In this connection the following article on The Fur Markets is reproduced from the April issue of THE HUNTER-TRADER-TRAPPER:

“The Spring or March London Sales began March 22 and ended April 2. During that time American Raw Furs were offered by Hudson’s Bay Company; C. M. Lampson & Co., and A. & W. Nesbitt. In face of the fact that prices on some articles have advanced so materially that American manufacturers have bought sparingly.

the outcome of the sales was awaited with much interest by the trade.

A year ago in giving the quantity of goods offered by the Hudson's Bay Company, this magazine said: "The quantity seems to be decreasing as the offering this year is less than 1907, and 1907 less than 1906." The offerings this year are still less than 1908, and for ready comparison the Hudson's Bay Company offerings at the March Sales for three years are given:

	1909	1908	1907
Otter .....	5,341	4,968	6,933
Fisher .....	2,671	3,224	3,228
Cross Fox .....	1,445	2,678	4,490
Red Fox .....	2,987	6,598	10,200
Silver Fox .....	344	526	896
Blue Fox .....	14	63	88
White Fox .....	2,058	6,703	11,409
Marten .....	21,577	29,808	43,798
Mink .....	10,966	13,091	32,817
Ermine .....	15,314	14,280	20,737
Lynx .....	8,856	31,892	56,611
Wolf .....	3,756	4,207	2,771
Wolverine .....	718	865	734
Skunk .....	1,478	5,023	11,430
Bear, Black .....	3,943	3,740	4,042
Bear, Brown .....	387	353	432
Bear, Grey .....	108	123	94
Bear, White .....	89	59	137
Badger .....	125	169	322
Raccoon .....	140	243	600

The combined offerings of C. M. Lampson & Co., and A. & W. Nesbitt were as follows at the Spring Sales in 1907, 1908 and 1909:

	1909	1908	1907
Mink .....	82,575	134,200	75,600
Skunk .....	545,284	416,000	615,900
Muskrat .....	1,238,257	1,015,000	1,018,000
Raccoon .....	203,155	316,000	69,726
Opossum .....	225,671	267,000	225,350
Marten .....	8,168	15,000	18,600
Lynx .....	1,500	7,550	11,727
Fox, Red .....	25,600	36,660	31,870
Fox, Cross .....	1,585	5,021	5,080
Fox, Silver .....	539	728	1,015
Fox, Grey .....	13,600	23,270	8,961
Fox, Kitt .....	1,670	388	655
Fox, White .....	3,310	14,000	4,785
Fox, Blue .....	3,630	2,600	3,600
Otter .....	5,211	9,000	2,916
Fisher .....	2,914	3,440	1,705
Beaver .....	14,282	6,800	11,900
Bear .....	7,240	6,980	5,770
Badger .....	4,070	4,475	5,905
Cat, Wild .....	6,925	5,800	7,072
Cat, House .....	20,344	15,800	17,000
Wolf .....	21,365	24,150	12,100
Wolverine .....	350	450	323
Ermine .....	77,600	77,000	100,580
Civet .....	19,200	33,000	53,800

The noticeable falling off in the Hudson's Bay Company offerings can be accounted for

from the fact that more "free traders," as the Great Company calls them, are yearly encroaching upon their territory.

The offerings of Lampson and Nesbitt is short of a year ago with the exceptions of beaver, muskrat and skunk. The advanced price of muskrat, no doubt, caused more trapping of these animals than ever before. Again the fact of the dry fall in many localities bunched the rats, so that they were much easier caught. The rats offered at the recent sales are largely fall and winter. From reports, the collection of spring rats will be very light — in many localities not more than one-fourth of an average collection.

While the offerings now show some 200,000 in excess of March, 1908, and also March, 1907, indications are that before the year 1909 ends there will be a shortage in the total rat catch for the year. Considerable anxiety is felt regarding skunk, as the number offered was 545,280 compared with 416,000 in March, 1908, which is nearly 130,000 more. This is hardly a fair test. The offerings at March Sales 1908 were light from the fact that skunk were not in demand at the beginning of the fall season of 1907, when a good per cent. of skunk are caught for the following March Sales. Go back another year, that is March, 1907, and see what the offer-

ings of skunk were; you perhaps will be surprised to learn that it was 615,900 or 70,000 more than at this spring's sale. The offerings of beaver were larger than a year ago, but with these exceptions, there appears a decided falling off—note the quantity of fox, coon, marten, lynx—all much less.

Furs are fashionable throughout the entire civilized world, and the catch seems inadequate on many articles. This is probably responsible for the high prices. At any rate, some articles have advanced beyond all previous high record. Prices for wolf, fox, lynx, wild cat and muskrat are very high, as well as many other American raw furs. Skunk reached a price that no one expected the past season. Since early in March or shortly after, too late to get goods into the London Sales, prices were lowered on skunk, opossum, raccoon and some grades of mink, especially Southern and Southwestern, but at the same time it should be taken into consideration that the quality is not so desirable as during the mid-winter months."

Many believe that by far the most of the furs come from the Far North. This is erroneous. It is true that the most valuable furs, such as silver, black and cross foxes, lynx and marten, come from that section. Some of the best otter, red fox and mink are also secured in the far

northern country. Yet fully one-half of the value of the American catch of raw furs is comprised in the three following articles—skunk, mink and muskrat.

In the Far North there will be foxes, otter, mink, and marten for some time to come. But what about that part of the country, say south of the Great Lakes, west of the Allegheny Mountains, north of the Tennessee and Arkansas Rivers and east of the Rocky Mountains?—a section which has been producing about half of the furs.

This section is the great skunk producing one and as well as one of the best mink and muskrat sections. It also furnishes from the Southern States within the area outlined, great quantities of coon and opossum. When those interested in the fur business consider that half the value of the annual catch is skunk, mink, and muskrat and that the best producing section has hitherto been the section as outlined, one can easily see that the supply will not long be equal to the demand.

During recent years, owing to persistent trapping, the fur producers have been greatly reduced and if not practically exterminated in parts of the country, are destined to become nearly so. The fact that skunk, mink and muskrat have been so greatly reduced in the past few years has caused those interested in the fur in-

dustry to ask,—“what of the future?” with the settlement of the country and the draining of the swamps, clearing of the forests, etc., which deprives many species of fur producers of their natural homes, how can it be expected that the supply will last?

That skunk, mink and muskrat do well in settled sections, there is no question, but since their pelts are so valuable, more trappers are after them than ever before. In addition, magazines and books on the subject are more plentiful than in former years, so that the inexperienced hunter and trapper has far better success than in past years.

There is always a cash market for raw furs and since the discovery of America, raw furs have been an important article of commerce. In the early days, beaver was the leading article and even at this date thousands of skins are secured annually by the professional trapper in the swamps of the south and along the streams and lakes of the north. Scattered thruout the South, Rocky Mountain sections, Northern Canada and parts of the East, are several thousand professional hunters and trappers whose annual catch amounts to several hundred dollars each. The aggregate of these men, footing up to perhaps \$3,000,000 or \$4,000,000. In the settled sections are tens of thousands of boys



and amateur trappers with here and there a professional. The annual catch of these foot up to perhaps \$6,000,000 to \$8,000,000, or double the catch of the professionals who leave civilization in September and are not seen again until May or June.

It is this class (boys and amateurs) that secures the greatest quantities of fur and as the number of trappers is so large and the grounds necessarily limited, here is where the animals are rapidly decreasing and at the present rate are in danger of extermination. In some sections there has been a wonderful falling off in the catch of late years, altho the number of trappers is larger.

An industry paying the hunter and trapper probably \$15,000,000 yearly is one that should receive attention. At the present rate of extermination, some of the fur bearers are destined to soon follow in the wake of the buffalo. The demand for furs is increasing as the population of the world is becoming more and more. Again furs are being put to more uses than ever. While the demand for furs are increasing, what of the supply? The day, perhaps, is not far in the distance when the demand will call for two or three times as many furs as today. Where are they to come from? The natural supply is surely diminishing.

The matter of "Supply and Demand" is one that there is considerable difference of opinion upon. Hunters and trappers, as a rule, are of one opinion and that is that the number of pelts secured upon a certain territory is becoming less each year. Trappers going over their lines are surely the ones who know whether the fur is holding out or not.

The number of persons seeking fur is larger each year. In localities furnishing as much fur as ever, the chances are that the number of animals left for breeding is less each year. If such is true the day when these localities will show a falling off in the receipts is not far in the distance.

Until recently, many dealers and manufacturers believed that the supply of wild fur-bearing animals was practically inexhaustible—that when wanted, trappers would go out into the "wilds," catch, skin and send the pelts to market. These people are beginning to awaken to the true situation and while they send out price lists, circulars, and traveling buyers after raw furs, they say it is much harder to secure the goods wanted than formerly.

A well known dealer in Minneapolis in sizing up the situation, says: "With the vast fund of information about trapping being sent out and with improved traps for catching and the great

stimulus to trapping owing to high prices, in five to ten years, there will not be one-fourth to one-half the fur bearers that there are now, unless stringent laws are enacted to curtail the trapping."

"Under proper conditions, with intelligent care, no doubt, raising fur animals can be made to pay. The raiser starting on a small scale and increasing as their knowledge increases. Most all successful business is built up by starting small."

The dealer who wrote the above advertises quite extensively for furs. The territory tributary to that city has always been considered a good fur producing one. During recent years, the supply has fallen off materially in face of the fact of improved trapping methods and a greatly increased number of persons seeking the fur bearers. The same conditions are true to a greater or less degree in many parts of the country.

The American people, however, can be depended upon to meet all emergencies. They have already set about to provide for the future raw fur supply by raising the animals. As early as 1884, experiments were made at raising foxes on the islands in the Northern Pacific Ocean, along the coast of British Columbia and Alaska. The experiments, as a rule, proved successful and

there has been for years a number of successful fox raisers on the islands of the North Pacific. More will be said about them elsewhere.

In various parts of North America, experiments have been made, principally with skunk, altho a few have tried mink and other animals but only in a small way, or by men who expected to get rich quick and who did not give the enterprise the care and attention that is necessary to make a success at any business.

## CHAPTER II.

### WHAT ANIMALS TO RAISE.

**T**HERE is a bright future to "Fur Farming." The person who knows something of the habits of the animal or animals that they expect to raise, will be the successful ones. A person who has always lived in the city would not be apt to make a success at general farming or fruit raising. The same applies to "fur farming." The person who has followed hunting and trapping or the farmer who has given attention to fur bearing animals are the ones most apt to be successful.

Foxes, no doubt, will be the animals that the majority would like to begin with, especially the more valuable species, as black, silver and cross. These for breeding purposes of course can be secured, but the present raisers do not seem to care to sell any of their stock unless at good round figures. They want to further increase their own numbers.

A good many attempts were made at raising skunk a few years ago, most of which were failures. Some entered the business on a large scale, knowing nothing of the animal, and of

course failed; others "penned up" a few skunk and as they were not properly cared for resulted in failures.

The recent advanced price for skunk skins has caused a revival in their raising. This time, an entirely different class of people are taking up their raising, and they are going to succeed, why? Because they know something of the animal and are going at the business in a calm and business-like way.

Mink, at present prices, look good to the fur-farmer. They are small animals but yield a pelt worth from \$3 to \$7, depending upon the size and color. Raccoon and opossum are compared with many fur-bearing animals as producers of cheap furs. This is true, but at the same time, they offer the most promising future for the fur-farmer in many localities. They are easily raised, and in addition to their fur, the carcass finds a ready sale in most cities.

Opossum and coon will not dig deep seeking escape, but are good climbers and considerable precaution should be taken to see that the wire netting is either extended in several feet at the top, or that a strip of tin a couple of feet wide is fastened to the posts some three feet from the ground.

The "fur-farmer," should the market be low for certain animals, can keep over; or the better

plan would no doubt be to kill off the surplus males and perhaps some females. At such times do not make the mistake of killing off too closely, as some will do, claiming that the fur is low and that there is no need of trying to increase. Nine times in ten, this is the time to raise as many as possible, for by another season, that particular article is apt to be in demand.

To illustrate: skunk were low in 1907, yet had the raisers gone ahead, they would have had a supply to kill during the Winter of 1908-9, at prices that were indeed satisfactory.

Had the opossum raiser, during the low prices for this fur in 1907 and 1908, sold off his breeding stock at low prices, as he would have been compelled to do, he would not had a supply when the prices advanced in January, 1909.

Some farmers make the mistake of selling off all their stock when prices ease up, expecting to go into the raising again when a reaction takes place. This is not the way to make the most money; when a reaction comes, other farmers who have continued raising this certain animal, reap the harvest, selling to the market or to their neighbors at high prices.

The prices paid for the various articles shows about what the grower may expect for his "crop." The demand, of course, will have much to do with the price. Fashion is constantly

changing but indications are that owing to diminishing supply and increased consumption, prices will be on a fairly high level always. Trappers and hunters often catch fur too early and as a consequence have blue pelts which are graded down. In the spring shedders and rubbed skins are secured which are sold as No. 2 or lower. With the "fur farmer," there will be no early caught blue skins or late caught spring and shedders. The animals will be killed when "prime," and will bring best prices.

Some reports from those that have experimented in a small way at raising fur animals is to the effect that they do not fur properly. This is true in regard skunk, when kept in a box or a small enclosure for weeks and fed largely on meat. The writer when a fur buyer has bought skunk that had been kept in a "pen" or small enclosure for weeks and in addition to being thinly furred, the hide was much thicker than it should have been.

Indians and professional hunters and trappers of the north say that they can notice a difference in the fur of foxes, lynx, marten, etc., when the food supply is abundant. The fur is thicker and has a healthier, silkier and glossier appearance. The secret, no doubt, is to give the animals plenty of room and feed should be varied. Here is where the person who knows the

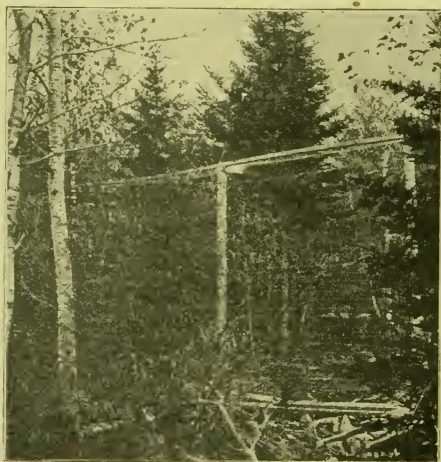


habits of the animal or animals he is raising is valuable. When cattle, sheep and hogs are fed properly they take on fat readily and produce a healthy coat of hair or wool. The same applies to the fur bearing animals.

What animals offer the best inducement to raise? This is a question that each individual going into the business must largely decide. The place you have in view for the starting of the "farm" will have much to do with this. Is the location one best adapted to skunk, mink, coon, fox, muskrat or some other fur bearer? Again, your experience should be taken into consideration, — what fur bearers you are most familiar with. If you live near a large city which offers a market for coon and opossum carcasses, this should be considered as these animals are easy to raise and opossum especially are very prolific, producing from six to twelve at a litter. While the fur of coon and opossum will never be very valuable, yet, as both fur and carcass have a cash value, they will prove greater money makers than many believe. Muskrat are another animal that should not be overlooked as they increase rapidly and their flesh is now being sold in many of the larger cities.

Marten and silver fox should not be raised in the south, as these are animals that do best in the cold sections. Otter and mink are two

animals that the sun fades the fur and as the darker the fur, the more valuable, it is important that as little sun as possible shines upon them. For this reason it is advisable to have the enclosure for these animals in the woods or thicket. In fact some trees should be in enclosures for all



Enclosure in thick woods.

animals. If raising coon or opossum, they will be "at home" in the trees while other animals will enjoy the shade in the summer and will make use of the leaves in the dens for winter.

There are some animals such as marten, fisher, wild cat, weasel, badger and wolves that

do not seem promising to us to raise for various reasons. Marten do best in the high mountain sections; fisher and wild cat would be hard to keep in an inclosure; weasel and badger are not valuable and would both be difficult to keep in; wolves are not valuable for fur and would require considerable attention and food, hence, not desirable to raise. In most states there is a bounty on wolf and coyote scalps but the raising of them for the purpose of the bounty would not work—the bounty would not be paid if county officials knew from what source they came.

Among the animals promising the best for raising are the black, silver, cross and red fox, skunk, mink, coon, opossum and muskrat. The otter, beaver, bear and lynx under certain conditions may be well worth considering, especially lynx at present value.

Do you think present prices for furs will continue? Generally speaking, yes. In fact, some articles are liable to go higher. On the other hand some furs may go lower but are sure to sooner or later react. The chances are that raw furs will not soon sell at the low figures of past years.

Suppose thousands engaged in the business of raising fox, skunk, mink, coon, opossum and

muskrat, what effect would it have upon the market? Would they overstock it? How many hundreds of thousands of persons are today raising cotton and wool to furnish clothing to the millions of people and there has always been a market. The same will be the case with fur. In fact, unless thousands engage in the fur raising business, the demand is going to far exceed the supply at no distant day.

Furs in the north are a necessity as no cloth will repel the piercing winds. Teamsters and others much out of doors wear fur overcoats, caps and use fur laprobes. Farther south, say in the latitude of New York, Pittsburg, Denver, etc., while furs are not an absolute necessity, yet they are much worn for comfort. In all the cities of the north, furs are worn eight or nine months in the year; in the central sections perhaps six months; while in the south only a few months. In addition to this, American furs are worn in all civilized countries of the world.

The farmer or stock raiser, as a rule, who is making the most money, is the one who raises not horses, cattle, sheep or swine alone, but often two or more of them. The same can be applied to fur farming. Suppose an enclosure of a few acres is made for skunk, why not take in a pond and raise muskrat, coon, fish and frogs.

There is a ready market in all cities for fresh fish and frogs.

The farmer that raises sheep not only sells the wool but fattens and sells some of the lambs, wethers or old ewes from time to time. The farmer is in the business to make the most out of it and such will be the case with the fur farmer. In the cities there is a demand for the carcasses of coon and opossum at prices ranging from 25 to 75 cents for coon and 10 to 50 cents for opossum, depending upon the size of the carcass, as well as the city in which you are marketing. In New York, Boston, Philadelphia, Baltimore, there is a ready sale for all coon and opossum carcasses at good prices. Other cities that use large quantities are Buffalo, Cleveland, Pittsburg, Detroit, Chicago, and Milwaukee. There is no city of any size north of the Ohio River but offers a market. St. Louis, Louisville and other southern cities being near the coon and opossum producing sections does not offer so good a market. Muskrat are now served, as "marsh rabbit" in Baltimore and other cities. The trapper realizing from 5 to 10 cents each.

With the exception of muskrat, fur bearing animals breed only once a year, unless the first litter are killed or die, when another is some-

times born and it might be said, such is frequently the case. The number that the various animals produce at a litter is given in the chapter dealing with that animal.

It is not all that are successful bee raisers who have gone into that business, yet how few failures are there among men who began in a small way, learning more of the business and gradually increasing the number of hives in their apiary.

One thing is important and that is, get the animals accustomed to their keeper as soon as possible. The old will be wild for some time but the young soon become tame. Skunk and coon are easily tamed and even beaver, otter and mink have become so tame when secured young, that children have safely handled them.

A man who has been in the "fur farming" industry for years, in response to the inquiry, "Will the business pay," says: "Yes, it will pay the right man big dividends on the capital invested." The right man is one who has "natural aptitude" for this sort of work, and who is "cut out" for "fur farming." If he has an "inkling" for this sort of work, he will study the nature and requirements of the animals and attend carefully to their every want.

Fur farming as an industry is only in its infancy, in fact, not begun. The future looks

bright to those who engage in the business in a business way. To those who expect to make a fortune at the business in a year or two, we predict failure, but to all who are willing to go at the industry, building a substantial enclosure, paying the same careful attention to the feed and care of their fur animals, that they would to other "stock," to get best results, far more than ordinary profits should result.

## CHAPTER III.

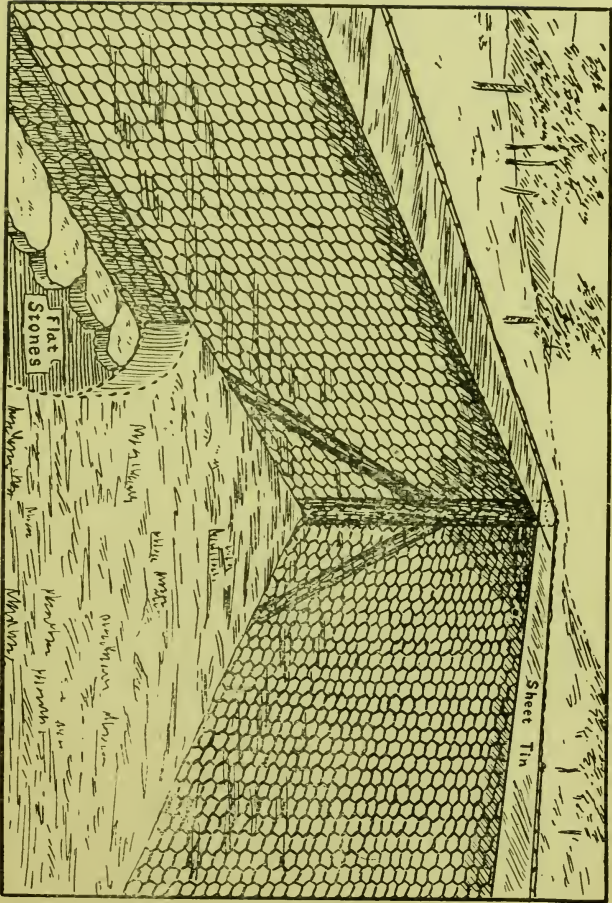
### ENCLOSURES.

**T**HIS is indeed, one of the important things in connection with "fur-farming." Some of the first experimenters in raising skunk and other fur animals, dug a trench from 2 to 3 feet deep, putting in rocks or boards edgewise to keep them from digging out, on top of which they constructed an upright fence of boards from 4 to 7 feet. On top of this fence was fastened a wide board to keep the animals from climbing out.

The enclosure should be an acre in extent and 2 to 5 would be better. The "ranch" should be located where the water will drain off quickly, so that the dens will be dry, making a good place to burrow. The ground should not be level, or at any rate, should have good drainage. Skunk and perhaps other animals are liable to disease, if kept in damp and crowded quarters, such as sore throat or similar diseases, which may cause death.

Galvanized wire, No. 14 or 16, with about one-inch mesh, seems to be the proper material for fencing. Posts should be of locust, cedar,





Corner of enclosure, showing sheet tin at top and stones at bottom.

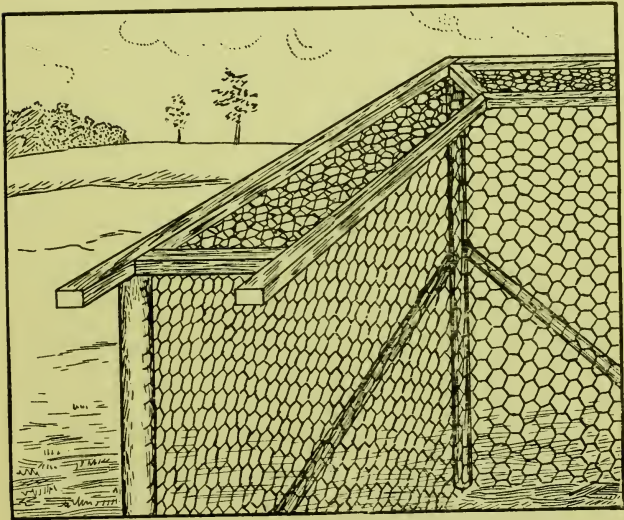
or some other long lasting wood. They should be fully 10 feet long and put in the ground 3 feet or more, depending upon how firm the earth is; they should be set about 8 feet or not more than ten apart, as your fence should be about 7 feet above ground. A trench two feet deep is dug, into which your wire is put. From this it will be seen that you need woven wire 9 feet high to make your fence 7 feet above ground, as two feet are under.

After your wire is in place, fill up the trench with dirt, or if there are flat stones, it would be well to place a layer about a foot wide, extending inward from the fence or bottom of wire. Should any of the animals dig downward from the bottom of the wire, striking the stone they would become discouraged and give up, as the stone would cause them to dig in the wrong direction to escape. On top of the wire fence, a sheet of tin roofing about 18 inches wide, should extend around the enclosure, on the inside, to keep the animals from climbing out, for skunk as well as coon can easily climb out of your enclosure.

Instead of placing the tin around the top some turn the fence in as shown in the illustration. If this is done to make the fence 7 feet high, a  $10\frac{1}{2}$  foot meshed wire is required as two feet are under ground and at least 18 inches

should be used for turning in — 2 feet would be best.

The “turning in” method has some advantages over the tin; one being that dogs cannot get in so easily, and another is that the fence will stand



Showing Fence with Wire Turned in at Top.

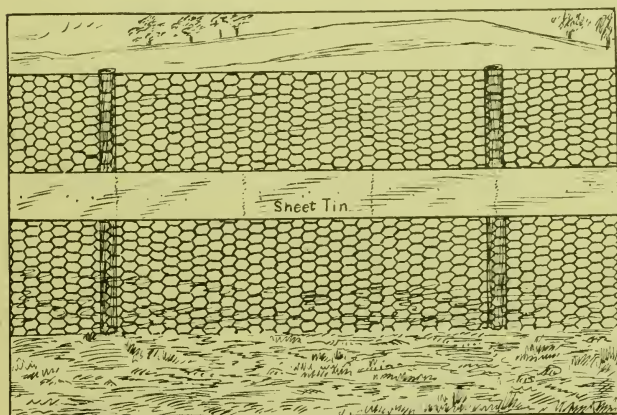
up better; the wide strip of tin or sheet-iron catching wind or snow which helps to sag the wire or cause the fence to lean. The tin or sheet-iron, however, seems to be the best in preventing any animal's escape.

The enclosure can be enlarged at any time, but do not make the mistake of beginning with too small an enclosure, as some have. Also have your fence about 7 feet high to keep dogs out, as well as to keep the fur-bearers in. Just how much the enclosure will cost depends upon several things: The cost of 9 foot, 1 inch mesh No. 16 galvanized wire is about \$1.50 per rod. This price, of course, will vary some, depending upon where you are located. In some of the smaller cities you perhaps cannot get the kind you want and will be compelled to send to some of the larger cities or catalogue houses. Perhaps you can not get wider than 5 feet. If such is the case buy in two widths — 5 feet and 4 feet. This will give you the desired height.

Posts as already mentioned should be of locust or some other long lasting wood, as cedar, and should be thoroughly seasoned before putting in the ground. The posts should be fully 6 inches in diameter. If from larger locust and split, so much the better, as the older the tree the longer it will last. The cutting and setting of the posts, putting up of the fence, can be done by the "fur-farmer" in those sections where locust and cedar grow, so that all the cash outlay necessary in building the enclosure, will be for galvanized wire, some staples and sheet tin for the top. Instead of placing the tin around the

top, it may be fastened on the inside of the wire (as shown), about four feet from the ground.

The corner posts should be two or three times larger than the others; they should be set more firmly in the ground, five feet being about right. This will necessitate these posts being two feet



Fence with Sheet Tin Four Feet from Ground.

longer than the rest. They should be firmly braced in both ways.

The cost of fencing an acre, varies, of course. An acre contains 160 square rods or about  $12\frac{1}{2}$  rods each side—equal to 50 rods of fence. If the wire costs \$1.50 a rod, and posts 40 cents each, the cost of material required to enclose

an acre will be \$95.00. We are figuring on two posts to the rod. Add to this staples, gates, etc., and the cost will perhaps be about \$100.00. Of course a much cheaper wire could be used, poorer posts, etc., so that the cost would be greatly reduced — but it generally pays to do a thing well.

To enclose a certain amount of ground with the smallest number of rods of fencing possible, the plat or ground to be enclosed should be in a square. The additional cost to enclose an acre, say 20 rods long by 8 wide, would be material for 6 additional rods. To fully illustrate, an acre fenced in a square would be  $12\frac{1}{2}$  rods on each side, or 50 rods; if 20 rods long, the two sides would be 40 rods, and the ends 8 each or 16 rods, making a total of 56 rods.

While the cost of enclosing an oblong piece of ground would be a few dollars more than if square, this should not stand in the way if the oblong piece of ground would make a better home for your fur-bearing animals.

The persons who expect to make "fur-farming" a business, can begin in a small way and same need not interfere with other work to a great extent. Year after year, as they learn more of the business, they can enlarge, etc. Trappers, hunters and others who from experience know much of the animals, will no doubt

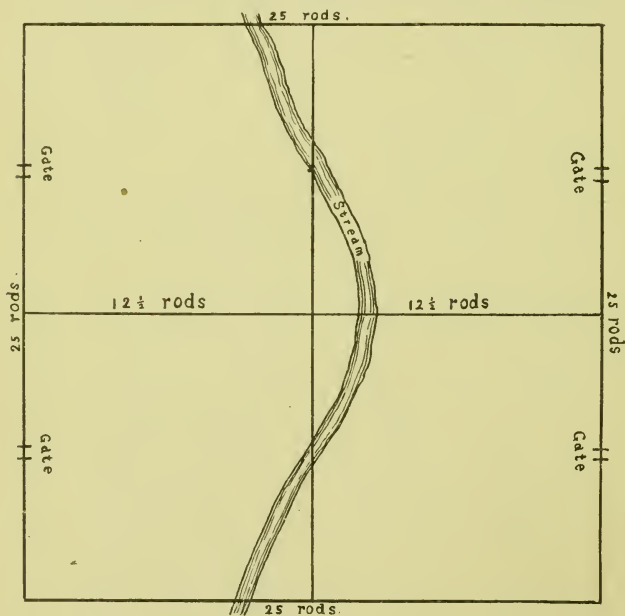
be the most successful from the start. One party writes to know if skunk, fox, opossum and mink can be successfully raised in the same enclosure. If he means allowed to run together, they can not. If he means the same outside enclosure, with separate apartments for the various animals, there is no reason why such a place should not be successful as there will be advantages in such a plan.

First, an enclosure of four acres can be built much cheaper than four separate enclosures of one acre each. To enclose four one-acre enclosures would require 200 rods of fencing — 50 rods for each. The four acres in one enclosure would be only about half or 100 rods. A square 25 rods on each side would be almost 4 acres. Should the fur-farmer wish to subdivide this into four tracts, a fence thru the middle each way would take 25 rods additional or 50 rods for both ways. This fencing need not be so high or so secure as the outside one. Should animals manage to get into another part of the four-acre enclosure, they would still not be at liberty, altho they might kill or injure some of the other species before being discovered by the owner.

If possible have a small stream of running water in the enclosure.

Without labor the cost of material will vary from \$2.00 to \$3.00 per rod. The greatest varia-

tion in expense will be for posts. Those living where posts can be had, having considerable the advantage. This estimate being for galvan-



Plan for Combined Enclosures.

ized one-inch mesh wire No. 14, per rod, smaller wire of course being cheaper. This is by far the best material in making enclosures, yet found. Some of the first experimenters used boards,



but where there were cracks, or the sap or bark on edges rotted, affording the animals a place to gnaw, they soon found a way out. This had to be guarded against where the boards extended into the ground they often rotted so that there was always danger of the animals escaping. Where stones were set up edgewise or cement used, it was rather expensive and as galvanized wire lasts well either in the ground, where not exposed to the air, or being galvanized, it stands the elements well, it seems to meet the requirements of the fur farmer for fencing or enclosure purposes.

Where is the farmer who would expect to make a success at raising horses, cattle or sheep, by keeping them in a small pen and feeding them foods not to their liking or nature? Yet, such has been the case with some of those who tried "fur animal raising." They made a failure of it and no one who is at all familiar with fur-bearing animals is surprised. Those who will be successful at "fur-farming" are trappers, hunters and farmers who know something of the animal or animals they expect to raise — those who love the animal and have a desire for the business.

The ox, horse and sheep were all wild at one time, but have become domesticated. Why not the same with the fur-bearers? This is exactly

what should be done. Skunk, especially, are very easily domesticated, and other fur-bearers, such as coon, mink and opossum, soon lose much of their fear.

When the raiser learns this and furnishes a large enclosure with dens and food similar to their wild state, they will be on the road to success. As one raiser says: "They do well in a semi-wild state." If the enclosure is too small, fleas, seed ticks, and other parasites are a great enemy to the animals. In a large enclosure the animals are more "at home" although at first they are restless and will walk around seeking a way to escape; that is they try to escape at night. They are seldom, if ever, seen during the day when first let loose in the enclosure; they generally go in the first den that has been prepared for them.

Water is important. If you are raising skunk, fox or opossum, water for drinking is all that they require; the same is the case with the coon, although they will do best where they have water to wade, play and search for food. Muskrat, otter, beaver and mink must have water to swim and play in, as well as to drink or they cannot be raised. The enclosure for mink and muskrat should include a stream of running water if possible, or a pond of pure water. The same conditions apply to otter and beaver, but

of course the wire should be of larger size than for mink and muskrat. Several different species of fur-bearers can be successfully raised in the same enclosure. Coon, opossum, and skunk will all do well together. Beaver and otter, apparently, live peaceably for weeks in the same beaver lodge or house.

The thousands of small lakes, ponds, etc., offer a splendid opportunity for the successful raising of muskrat. While many owners of such, today, in their natural condition, or without any fence, are reaping a profitable and furry harvest; yet there are additional hundreds that by building a fence around, would soon have a muskrat lake or pond worth a great deal. Muskrat are fond of their homes and often remain at the same location for years. If a wire fence three feet high were built around this lake or pond, (with one foot underground), it would keep the rats at home, as some would leave, especially as soon as the increase became large. Such a fence would also keep out mink, which kill muskrat, often.

Muskrat, in their wild or natural homes, seldom leave the water more than a rod or two, so that a pond a considerable distance from any stream, would be a comparatively safe place to raise them, without any enclosure. The danger would be, mainly, that after the animals became

quite plentiful, some would perhaps leave, for instinct seems to teach them that some should seek homes not so crowded. This has happened in their natural breeding places where they became very plentiful.

How large and where to build enclosures for fur farming, must be decided by each individual. One party may have a creek, pond or lake, perhaps a swamp, already inhabited by muskrat, and all that is necessary is to keep other hunters and trappers off. On navigable rivers or lakes having an inlet and outlet, we believe in most states any one can trap so long as he is upon the water. In other words, the water does not belong to the land owner and he cannot keep others off; but any small lake or pond may be enclosed. On this point it would be well to see some lawyer in your county, as different states may have different laws.

A wooded bluff containing some den trees for coon, and hollow logs, stumps, etc., for opossum and skunk, would be an ideal place for a fur-farm. The location of the farm should be within sight of the home of the raiser, in case a dog should get within or a thief should visit the farm. To guard against stealing at night your dog would give the alarm, or you could have an electric appliance connect the farm with the house.

Islands in large lakes offer a splendid place to begin raising fur-bearing animals, and especially those that do not like to get their "fur wet" or that naturally are not swimmers. In this class are the various kinds of foxes, skunk and opossum; marten, it is true, are not included in the swimming class, but the successful marten raiser perhaps will be found, if at all, in the higher altitudes where the snow gets several feet deep during the winter months, and the ground is covered with snow eight or nine months each year — such is the ideal and natural home of the marten.

Skunk and opossum are two animals that do not travel much in extreme cold weather, so that an island in a lake or large river, could be used with no fencing. It perhaps would be best to put up a wire fence but it need not be so substantial as if it were not surrounded by water. Of course islands in rivers that overflow, would not be suitable. There are, however, islands in the Great Lakes and elsewhere, that can be used for raising both skunk and opossum with little or no cash outlay at the start.

If islands are used for foxes (except in salt water where the water does not freeze), the same precaution in fencing must be taken as elsewhere. Foxes travel during all kinds of weather and the first night the ice formed sufficient to

bear their weight, they would be very apt to leave.

Coon could not be successfully raised on an island. They do not travel much during severe weather, but unless the island happened to be some distance from the mainland, they would likely swim to shore. Mink would be at home on an island where there was fish, frogs, etc., with drift and log piles to wander through, but as they are good swimmers, there would be nothing gained by starting with this animal on an island.

Skunk and opossum seem to be the only animals that can be safely raised on an island without the same precaution taken in fencing and enclosing, as upon the mainland. These two animals, while not the highest priced furred ones, for various reasons will prove to be as profitable, or more so, where conditions favor, than many other fur-bearers.

## CHAPTER IV.

### BOX TRAP TRAPPING.

**I** WAS born in Central Pennsylvania and spent the greater part of my early life among the mountains of that part of our country, writes Mr. A. C. Williams, a well known trapper. From my early boyhood, I had a decided liking for the wilder class of literature, and took special interest in tales of hunting and trapping adventures; but at that time, did not know that there were many who still followed hunting and trapping for profit. When I did learn of it, I naturally became even more interested, and tried to find a partner among my boy friends, intending, if I could find some person to accompany me, to make an extended hunting and trapping trip into some one of the wilder portions of the West or North.

Of course I was no more fitted for such a trip than any other country boy of the same age, and knew nothing of the wilderness; but being a boy, and having read so many tales of boy hunters traversing the wilderness as they would their own back yards, I naturally thought that life in the forests was a very simple thing, and

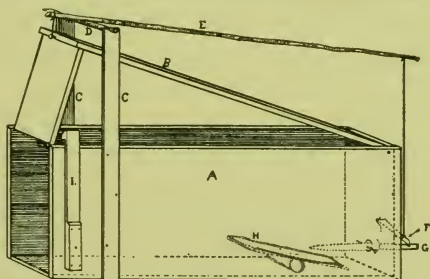
that there was no reason why I should not go. As I grew older I learned that there was still some fur to be found in Pennsylvania, and not only that but that there were parties who made trapping a business, in season.

I was interested, and decided to try my hand on the fur-bearing animals found near my own home, before going farther, but I had no traps and knew nothing about the various sizes and grades; as a consequence, I sought out one of the trappers that I had heard of, and asked his advice regarding different traps for the various animals. He gave me the desired information, very willingly, and also remarked that he had been very successful in trapping mink and other small animals with box-traps. After he had mentioned it, I remembered that my father had, on one occasion, caught a mink in a box trap, after it had been paying nightly visits to our chicken coop for a week or more, killing a hen each night; but for all of that I did not know that these traps could be used successfully when trapping for profit. It was not very long after my conversation with this trapper, that I had an opportunity of examining one of these wooden traps and studying its construction. I will give here a description of the trap used in that section:

A plain box, size 10 by 10 by 24 inches, is



made of one-inch lumber, hardwood preferred, and is left open on one end and the top (see A) another part (B) the cover, is fitted in top and end, and hinged at back by driving a nail in each side, being careful to get both nails same distance from the end of board. This cover should work freely, and when dropped down in place, should fill the opening neatly, leaving no cracks for the captured animal to gnaw at.



Box Trap for Catching Animals Alive.

Now nail two strips (CC) on opposite sides of the box and about three inches from the mouth of the trap. These strips should extend about ten inches above the top of the box, and should have the tops notched to hold stick (D). Stick (E) is tied at one end to a nail driven in the end of cover, and at the other end, is attached the trigger (F). One end of this trigger fits into a notch cut into the end of the box, and the

other end fits into a similar notch cut in the bait-stick (G). The bait-stick, as will be noticed in the drawing, is slipped through a hole in the end of the box, just below the trigger notch, and is kept in place by means of a nail driven through on the inside of the box. A small trip board (H), rests under the bait-stick on the inside of the trap. This trip board doubles the value of the trap, as by its use many an animal which merely enters the trap to smell at the bait, will be caught; which would not occur if the board were not used.

To complete the trap, a snap catch (I) is fastened to one side of the trap in front of upright strip (C) and its purpose is to catch and hold the cover when the trap is sprung. This snap is made of springy wood, beveled on the top, and the falling cover presses it outward; but as soon as the trap is fully closed, it springs back to the original position holding the cover securely. In making this trap it is advisable, always, to use old, weather-beaten lumber.

As a result of my investigation, I made a number of these traps and was successful with them, from the start. In that part of the country there had been many saw-mills and logging camps, at one time or another and at such places I could always find old boards from which to construct the traps. The only tools required

being a saw, a hatchet, and a half-inch auger, I would go to these places during the summer, whenever I had a day to spare, and make a few traps, hiding them near the places where I wished to set them.

The trap described above is of the size used for mink, skunk and opossum, but I made most of mine on a larger scale, and by baiting with fish, I caught many coons. On one occasion I caught three coons in one night, with only three traps set, and in another trap, set by the side of a small stream, in a gap of the mountains, I caught three mink and two coons in one fall season. At another time I caught a large bob-cat in such a trap.

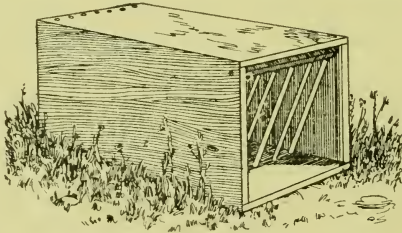
As I said before I baited with fish when I could get them; but those trappers who used them for mink alone, never used bait, but attracted the mink into the trap by means of mink musk rubbed on the trip board.

I caught quite a lot of skunks in box traps, and it is a nice way to catch these animals, for the trap may be carried to the nearest water and the catch drowned by holding the trap beneath the surface. It is advisable always, to place a weight — a few stones or wet chunks — on the cover, as this will make it more certain in its action.

These traps are specially suitable for catch-

ing animals alive and uninjured, for breeding purposes, and now, that so many people are interested in raising fur-bearing animals, there is a ready sale for live animals, and this matter should be given attention.

I have used another style of box-trap for muskrats, but is not intended for catching the animals alive, and the muskrats are always drowned. It is a simple box or square tube of



Box Trap with Swing Gate.

boards, 6 x 6 x 24 or 26 inches, open at both ends. A wire screen is fastened over one end, and a loosely hinged gate of pointed wires is hung in the other end. I used for the gate, pieces of umbrella ribs, cut about eight inches long and the ends filed sharp. With the wires cut this length the gate will hang at an angle of forty-five degrees, or more, and will push in easily, allowing the animal to enter the trap without

effort; but once inside, escape is impossible, as the gate cannot be pushed out, and even if the captured animal should raise the gate and attempt to creep under it, the pointed wires will catch in its back and prevent escape.

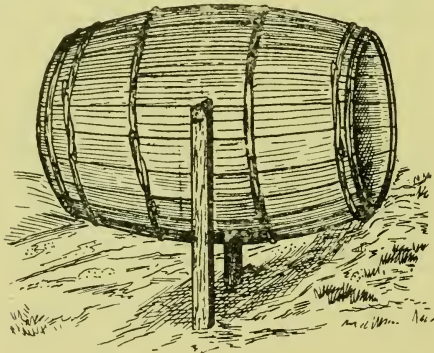
They are set in the dens, under water, and if the mouth of the den is too large, the space around the trap should be closed with sods. Set in this way, it will catch any muskrat that attempts to leave the den, and I have caught three at one time in such a trap.

While muskrats caught in this way are always drowned, other animals, such as: mink, skunk and opossum, may be taken alive by setting the trap in the mouth of the den, blocking up all side openings. The width of the trap as shown in the cut, is considerably out of proportion, when compared with its length—it being drawn this way to show more clearly the working of the swing gate.

A very effective skunk trap may be made from an old barrel. The barrel is pivoted to a pair of stakes, driven firmly into the ground along a bank or hillside, where skunks are found, and the bait is fastened on the bottom of the inside of the barrel. This trap is shown plainly in the illustration. It will be apparent to all that when the skunk, in approaching the bait, passes

the center, where it is hinged to the stakes, the barrel tips over, and it will be impossible for the animal to escape.

Muskrats are sometimes taken with a wire net. To hunt them successfully in this way, two persons are required. While one holds the net over the mouth of the den, the other hunter



Barrel Trap for Catching Animals Alive.

drives the inmates from the burrow by prodding the ground with a pointed pole. A wire cage with a cover must be used to carry the captured animals, and each individual must be shaken into the cage as soon as captured, and the cage closed immediately to prevent their escape.

When box traps are used, no difficulty whatever will be encountered in transporting the ani-

mals, as trap and catch may be carried into the enclosure before the animal is liberated. Even the skunk may be carried along in this way without any danger of scenting. The trap should be handled carefully—not thrown about.

Muskrats may be handled with perfect safety if grasped by the end of the tail and held at arm's length.

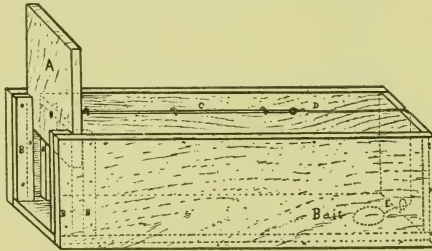
Trappers, as a rule, know just what time of year the young of each species of animal are born and I would advise, when trapping animals for breeding purposes, to catch them before this time, or at such a length of time after the birth of the young, that there will be no danger of their starving in case they are not captured along with the mother. Even if the very young animals are taken from the den, there is danger of them suffering from careless handling, or from not receiving proper care. It is better to catch the female animals before the young are born.

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Another box trap that is a good one, is described by an Illinois trapper as follows:

“I here enclose a sketch for making a trap for catching mink which I have used for years, and think it can't be beat. Make a box 22 inches long, 5 inches wide, and 6 inches high out of inch lumber; bore a hole at the back for the string (D) to pass through, which is tied to a bait at

(E) and fastened at the other end to a heavy wire (C), on top of the box, which holds the sliding door (A), when set. A couple of strips (B) are nailed on each side to hold the door in place. This is a good trap for mink that are afraid of steel traps. For bait use a rabbit's head tied securely to the string, also a few drops of good scent put on the bait, and set near the mouth of some tiles or wherever mink abound."



Another Box Trap.

This trap, as well as all the box-traps in this chapter, are recommended for catching such animals as skunk, coon, mink, and opossum, alive and uninjured, for stocking "fur-farms."

Muskrat can be caught in these traps by baiting and setting where they feed, or on runways from one pond to another.

Animals caught in these traps can be carried with safety to both catcher and animal, to the enclosure, before taking out of the trap.



## CHAPTER V.

### FOX RAISING.

**T**HE foxes of North America are divided by naturalists into only three distinct groups or species, namely, the red, the gray and the Arctic foxes. Of these, the red species is divided into a number of varieties, among which are the Nova Scotia Red Fox, the Newfoundland Red Fox and the Western Kit or Swift Fox, etc.

The black, cross and silver foxes are commonly supposed to be only color varieties of the red, there being no difference whatever, except in the fur. While naturalists all agree on this subject there is considerable difference of opinion among others who give as proof that they are of a different species, the fact that the black, cross and silver are only found in the northern districts while the red variety is found well down into the south. There are, however, certain facts which go to prove that they are all of the same variety or if different that they interbreed, the most convincing of these being the fact that the various colors are sometimes found in the same litter. But, be this as it may,

the matter is of little importance to the prospective fox breeder as it has become a well known fact that the red color can be entirely eliminated by careful breeding.

The red fox is found throughout the greater part of Canada and the United States except in the far south where it is replaced by the gray species and in the extreme northern portions of Canada and Alaska, where it gives place to the Arctic fox, also they are not found in the far western states nor on the Pacific coast, being replaced here by the gray. They are perhaps most abundant in the New England States, Newfoundland and the eastern provinces of Canada, but are also found in good numbers in parts of New York, Pennsylvania, Virginia, West Virginia and the mountainous and hilly sections of the South.

The silver and black foxes are found but rarely in the most northern tier of states and are probably found in the greatest numbers in Newfoundland, Labrador, northern Quebec and northern Ontario, but an odd specimen is occasionally met with in all parts of Canada. They appear also to be quite plentiful in the interior of Alaska and the Yukon Province of Canada. The range of the cross fox is the same as that of the silver and black except that it probably

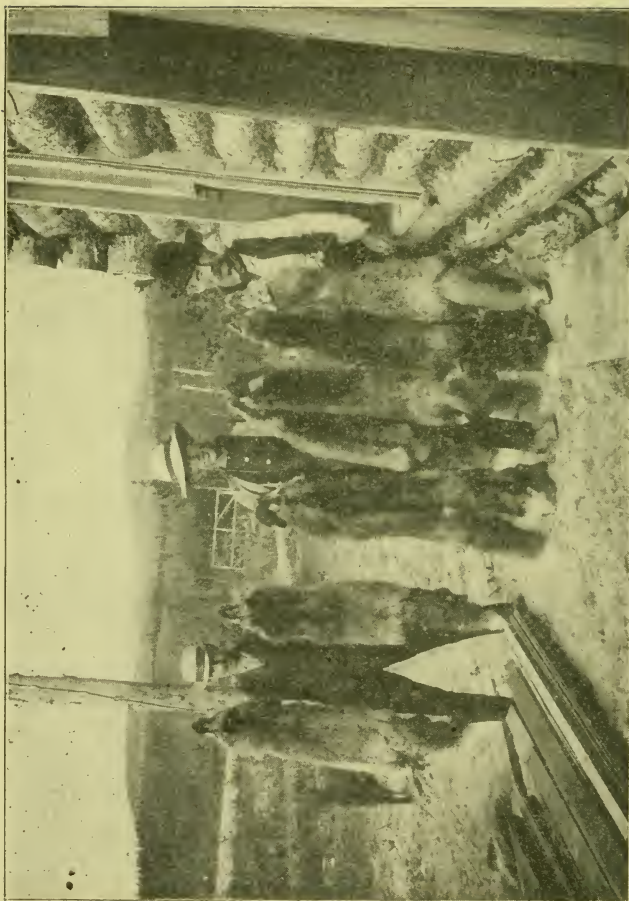
extends somewhat farther southward into the United States.

Of the gray foxes, several varieties are recognized, all however, being very much alike. They are found throughout the Southern and South Central States—in the east being found as far north as Connecticut and on the Pacific Coast are found in California and Oregon.

The Arctic fox, also known as the blue fox and the white fox, is found only in northern Canada and Alaska. In the most northern parts of their range they are a bluish color in summer, changing to white in winter, but in the lower latitudes they retain the blue color throughout the year.

There is an immense difference in the value of the various varieties of foxes. While the fur of the gray variety is seldom worth more than a dollar or a dollar and a half, that of the fine silver and black foxes will range from several hundred to a thousand dollars, and more if the skin is an exceptionally fine one. The Arctic fox comes next in value to the silver, while the cross is as a rule of less value, depending mostly on color, and the red variety sells for from three to five dollars each and upwards for prime skins.

The various members of the red fox family



Northwestern Fox Skins — Silver, Cross and Red.

are practically the same as regards habits, being influenced to a certain extent by environments, differences in climate and food, etc., but on the whole very much alike. They are all of a cunning, wary and suspicious nature and it is owing to this fact alone that they have been enabled to live and thrive in the face of the persistent hunting and trapping. They are hardy animals and while they generally have a den somewhere on the side of a gravelly or sandy hill, they spend comparatively little of their time in the dens and prefer to spend the day in a bunch of grass or weeds, a clump of brush, or, curled up on top of a stump.

In their search for food they sometimes start out quite early in the evening, but are probably most active in the early morning when all animal life is on the move. Then it is that the rabbits and other nocturnal animals are seeking their places of rest and the birds, etc., are commencing to move about and the fox stands a better chance of securing some article of food.

Their food consists principally of small animals and birds, such as rabbits, partridge, quail, chipmunks and mice, but they also eat fruit, such as apples, wild grapes and nuts. However, they are more strictly carnivorous than the gray fox. They are fond of eggs and often rob the nests of ground building birds, of

eggs and young, and in the settled sections have acquired a decided liking for poultry of all kinds.

The food of the gray fox is practically the same as that of the red variety but they are more given to eating fruit and feed extensively on grapes, apples, etc., and in some sections they feed on green corn. All foxes will eat fish with a relish when they can get them and will refuse scarcely anything in the line of flesh, being especially fond of muskrat, skunk and opossum. In captivity they take very kindly to a vegetable diet.

The Arctic foxes live chiefly on lemmings, small animals which are found quite plentifully in the far north, but in captivity they thrive on fish and cooked corn meal.

The mating season of the red fox comes mainly in February and the beginning of March and the young, from five to eight or nine, are born in April or early in May. The young of the gray fox are born in May, the mating season of this species being somewhat later than that of the red fox. The breeding dens of the fox are usually located on some gravelly hillside but in places where the country is broken and rocky. They use natural dens in the rocks. It is only during the breeding season and while the young foxes are still quite small that these dens are regularly inhabited. At other times they may

spend an occasional day there or seek safety in the dens when hard pressed by hounds, but for the most part they prefer to rest out of doors.

Foxes prefer the rough hilly countries and are usually found in good numbers in the hilly farming sections where there are old pastures and an occasional patch of woodland. The gray fox is most at home in the wooded districts but the red species, including the silver, cross and black prefer the more open stretches of country. In the north they will be found most plentiful in the barrens and sections where second-growth timber prevails.

The two species do not appear to be on very friendly terms and not given to mixing one with the other. In some sections where red foxes were once numerous and the gray variety were unknown, the grays now predominate, having driven out the red variety. In other parts the reds have supplanted the grays. This, however, is only in the central and southern districts, as the gray fox is never found far north.

FOX FARMING.—Fox farming has been attempted by various parties from time to time and those who have given the business considerable study and have persevered have generally been successful. Many of the parties, however, were men who have had practically no knowledge of nature, having gone into the business too

deeply in the start and being ignorant of the nature and habits of the animals when found in a wild state, have as a consequence, failed. Very few of those who have made a success of breeding the valuable silver foxes have gone into this business in the start, but have first experimented with the less valuable red fox, and as the silver and red foxes are of the same variety their nature and habits are also the same, and the knowledge of their habits gained by experimenting with one is of equal value as applied to the other.

The Arctic foxes are being raised successfully on many of the islands off the coast of Alaska. As the seas never freeze over there, no enclosures are necessary and the business has proved comparatively easy from the start. Such islands are not within the reach of the average fox farmer and other means must be resorted to. The breeding of silver foxes has, thus far, been carried on mainly in the Canadian Maritime Provinces and the state of Maine, but it has also been undertaken to some extent in Michigan, Alaska, Labrador and Newfoundland.

We are certain that if one will give the matter sufficient study, learn the habits and nature of the animals thoroughly and act accordingly, success is sure to follow and that the red, cross and silver foxes may be bred and raised suc-



cessfully. Experiments should be conducted on a small scale, for otherwise failure would mean a great loss. We would advise that the amateur conduct his experiments with red foxes, learning their habits thoroughly before attempting the breeding of the valuable silver-gray.

FAVORABLE LOCALITIES.—It is a well known fact that the finest furs are produced in northern localities and fox farming should not be attempted in the far south. The accompanying map, which is taken from the bulletin of the U. S. Department of Agriculture, will show the area most suitable for silver fox farming. The plainly lined portions show the most suitable country, and conditions in those parts are most excellent and the cross-hatched parts show the area where silver fox raising is possible and conditions favorable. The red fox will do well somewhat farther south, but as before stated, the warm climate of the south is detrimental to fine furs, and it will be wise to not locate too far south of the shaded portions shown on the map.

Having decided on a favorable section of country the next step is to find a suitable location. It is not necessary or even advisable to have a large enclosure. For the beginner a half-acre to an acre will be sufficient, and a space of four or five acres is ample for extensive oper-

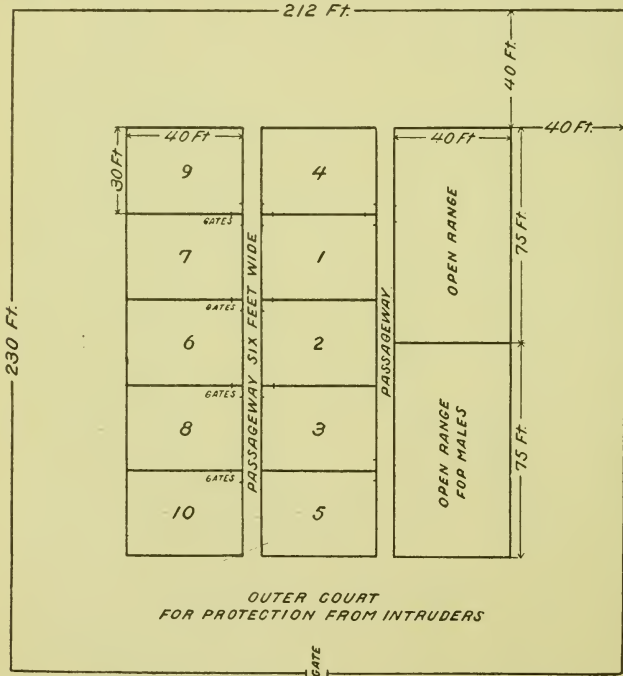


Map of life zones in which fox farming is feasible in the United States, showing the Canadian zone where conditions are excellent, and the Transition zone, in parts of which conditions are favorable.

ations. If the enclosure is too large the animals will be wild and unmanageable, and on the other hand if too small they will become nervous and restless and will not breed well, and it is advised also that the foxes be not disturbed by visitors and be allowed to live as quietly as possible. A sandy soil is recommended, and there should be some trees for shade, but a thick woods is not desirable.

ENCLOSURES.—Fences should be made of galvanized woven wire of two-inch mesh,—number 14 or 16 wire being best. The fence should be ten feet in height and should be sunk in the ground two feet and turned in two feet at the top. The overhang at the top is easily adjusted by means of cross strips on the top of the posts. Care in making the fences is essential, and if there is much snow in winter the drifts must not be allowed to become high enough to allow the animals to leap over. It is advisable to have a set of inside enclosures, and as it is necessary that the animals are not annoyed by visitors. It is a good plan to have the space between the inside and outside fences filled with trees and clumps of brush so as to obstruct the view. The inner enclosures are small and designed for single animals and pairs and should be about thirty or forty feet in size. There should also be several larger enclosures for the males and

females, for, except during the breeding season it will do no harm to allow the males to run together. Each separate enclosure should be

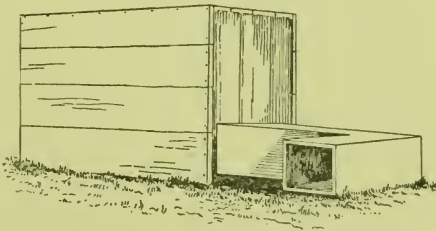


Plan for Arrangement of Fox Yards.

provided with a gate so that it will be an easy matter to remove the foxes from one enclosure to another. The plan for the arrangement of

the yards as shown here is a good one and is taken from the Government Bulletin.

Each compartment should be provided with small kennels, for although the fox will usually dig a den, the nature of the ground is not always suitable and they take kindly to these artificial dens. They are usually made four or five feet square and two or three feet high. If desired, shelters may be made of boxes as shown in the



Box Shelter for Female and Young.

cut. No bedding is required, as the old foxes will do well without or will provide one themselves.

**FEEDING.**—Many fox raisers have failed to recognize the fact that the fox is almost omnivorous and give a strictly meat diet according. While this does not always have disastrous results, it is better to give them a mixed food, including besides meat, table scraps, bread and milk, etc. Overfeeding is a common trouble and should be avoided. Of course they must have

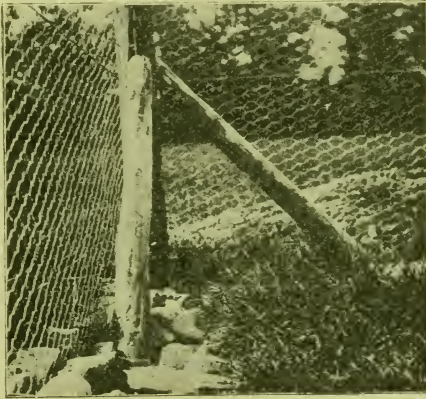
sufficient, but should not be allowed to become too fat, as this spoils them for breeding purposes; also feeding should be at regular intervals. The weight of a healthy fox is from six to nine pounds, and when an animal weighs more than ten pounds it is almost certain that it is too fat. When a number of animals are kept together in one enclosure the boldest and strongest will usually get more than its share of the food. Of course fresh drinking water must be provided regularly.

One of the most successful breeders feeds a quarter of a pound of meat and a quart of skim milk daily. A quarter of a pound of meat and a handful of scraps is a fair daily allowance. Another fox farmer feeds along with the meat a hoecake made of corn meal and sour milk.

Beef, mutton, fish, horseflesh, etc., are all good food for the fox. Old worn-out animals may be secured in any rural district, but it is absolutely necessary that the animals be healthy and the meat should be kept on ice. One breeder claims that if everything were purchased, his foxes would not cost him more than one cent each a day, but as he feeds considerable table scraps the cost is even less.

**BREEDING.**—In the wild state the male fox mates with a single female but in captivity one male will answer for two or even three females

but it is best to have all animals in pairs. It has been found best to place the male with the female in December or January and leave them in company until the last of March when the males should be removed. The females should be kept in the small enclosures continuously and

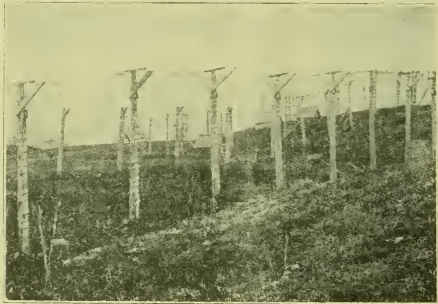


Corner of Fox Yard showing Stones to Prevent Escape by Digging.

the young foxes removed when weaned. They breed the first season, when less than a year old, but as a rule the litters are small.

As before stated it is absolutely necessary to prevent the animals from becoming nervous from too frequent visits of strangers. This nervousness has a bad effect on their breeding

qualities. It is especially bad after the young foxes are born, as the mother fearing for the safety of her young, will move them about continuously until they are badly injured or die of exposure. The keeper also should not disturb the young but should keep away from them as much as possible. In raising silver foxes, only the most perfect specimens should be kept for



Fox Yards, Showing Detail of Outer Fence.

breeding purposes. However, if there is a tendency to show some red among the fur this may be bred out entirely by using care in selecting the breeding stock.

As there is considerable difference in the disposition of individuals this should also be kept in mind and those animals showing the least aversion to man should be selected, providing, of



course, that they are prolific and otherwise perfect.

A party in Ohio who has been raising foxes for some time writes as follows:

Two years ago I added foxes to my game preserve and last spring my red gave birth to five young foxes. My black male fox got to the young and killed the three males. I now have three cross foxes, one black and four red. I expect to have a big increase in the spring. Should I get a lot of black pups next spring I will surely do well with my foxes.

I find that foxes are not strictly carnivorous (flesh eating) animals. I feed them stale bread, milk and any kind of a dead fowl, rats, mice, stale meats, muskrat, coon or any other carcass. I aim to give them all they will eat, yet I often have thought that I feed them too much at one time and not enough at other times.

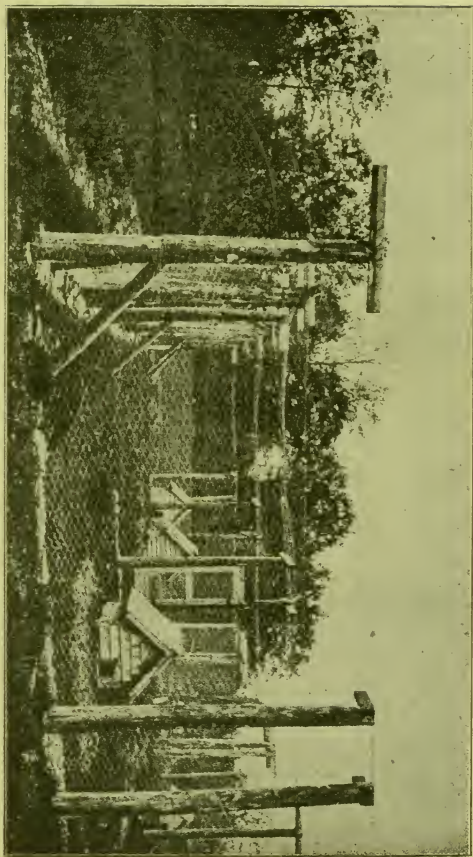
I think foxes should be fed morning and evening only about what they will eat. They should be given fresh water twice a day during the summer months and the water should not be given them in a shallow vessel, nothing lower than an ordinary bucket. They are sure to foul the water if they can get over or in it.

Allow me to suggest to any one who contemplates raising foxes that one of the essential things to do is to first build a kennel in such a

way that they will not gnaw or dig out. A safe fox pen can be built by putting a stone wall or concrete two feet down, setting posts first, then build wall around posts. Don't use any netting over two-inch mesh and the poultry netting should be made of No. 17 wire. Fox will tear the ordinary two-inch poultry netting as fast as you can put it on.

My kennel is 50 feet by 25 feet and 7 feet high, covered over the top with ordinary poultry netting. One of the essential things to do after kennel is built is to see that it is properly underdrained and to see that plenty of dry leaves are put in kennel. Straw will do if leaves cannot be gotten. A mound of earth would be an excellent thing in each apartment of your kennels. Foxes are great to be constantly digging in the ground. Keep plenty of boxes in your kennel with a nice smooth hole in each box, as a rough hole destroys their fur.

A summary of the whole shows that the points most necessary of consideration for success is in proper feeding, in giving particular attention to the animals during the breeding season, in using special care to prevent them from being frightened and in the keeper winning the confidence of the captive animals. A careful study of their nature is advised and it



Yards of a Successful Maine Fox Farm.

should always be kept in mind that foxes are wild animals and therefore should have far more attention than is necessary with domestic animals.

## CHAPTER VI.

### SKUNK RAISING.

**H**ERE are but two species of skunk found in North America, namely, the common striped skunk and the small spotted skunk of the Central States, — commonly known as the “civet cat.” This latter name is wrong as the real civet cat is an entirely different animal.

It is with the true skunk that this article has to deal, and of this animal naturalists recognize several varieties, the only difference being in size and markings.

They are found in all parts of the United States, with the exception of the bunch-grass plains and the mountainous district of the West. They occur again to the west of the mountain ranges and also are found in most parts of Southern Canada. They are found in the prairie country and in the hilly and mountainous districts of the East, and are at home in the “wilds” as well as in the thickly settled districts, however, they seem to thrive best in the farming sections and especially if the country is of a hilly nature. Their dens are located along the

gravelly hillsides, quite often under the roots of trees and stumps but in the prairie they den along the washouts and creek banks. In thickly settled sections they frequently make their home under houses and outbuildings, showing practically no fear of man and often appropriate the den of the woodchuck.

They are nocturnal animals and as a rule do not wander far from the den but in the fall they travel farther, looking for a good den in which to spend the winter. Again, in early spring during the mating season, the males travel considerably. While they are not a hibernating animal, they stay in the dens during cold weather, also when the snow is loose and deep, but are sure to be out on the first nice night.

The mating season of this animal is in February and early March and the young are born mostly in May, although some will be born in April. There are usually from four to ten young in a litter but occasionally there will be a larger number.

The value of a skunk skin depends mainly on its size and markings, they being graded by the buyers entirely by the amount of black fur, providing, of course, that the skin is prime and well handled. There is a considerable difference in respect to sizes and markings of the average catches of the various sections. From some parts

of the country they will run quite large, in other parts small, and while in one section they will run perhaps ninety per cent. long stripes, in other parts of the country the black and short stripe grade predominates. Of course the skunks of the South are not as well furred as those found farther north.

Being slow moving animals, they can not catch the more active animals and birds as do the other members of the weasel family and their food consists mainly of mice, insects and grubs, also on the eggs and young of such birds as nest on the ground. They are very fond of poultry and frequently visit the poultry houses, killing the young birds. They also feed on carrion. When they can get it they will eat almost any kind of animal food. Even in the wild state the skunk is not, strictly speaking, a carnivorous animal as they will eat and in fact are fond of sweet corn when in a milky state, also sweet potatoes, melons and wild fruits.

They have no means of defense other than their scent, but this is sufficient in many cases and the majority of people will give them a wide berth. This scent is only used when alarmed or frightened and in captivity there is no trouble whatever from this source as they soon learn that there is no occasion for alarm and become quite tame.

PAST EXPERIMENTS.—Beyond all doubt the skunk has been given more consideration by raisers of fur-bearers than any other animal, with the exception of the fox. There are many who have tried raising these animals with more or less success and where the experimenters have used good judgment and have given the subject all of the attention it deserves, they have been reasonably successful. Most of these people have started in on a small scale, having perhaps only a dozen or two of skunks to start with; in fact, nowhere has the business been carried on as extensively as some newspaper articles would lead one to believe; the majority of these parties having at the most only two or three hundred animals. One of the largest ranches was located in Eastern Pennsylvania, but for various reasons this venture was a failure.

It is the smaller experimenters, in other words, those who have begun on a small scale, who have been most successful. They are for the most part trappers who had even before venturing into the business a fair knowledge of the nature and habits of the skunk and therefore were more qualified for making the business a successful one. Trappers naturally take an interest in all nature and are most likely to give the proper amount of attention to the animals, also learn their habits readily and act accordingly and



these qualities are absolutely necessary for the successful raising of all fur-bearing animals.

The most successful stock breeders are those who make a special study of their animals and take a great interest in them and those who do not are almost certain to fail and really deserve failure. If so much care is necessary in breeding domestic animals, how much more important the care in handling the wild creatures, knowing so little of them as the average man does. But even handicapped by lack of knowledge the experimenters have been fairly successful from the start if they were the right men for the business. Without exception they all report that the animals breed well in captivity and are easily kept; in a short time becoming quite tame and losing their fear of man.

The skunk is an animal which is despised and feared by many people because of its readiness to make use of its powerful scent, the only means of defense with which nature has provided it, but it is only when frightened that it uses this scent and once they have become tame and learn that they will not be harmed they are practically harmless. We will say, however, to those who are afraid of the scent do not attempt to raise skunks, but devote your time to some other calling for which you are more fitted.

It is true that the scent glands may be re-

moved from the young animals but many of them will die from the operation and there is practically nothing gained; therefore, this practice is not advised.

Those who have failed were for the most part people who knew nothing regarding the habits of the animal and its care when in captivity. They were men with capital, who began on a large scale expecting to make a fortune in a short time, but in this they were mistaken, for many of them lost all that they invested. These parties have had trouble from the older animals killing and eating the young, also from depredations of owls, but mainly from the first reason. It is our opinion that this cannibalistic tendency is caused by improper feeding, as those parties who have used care in that respect have had no trouble whatever.

To those who are thinking of embarking in the business of skunk farming, we would say,—start on a small scale with only a small number of animals, say two dozen females and six males. Give them every possible attention and study them under all conditions. Do not expect to make a fortune in a short time.

ENCLOSURES.—After you have decided on this business the first thing is to find the proper location and make a suitable enclosure. There should be a spring on, or a small stream

crossing the ground to be inclosed, but at the same time the ground must not be wet; in fact, it should be of rather dry nature, so that there will not be too much dampness in the dens. There should be banks of earth for the animals to den in and the ground should have a gradual slope so that it will drain readily. If it is of a sandy nature it will be all the better. Some who have tried skunk farming have located the yards on the shore of a small lake or pond and have included a portion of the pond in the enclosure. This is a good idea and it will not be necessary to extend the fence very deep into the water, as the skunk is not a water animal and will not dive under; however, where the fence crosses a stream of running water the fence should reach to the bed of the stream as the water will fall considerably during dry weather.

The enclosures should be large. When the animals are inclosed in small yards or pens they become infested with fleas, ticks, etc., and they do not do well. Such small enclosures will answer for a short time but as soon as possible they should be placed in a large roomy yard. For fencing material, galvanized wire netting of one-inch mesh is advised, as the young animals will escape through a two-inch mesh. The fence should be seven feet in height. Under ordinary conditions the skunk would not escape over a



Corner of an Ohio Skunk Farm.

four-foot fence, but there is danger in winter from drifting snow, and dogs and other animals must be kept out at all times; therefore, the fence should be of the height mentioned and it must be turned in at the top or a sheet of tin placed along the edge to prevent the animals from climbing out.

The interior of the enclosure should be divided into compartments, using the same material for the fences but they need not be so high. The largest compartment would be for the females and there should be a smaller one for the males, also one for the young animals after they have become large enough to take care of themselves. Some also make small yards in which to place the females, two or three together, after the young animals are born. The most of those who have tried skunk breeding, however, have not found this necessary, but there should always be a separate enclosure for the males. When the number of animals increases it will be necessary to have a few small breeding yards, large enough for ten or twelve animals. One need not, however, make such an elaborate enclosure in the start but can enlarge it as needed, adding more compartments.

In each compartment a number of dens should be made by digging a trench and covering afterwards. While the animals will dig dens

if necessary, they prefer even while in a wild state to use dens already made. Boxes, barrels or pens with board floors should not be used. Some of the successful ones claim that this has a tendency to cause a thick pelt and thin fur and say that it is absolutely necessary that they have natural dens in the ground. The dens should be made quite deep so that there will be no danger from frost in winter.

FEEDING.—Skunks should have plenty of food especially during the summer and they should be fed at regular intervals, giving just enough for a meal each time. It is advisable to give a mixed diet, partly animal and partly vegetable. They will eat almost all kinds of flesh and fish, table scraps, fruits, especially if very ripe, melons, sweet potatoes, berries, etc. One of the most satisfactory foods is bread and milk, but it is considered too expensive by some people. However, it could be given occasionally. They are very fond of carrion, but such food should not be given, for it is likely to cause disease. If near a slaughter house one can get plenty of offal and in the country one can buy old, worn-out horses, etc., but one should remember that the skunk will consume an amazing amount of food. One party claims that three hundred skunk will eat two horses in a week. In the fall especially, when they are laying on

fat for winter, they should have plenty of food. In winter they do not require so much.

It should be remembered that it is a lack of food that causes them to eat their young and one should feed well during the spring and summer.

Skunks feed largely on insects, grubs, etc., and it is to be regretted that one can not supply this food. They are fond of eggs, either fresh or spoiled, and should be given a feed of this kind occasionally if possible. They also have a fondness for poultry of all kinds.

The matter of providing sufficient food is not as difficult as it would appear at first glance. If the farm is located near a large town or city, hotel and restaurant keepers will generally save table scraps, stale bread, etc., on request, if one will make a regular habit of calling for it. Even in the country the neighbors will help out. The farmers will be only too glad to have you take the dead stock, poultry, etc., thus saving them the time and labor of otherwise disposing of it.

**BREEDING.**—As before stated the mating season comes late in February and in March and the young animals make their appearance in May. The period of gestation being about nine weeks.

One male animal will easily serve eight or ten females and he should be left in their company a number of days. After that he should be

removed and to make certain, another male should be installed for a few days. Two males should never be allowed with the females at one time or they will fight and one or both may be seriously injured. This is the plan which is used by the most successful skunk farmers and is recommended.

Great care should be exercised in the selection of the males for breeding stock. Only the large and healthy animals of good color should be used and all others should be killed and their skins marketed while they are in good condition.

While the animals do not always breed strictly true to color, the white markings may be greatly reduced and the general stock improved by selected breeding. One should, each year secure fresh breeding stock from other localities and related animals should not be allowed to breed together or in a few years the result will be disastrous. One can not be too careful in this respect for it is very important.

After the mating season the females should be separated, placing three or four together in small enclosures and they should be well fed or otherwise they may kill and eat the young. They should be allowed to remain in these small enclosures until the young animals are large enough to take care of themselves, when they



should be separated and the females may again be placed in the large enclosure.

GENERAL INFORMATION.—From the commencement of the breeding season until late in the fall the animals require a larger amount of food than during the winter and especially during the breeding season and while the mother is still nursing the young they will require plenty of nourishing food. They require fresh drinking water at all times and the enclosures should be so arranged that each compartment will be supplied.

As before stated one should use care in selecting animals for breeding purposes as it is in this way that the quality of the fur will be improved and the business made to be a profitable one. All small and weak animals and those showing considerable white fur, especially males should be killed off while the fur is in good condition. If you wish to increase the number of animals do not be tempted for the sake of the higher prices realized for the finer skins to kill off animals that should be kept for breeding.

The animals should never be allowed to become frightened by the intrusion of dogs into the enclosure — dogs should be kept away at all times.

The skunk raiser must watch closely at all

times to see that the enclosure fences are in good shape so that the animals do not escape. If they are found digging holes near the fence, these holes should be filled up so as to discourage the workers.

Fleas and other parasites are likely to bother the animals and they should have plenty of room so that they can change dens when the old habitations become infested with vermin.

On the whole, one should study the habits of the animals on every opportunity and attend to their wants. If one will give the proper attention to the animals and take an interest in them there is no reason why he should not succeed.

## CHAPTER VII.

### MINK RAISING.

**C**HERE is only one species of mink found in North America, altho there are a number of varieties differing in size, color and quality of fur. Thus we find in Northern Maine and New Brunswick a very small variety having a fine silky fur of a very dark shade; farther west and south a somewhat larger variety, paler in color, and thruout the Mississippi valley and parts of the south, also parts of Western Canada, a very large mink is found, but running quite pale, and the fur somewhat coarser than the northeastern varieties.

Again, on parts of the Pacific Coast, a very small and poorer quality are found, and the mink from the lower Yukon River of Alaska are said to be of very poor quality. One or more varieties are found in almost every part of the United States, Canada and Alaska. Wherever there is running water their tracks may be seen; but they seem to prefer the smaller streams, as a rule, and they will be found as plentiful in the thickly settled parts as in the wilderness.

Mink are great travelers, but each individual animal has his regular route and seldom ventures far out of his course. While they travel streams and lake shores as much as possible, they do not hesitate to leave the stream and cut across country in order to reach some other water-course. During the mating season they also wander away from the streams more than at other times. While they are always found in the neighborhood of fresh water, they are not a water animal, and in following a stream, always run on the bank, but usually as near to the water as possible.

In the thickly settled districts where the most valuable fur-bearing animals, such as the silver foxes, otters, etc., are not to be found, the mink is the most valuable and is eagerly sought by the trappers. The fur is at its best during the first two months after it becomes prime, which in the north will be about November 1st, and in the south perhaps a month later. After the first two months, the fur commences to fade, especially where the country is open and the animal is exposed to the bright light, for the mink is not, strictly, a nocturnal animal. The darkest skins come, as a rule, from the timbered parts of the country. While the female is smaller than the male, she is also darker, and the skins have about an equal value.

The food of the mink consists mostly of rabbits, partridges, quail, squirrels, muskrats, mice, fish, frogs, birds' eggs, etc. While they will eat stale meat, if hungry, they prefer strictly fresh food. Occasionally they will pay a visit to the poultry house, for like most animals of the weasel family, they have a decided liking for the domesticated birds. They are very fond of fish, and when same may be secured easily, they will kill large numbers, merely for the sake of killing.

They are active and hardy little animals, apparently almost tireless, as they will travel long distances in a night. They are perhaps most active during the fall months, and in the north they travel very little during the cold part of winter.

The burrow or den of the mink is usually located in the high bank of some stream, but they frequently inhabit deserted dens of other animals, but always near the water. It is in these dens that the female and her offspring spend the summer months, never straying far from home.

The first two weeks of March is the minks' season for mating, and the young — from four to six — are born about six weeks later. When confined in enclosures where the diet, water and temperature are similar with each animal, there is so little difference in the time of mating and

bearing their young, that five or six litters may make their appearance within twelve hours of each other.

The young are blind from four to five weeks, but are very active and as playful as kittens. The mother weans them when they are eight or ten weeks old. At about four weeks the mother begins to feed them meat, and they learn to suck at it before they have teeth to eat it. The young are fed by the mother on frogs, fish, mice, etc., until they are three or four months old, when she leaves them to shift for themselves. The young soon separate and do their hunting alone. They do not pair and the male is a rover and "free lover."

Mink are extremely cleanly and as soon as the den becomes foul, the mother moves the family to some other nest.

**MINK BREEDING.**—There are a great many readers of the H-T-T who live in the city, that long for some way to profitably spend their idle time. I will give a successful way of breeding mink, according to Mr. Boughton's Guide:

"Wild adult mink are almost untamable, but young ones readily submit to handling and are easily domesticated. The time to secure young mink is in May or June when they begin to run with their dams. The streams must be quietly watched for mink trails, and these, if possible,

tracked to the nest. When they leave the hole, the young ones may be secured, or they may be dug out. Those who own a breeding stock of mink ask very high prices for them, but if the aforesaid plan is carried out, it is an easy matter to get the young wild ones.

MANAGEMENT OF MINK.—Mink being by nature solitary, wandering animals, being seldom seen in company except in mating season, it is impossible to rear them successfully if large numbers are kept together constantly; therefore, their enclosure should be a large one. The male and the female should be permitted to be together frequently from the middle of February until the middle of March. At all other times keep them entirely separate.

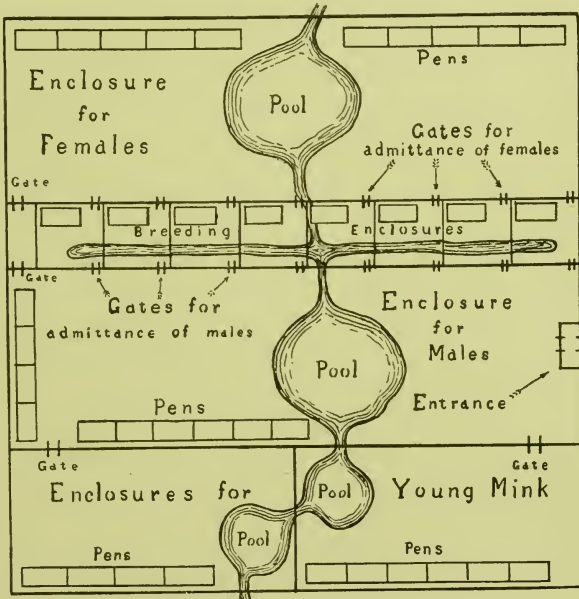
“About this season the mink should be allowed plenty of fine grass, which they will carry into their boxes to make their nests out of. A box 3 or 4 feet long and 18 inches wide is the shape they prefer. It should be placed as far as possible from the water to prevent the mink from carrying mud and water into it. The young mink, when first born, are small and delicate, destitute of any kind of fur and much resemble young rats. If the old mink is tame, the young ones may be taken out of the nest and handled when they are three weeks old: They will soon learn to drink milk, and may be fed every day.

At three weeks of age they may be taken from their mother and put into a pen by themselves, and then they will soon become very playful, are pretty, and make much better mothers than they would if allowed to run with the old one.

The shelter should be in the shape of a long box, 5 or 6 feet wide and 3 or 4 feet high, set upon legs, with a good floor and roof. Divide into separate apartments 6 feet long (longer would be better), the front of each apartment to be furnished with a swinging door of strong screen wire, with hinges at the top, and a latch on the bottom. A trough 6 inches square, should run the entire length of pen at rear side; one end of the trough should be made several inches lower than the other, so that the water could be drawn off. With this arrangement the water can be turned in at one end of trough, and be drawn off and changed as often as desired. The lower end of the trough should be a little deeper than the other end to prevent the water from running over. Each apartment is furnished with a box 3 feet long and 13 inches wide. On one side of the box, and near one end is made a round hole about 4 inches in diameter, and provided with a sliding cover, so by means of a stick it can be opened or closed from the outside. This is so the mink can be closed up while the pen is being cleaned.



On the top of the box and at the other end should be a door large enough to put in grass, straw, etc., for the nest, and take out young. It is necessary that they have an abundance of pure



Mink Enclosure in Detail.

soft water, fresh air, desirable shade and plenty of exercise. These conditions secure for the mink a good quality of dark fur and good health. Brush, weeds, etc., are allowed to grow up in

the yard, but not near enough to the fence to admit of their climbing up and out.

The fence for the enclosure should be of poultry netting of one-inch mesh. If of larger mesh the young animals will escape. The general plan for the fence should be the same as described under the heading, "Enclosures." There should be separate apartments for the males and females, and also some smaller breeding pens. As it is not advisable to attempt handling the animals, each compartment should be provided with a small gate so that the animals may be driven from one pen to the other. During the breeding season, and afterwards, while the young animals are under the care of the mother, the same general methods of handling as is recommended in skunk raising, should be adopted.

At all times, plenty of fresh water must be provided, and the enclosures should be so arranged that the water will be distributed to all parts. While the mink is always found near the water, it is not a water animal, as is the muskrat, and a large body of same is not needed. A spring or a small stream is all that is needed; and a pond may be dug in each of the large enclosures.

Careful and regular feeding is advised. The mink is strictly a carnivorous animal, and always prefers fresh food. The matter of sup-

plying sufficient food will be more difficult than in the case of the skunk and muskrat. As they are fond of fish, if one is near a place where they may be obtained, the feeding will be comparatively easy. They should not, however, be fed on fish alone. An occasional fowl will be acceptable, also rabbit, muskrat, etc.

The natural home and breeding place of the mink is near the water. Their den is often under an old stump, tree or in some drift pile. The nest where the young are born generally being in the ground. When the animals become tame enough, the raiser should provide dens similar to those used in their wild state. These can be made by burying tile in the ground and in other ways making artificial burrows. A few hollow logs placed in the enclosure would be enjoyed by the animals.

Many report that the males kill the young. This should be guarded against by keeping the males separate. Some hesitate about starting a "minkery" for fear that the animals will not fur properly. There is no danger on that point if properly fed, watered and given homes in keeping with those they lived in when roving at their own free will. This only brings out more forcibly the fact that those who are going to be the most successful mink raisers should have a natural aptitude for the business — trappers,

hunters, animal lovers, etc. Who has made the greatest success at raising stock in your neighborhood — the man who loves stock or someone who thought they saw a fortune in the business but neither loved animals or knew anything about them? We venture the answer, without fear of contradiction, that it has been the party who loves and delights in stock. Remember, this applies to fur animals as well as horses, sheep and cattle.

## CHAPTER VIII.

### OPOSSUM RAISING.

**T**HE opossum is a southern animal and is found in abundance in most parts of the Southern States. In late years they have been moving farther northward and are now found, though not numerous, as far north as Central Pennsylvania; but are found most plentifully in the wooded portions of the South, where they are such a common animal as to be well known to all.

They are slow moving and inoffensive, having no means of defense whatever. When approached, they make a great show by opening the mouth, and present a rather fierce appearance, but when touched by man or animal, they pretend to be dead, and this very characteristic habit has given rise to the expression, "playing 'possum."

While the opossum is a nocturnal animal, it is sometimes seen in daylight, but this is of rare occurrence. They do not hibernate but will remain in the dens during cold weather, and do not like to roam about when the leaves are dry and rustly.

The dens are, as a rule, located in the ground.

under a rock, log or tree, and are quite shallow; the nest at the extremity being lined with leaves or grass. They also den in hollow logs and stumps occasionally, and in natural openings in rock bluffs.

The young of this animal are born in the last half of April and the beginning of May, the number of young varying from six to twelve, and sometimes even more. When born they are very small and imperfectly formed and are immediately placed by the mother in the pouch on her belly, where they remain until they have attained a perfect form and have become large enough to walk about. After being placed in the pouch, they attach themselves to the teats of the mother, and remain in that condition until they have become large enough to move about.

On leaving the pouch, they quite often ride about, when tired, on the mother's back, holding fast by winding their tails about that of the parent. They will reach their full growth within a year, if the conditions are favorable — that is, if they have plenty of food, etc. In captivity, when well cared for, they attain considerable size by midwinter.

The opossum is omnivorous, feeding alike on animal and vegetable food, but it prefers flesh to fruit. They feed on carrion, and on any small animal which their slow movements will

allow of capturing, also on eggs and young birds, for they are good climbers. They are quite fond of wild fruits, such as persimmons, polk berries, apples and paw-paws; also of certain vegetables, especially onions. They also eat mice, insects, etc.

Opossums are hunted extensively in the South, and when pursued they usually climb the nearest tree, unless they are close to the den. As an article of food they are highly esteemed, especially by the colored people, and find a ready sale in the market.

While the fur of this animal is not, strictly speaking, a valuable one, to the prospective fur-farmer it is well worth considering, especially if located near a market. At present prices the young animals by midwinter, will average a dollar each in value, when selling both the skin and carcass. The ease with which they may be raised is also an important factor, so that on the whole, in many sections, they will be found to be a profitable animal to handle.

Opossums are fairly good climbers and the enclosure should have a wide strip of tin around, as described elsewhere in the chapter on Enclosures. They will also gnaw out of wooden enclosures if there is a crack or any chance to get a start. They will readily climb out of the enclosure if made of wood unless covered or at

least partially covered. There has been no better or cheaper material found for constructing fences for opossum raising purposes than galvanized wire.

They are not much given to digging and the wire need not be buried very deep in the earth. If the ground is solid, 18 inches will be deep enough. The animals, if properly fed, watered and cared for, will soon become accustomed to their quarters, and make little or no effort to escape. The young will become tame and quite playful.

The natural home of the opossum can be described as south of a line drawn west from New York City through Pennsylvania, Northern Ohio and Indiana, south of Chicago, through Iowa near Des Moines, and into Nebraska near Omaha, extending about half way into Nebraska, then South through Kansas, all of Oklahoma and the lowlands or the Eastern half of Texas. The opossum is not a cold weather animal, and in its wild state would freeze if it inhabited territory much farther north than the northern boundary of the line shown. A severe winter a few years ago, is said to have frozen large numbers in their dens in Southern Ohio, Pennsylvania, and parts of West Virginia, Indiana and Illinois.

In their natural or wild state, they often

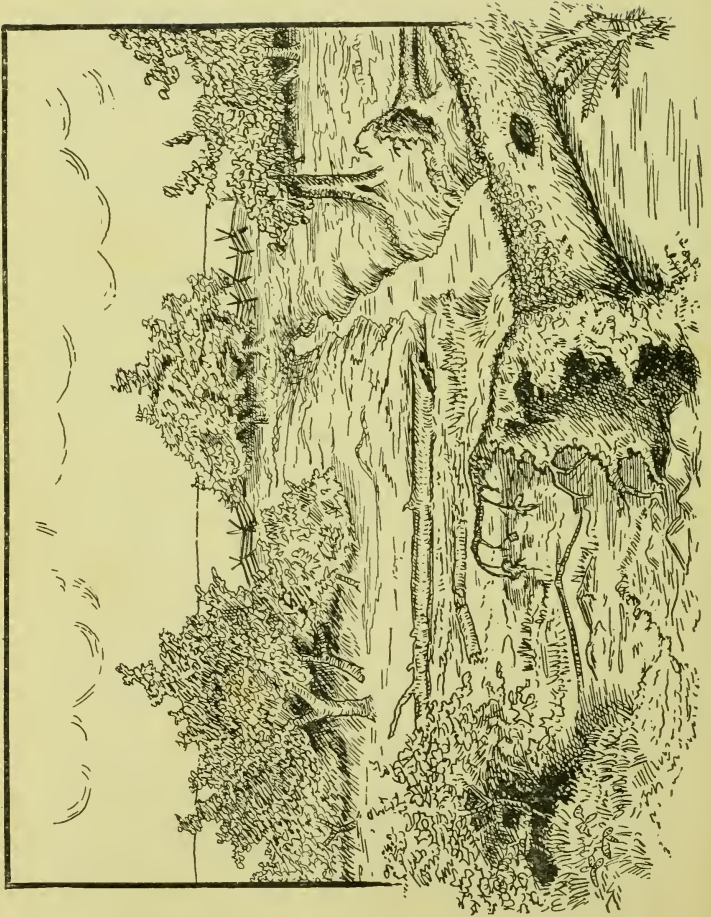


hole up in shallow dens, old logs, trees, etc., and while they are endowed with the instinct of "playing 'possum" when injured, their instinct along other lines seems very shallow, as they do not always know enough to "get in out of the cold;" in other words, on the approach of severe winter weather, they do not all seek deep dens where the ground does not freeze.

While the natural home of the opossum is in the section as outlined, there is no reason why they cannot be successfully raised hundreds of miles north of their northern limit. The thing to guard against will be freezing. The raiser must see that they have good and deep burrows — deep enough that the ground will never freeze to their nest. They should have plenty of leaves in their nest. If the enclosure is in a thicket, and there are trees within and leaves near, the animals will no doubt carry an abundance of leaves into their dens for nests. If there are no trees in the enclosure, see that a supply is furnished each den before freezing weather in the Fall.

The opossum is going to become one of the important animals in fur-farming for various reasons: They are prolific breeders, bringing forth from 6 to 12 at a litter; grow rapidly; are easily fed and eat a great variety of food.

The opossum raiser has two sources of reve-



Ideal Spot for an Opossum or Raccoon Fur Farm.

nue — fur and carcass. There is a ready market for the carcasses in all cities. The grower should make arrangements with butchers and others to take so many carcasses on a certain date. The fur is at its best from about Thanksgiving to the middle of February. Thanksgiving, Christmas and New Years are three holidays when the fur will be prime and the meat in demand. In cities like New York, Boston, Philadelphia, Baltimore, Pittsburg, Buffalo, Cleveland, Detroit, Columbus, Cincinnati, Indianapolis, Chicago, Milwaukee, Omaha, Des Moines, Kansas City, St. Louis, etc., a market can be had in each for large quantities at each of these holidays, as well as considerable quantities each week during the winter months. In the smaller places, from 5000 up, there will be found a demand for the meat, so that the market for the carcasses as well as fur, is one that will always be open. Prices at which the carcasses sell will of course vary, depending to some extent upon the supply of other meats, as well as the times, etc.

When it is taken into consideration that the litters are large; that they eat cheap food; their growth is rapid and that the pelt is extra, does not this animal promise to lead as a money maker over some of the other and higher priced fur-producers?

In the latitude of West Virginia, the young are born about the middle of April. In two months, or by June fifteenth, they are about the size of rats and always "gaining." Six months later, or December fifteenth, if well fed and cared for, they will weigh from nine to fifteen pounds. By this it will be seen that at only eight months old — born April fifteenth and killed December fifteenth — they have attained sizes ranging from medium to large.

The males should be kept by themselves, at least from the time the young are born, until they are two months of age or older. The female, with her large family, should be given plenty of food from the time the young are a few days old until weaned, as she requires a great deal of food to satisfy her cravings and to supply the numerous young.

As the severe weather is over by the time the young are born, very good places for the old can be made in boxes, old logs and the like. These should be so placed and constructed that food can be given to the female handily, so as not to disturb her and the young more than necessary.

## CHAPTER IX.

### MUSKRAT RAISING.

**T**HE muskrat is one of our most common fur-bearing animals and is found in greater numbers than any other animal, notwithstanding its fur is very popular and is gradually increasing in value.

Musk rats are found throughout the greater part of the United States and Canada, but for various reasons are more plentiful in certain sections. Being water animals they are found in greater numbers in marshy places, on ponds and lakes and sluggish rivers, but also thrive and are found in fair numbers on the smaller and more rapid streams. They are very plentiful in Western Canada and especially in the marshy country lying west of Hudson's Bay. In the salt water marshes of Delaware and Maryland they are probably found in greater numbers than in any other part of the world. There, hundreds of the houses of these little creatures may be seen in every direction.

It is said that the value of the catch from Dorchester County, Md., will ususally run to \$20,000 a year and in some seasons reaches al-

most to \$50,000. The number of animals required to reach such a figure must necessarily be very large and the number of muskrats found in that locality may be judged from the fact that the open season for these animals and the only time of year when they are trapped, is during the months of January, February and March. They are also very plentiful in the marshes along the western shore of Lake Erie and about Lake Champlain. They are not found on parts of the Pacific Coast and portions of the South and never range south of the State of Arizona.

While there is only one species of the muskrat, naturalists find several varieties differing mainly in size and color. For instance, there is the southern muskrat, which is comparatively small and is dull sooty in color, found in the lower Mississippi Valley and along the coasts of Mississippi and Alabama; then there is the Dismal Swamp Muskrat of the Dismal Swamp, Va., which is larger, darker and richer colored than the common variety and has larger teeth. In Labrador a small and very dark variety is found.

The muskrat of the Northwest, while of the same variety as those of the Central and Eastern districts, are small and thin skinned and as a consequence are less valuable. What causes this difference in size is not known, but it is supposed to be due either to the presence of alkali



Fur Farm on Open Ground near a Farmhouse.

in most of the Northwestern waters or to the scanty and poor quality of its natural food.

The popularity of muskrat fur is on the increase, while large numbers are exported to foreign countries, it is being more and more used in the United States and Canada. At present it is much used for lining ladies coats and its rich appearance when used in this way seems certain to increase its popularity. It is also dyed and is then known as electric seal and French seal.

The great demand for the fur during the past two seasons has resulted in such persistent hunting and trapping that the number of animals in many sections has decreased visibly and as a consequence the spring catch has been comparatively light.

Just before this book went to press, considerable inquiry was made about the supply of raw fur the past season. The general report was that the catch of Spring Rats in 1909 was perhaps not more than 25% what it was the year prior. The fall catch of 1908 and the winter catch of 1908-9 was quite heavy.

From this it appears that the high prices of muskrat during the months of October, November and December, 1908, caused an unusual number of hunters and trappers to seek these animals. The consequence being that they were caught off much closer than ever before.



To further bear this out, dealers say that in many of the Central States where last year they collected 20,000 during March and April, this year they only secured 4000 or 5000. Trappers say that there are very few muskrats left in certain localities. This shows that continued trapping will practically exterminate the muskrat.

Along the Atlantic Coast south from New York for hundreds of miles the marshes along the coast, bays, rivers and creeks are literally alive with muskrats. The marsh owners farm out the "rat catching" privileges, usually on the halves. The State of Delaware protects the rats some eight or nine months each year. There are laws in several other states protecting these animals. A few states prohibit the destroying of rat houses at all times.

While hundreds of people follow rat catching along the marshes the owners and state see that enough are left for breeding and replenishing the marshes. They get their food from the flags and other weeds largely, which flourish in these swamps. Fifty acres of "swamp" has been known to furnish 2000 rats or fifty per acre year after year.

In this section black muskrats are not uncommon, the catch some seasons running as high as 40% black, but as a rule it is lower. What causes this strange color phase is unknown.

Black muskrats are met with occasionally in other sections but nowhere is the proportion as large as along the East Coast.

What nature in a way does for the muskrat in the Eastern swamps, fur raisers can help to accomplish in hundreds of localities throughout America. There are scores of ponds, small lakes, swamps, etc., in practically all states where the muskrat is found that can be made to yield large profits from muskrats. They are easily raised, in fact, will raise themselves if given "half a chance."

There is no doubt whatever that the fur of this animal will steadily increase in value. While there will be fluctuations as in the past, we do not believe that prices will ever go as low as they were some years ago. Our conclusions in this are based on the fact that the catch is growing smaller and the popularity of furs for wearing apparel and especially muskrat fur, is steadily increasing, also the population of all countries grows larger each year and there is bound to be a steady demand for furs.

Another thing worthy of consideration is the fact that the flesh of the muskrat has become a very popular dish in many of the Eastern cities and there is a market for the carcass of the animal. The trappers of Maryland and Delaware find ready sale for the flesh.

The muskrats found on the East Coast as well as those found in the marshes and the shallow lakes and ponds of other parts of the country are of the house building kind. It should be understood, however, that the muskrat living in houses and those living in burrows in the banks of streams are the same variety, their different styles of habitation being due to the different conditions of their respective locations. Where streams are swift or where there is danger of the houses being carried away by freshets, they dig burrows in the bank, making the entrance below the surface of the water.

These burrows extend sometimes twenty-five or thirty feet into the bank and the interior chamber is sometimes quite large. Along the streams of the farming sections, much damage is done by muskrats because of these burrows.

The houses of the marsh-dwellers are composed of grass and flags, grass roots, mud, etc. They are of cone shaped structure and to those unacquainted with the animals, they are simply piles of grass and weeds in the water, for that is what they resemble. The entrances to these houses are always deep under water. It is said that the muskrats build their houses with thicker walls when they feel instinctively that an unusually severe winter is approaching.

In addition to the house the animals build



Muskrat House in a Marsh.

small feeding places near by. These feed beds as they are called, are constructed in the same way as the houses, but only rise to the level of the water. These beds are the dining rooms of the muskrats, for to them they bring all of their food so that they may have a place to rest while they are enjoying their meal. They also have like the raccoon, a habit of washing their food before they will eat it.

The muskrat is a vegetarian and seldom eats any animal food. In the wild state their natural food is grass and roots, fruit, grain and clams or mussels. They are also fond of parsnips, carrots, artichokes, white flag roots, wild rice, pond lily roots, sweet corn and pumpkin, and will eat almost all kinds of vegetables.

It will be seen that in captivity the food problem would be easily solved. They are very fond of wild rice, and those who have ponds suitable for muskrats and are contemplating the raising of these animals would do well to sow them with wild rice. The rice may be obtained from almost any of the seed houses and it will grow in six or eight feet of water. They are also fond of pumpkins and it is a cheap and satisfactory food.

Some of them will lay up stores of food for winter, but they do not all do this. Where the streams are rapid they can get out to hunt for

food at almost all times, and where they are located on lakes and marshes that freeze over in winter they can find plenty of food in the water under the ice. This food is taken to the feed bed to be eaten.

In early spring the warmth from their bodies will sometimes thaw a hole through the ice over the bed and the muskrat stops this hole with grass roots, etc. The trapper is looking for just such places and it is the bunch of grass roots on the ice that gives them away. The steel trap is soon in place, awaiting the coming of the animal, and many of them are trapped in this way.

The breeding habits of the muskrat are different from those of other fur-bearing animals, as they will have three litters in a season. The first are born in April, and there will be from six to nine young. It is claimed that the female of the first litter will also bear young that season and this accounts for the small rats, or kits, caught during the fall season.

It would appear from this that the animals should increase in numbers very rapidly, but they have many enemies other than man, and perhaps one-half of the muskrats born in a season never reach maturity. With the exception of man, their greatest enemies are the birds of prey, such as owls, hawks, buzzards, etc., but

chiefly the owl, as it is a nocturnal bird and has a fine opportunity to capture the unwary. The fox frequently makes a capture, as does also the mink and otter.

It is a deplorable fact that there is a large proportion of small animals in the trapper's catch. These are the young muskrats, for while they grow rapidly the first summer, it requires several years for them to attain full size, yet they class as No. 1 the first season. The old animals are larger and their fur is more valuable than that of the young. For those who raise the animals there would be less trouble from catching young and immature rats.

Muskrats do not become fully prime until midwinter and many of them are not strictly number one until March. When fully prime the skin will be of a cream or pink color, with no dark spots showing. Winter caught skins will have a number of dark spots, while those taken in the fall have a very pronounced stripe or two on the back.

Along the Atlantic Coast for many years land owners have rented the rat catching privileges to "ratters" on shares, which is generally one-half of the catch. The "ratters" only trap when the fur is at its best, so that the supply is holding out. On lands "free for all" the rats are thinned out.

During recent years, property owners in various rat producing sections have awakened to the fact that their "swampy land" is of more value for the animal fur harvest than for any other purpose.

Muskrats are easily raised and increase rapidly. They often make their homes in the banks of canals, fish ponds, etc., coming from nearby waters of their own accord. These places seem to be ideal places for muskrats and instead of their leaving they remain year after year, even though they are trapped and the property owners resort to other means endeavoring to get rid of them. Muskrats are not afraid of civilization, and do well in thickly settled sections where there are rivers, creeks, lakes, ponds, marshes, etc. They seem to do well in their natural state where they have water and feed and on some ponds hundreds are caught annually.

As already mentioned, these animals need little care. If the waters where the animals are is naturally productive of muskrat food, the animals will take care of themselves unless the numbers are too large and they consume the entire food supply. The raisers should guard against this by feeding, as the natural supply should be protected so as to help furnish the food supply year after year.



Lakes, ponds, etc., that abound in wild rice, flags, lilies, etc., make an ideal home for muskrats, as they are fond of both the wild rice seed and roots, as well as the roots of flags and lilies, on which they feed when the surface is frozen over. Artichokes should also be started, as muskrats are fond of them.

Those who expect to raise this fur-bearer should take into consideration that little or no fencing is required on lakes, ponds and creeks if proper feed grows there. If the feed is not there the prospective raiser should see that it is started at once by sowing wild rice seed, transplanting some flags and lily roots to his muskrat waters. In fact, the prospective muskrat raiser should have the food supply well under way before the rats are brought or secured or they will destroy it.

There are no doubt hundreds of places that can be converted into ideal "muskrat preserves" by a little work. Low, marshy land on which the water is not deep enough to be dammed. Such a place would require a wire fence around it. Perhaps the best way would be to place the fence several rods back from the water, as there would then be no danger of the animals burrowing under. The fence should be of five-foot wire, one foot in the ground. Where the fence crosses any inlets or outlets, the wire should be put

much deeper for two rods or more on each side and it would be well to place flat stones in the bottom of the trench, as shown and described in the chapter on Enclosures.

## CHAPTER X.

### RACCOON RAISING.

**T**HE raccoon is closely allied to the bears, although much smaller. Like them it possesses an omnivorous appetite, is plantigrade, and hibernates during cold weather. It is found throughout the Southern, Central and Eastern States, and in Southern Ontario and Nova Scotia. It is also found in good numbers on the Pacific coast, northward into British Columbia; but they are found in greatest numbers in the extreme South of the United States, and especially in Florida, Louisiana and the lowlands of Arkansas and Texas.

Their natural home is in the heavily timbered parts, but they are also found in the sparsely wooded bottom lands of the Central States.

They den, as a rule, in hollow trees, well up from the ground, and seldom if ever in a tree which has a continuous hollow and an opening at the bottom, preferring a hollow, broken off limb, or a hole in the trunk, high up on the tree. In some places they den in natural caves in the rocks, and in the western part of their range, it is said that they sometimes occupy dens in some high and dry bank of earth. During the

mating season the males travel considerably, and will, when daylight approaches, seek a place of rest in any hollow tree that is to be found, or failing to find this, may spend the day in a hollow log or under a stump.

The mating season comes mainly, late in February or early in March, and the young, from four to six in number, are born in April and the beginning of May. They remain with the parents for some time during the summer, but will find a den for themselves as soon as possible. However, they will be found, the first season, in the near vicinity of the parents' den.

The food of the coon is variable, to conform with conditions of different sections, but wherever found, they feed on both vegetable and animal food. Fish, frogs, crawfish, clams, eggs of birds, and turtles; water snails, wild fruits, such as grapes and berries, nuts, acorns, etc., are all eaten with a relish. They are especially fond of corn when in the milky state, and in late summer they feed on it extensively. They are fond of poultry, also of honey, and will dig out the nests of bumble bees when they find them, for the sake of the little bit of "sweet" which is found therein.

They are nocturnal animals and are seldom seen by daylight. In their travels they follow the streams mostly, and catch fish by feeling

under the stones in shallow water. Whenever possible, they wash their food before eating.

The raccoon has a peculiar cry, which is heard sometimes, on still nights, during the summer. It is a quavering note somewhat resembling that of the screech owl, but lower and softer, and seems to come from a distance, though really close by. To one inexperienced in the ways of this animal, the cry would not be recognized.

The fur of the raccoon meets with ready sale at fair prices, and there is also sale for the flesh in many markets. There is considerable difference in color in individual animals, some of them being very dark, and others quite pale. Of course the northern animals are more heavily furred than those of the south.

The darker and larger specimens, as a rule, are secured in the northern states—New York, Pennsylvania, Northern Ohio, Northern Indiana, Northern Illinois, Michigan, Wisconsin, Minnesota and the Northwest. The greatest numbers, but smaller and lighter colored, are secured from the southern states, those bordering on the Gulf of Mexico, Tennessee, Arkansas, Missouri, and Kentucky.

While raccoon can be raised in nearly all parts of America, the best furred specimens can only be raised where the climate is productive of good fur,—say north of 40 degrees. This

would be on a line passing through Philadelphia, south of Pittsburg, just north of Columbus, through Central Indiana and Illinois, northern Missouri, boundary between Kansas and Nebraska, north of Denver, and on to the Pacific Ocean.

It is not meant that coon cannot be profitably raised south of this line indicated, for they can. The chances, however, are that far south of the line mentioned, the skins would not be as valuable and being nearer the coon-producing section, there would not be as ready a market for the carcasses.

The coon raiser should secure good dark males and females for breeding purposes, from northern sections. If unable to do this, a good male or two crossed with the females, would help to produce larger and darker animals. This is important, as the larger and darker the pelt, the more valuable, and the larger the carcass the more it brings.

That raccoons do well in captivity is well known from the many kept in zoos, parks, etc. Countless numbers have been caught while young, when they soon become tame and interesting pets. Even those caught when grown, soon become accustomed to their owners and keepers. They can be handled and become amusing pets. They know strangers and will often

put their paws over their eyes and look between their toes, thinking perhaps, that the stranger cannot see them, while their paws are over their eyes.

Large numbers of raccoons could be raised by fencing in a piece of woods, embracing a few acres, with a creek running through. If the fence was considerable distance from the edge of the woods, it is doubtful if the animals would make much effort to escape. The places they would be apt to frequent the most, would be where the stream entered and left the enclosure. At these places the fence should be extra high, strong and secure.

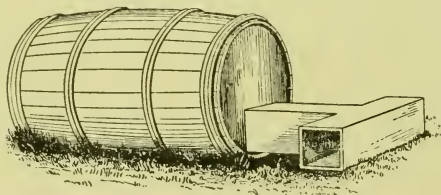
The raccoon and opossum farmer have a double advantage where their "farm" is situated near a city. First, if the fur farm is one containing a large number of animals, the supplying of food will be quite a problem and the city offers a means of plenty and cheap food for your animals, such as offals from slaughter houses and other feed. Second, the city offers a market for the meat at "killing time".

While raccoon will eat decayed meat to some extent, it should be furnished them fresh, in which condition it is much better for them. Most animals will eat carrion, yet it is doubtful if it is advisable to feed when in such condition. Putrid flesh is unhealthy and some claim, causes

fur-bearing animals to become affected with mange.

Raccoon are naturally a clean animal, and in their wild state are particular that their food is clean. They seldom, if ever, eat left-over food or flesh that has become tainted.

That raccoon raising promises well is borne out from the fact that they are easily handled, eat a variety of food easily secured, and their fur and meat both have a ready cash market.



Barrel Shelter for Female and Young.

The pelt of a full grown and dark raccoon is worth from \$1.00 to \$2.00, depending upon the section; to this add from 40c to 75c for the carcass and it will be seen that the raccoon brings to its owner \$1.40 to \$2.50 or upwards. This price is for the better grade. The smaller and lighter colored skins from the more southerly sections, will perhaps only bring two-thirds as much — 75 cents to \$1.50 for the pelts and 25 to 50 cents for the carcass.



At what other "branch of farming" is there greater profit? No one is going to become immensely rich "at coon raising" in a few years, but if they enter the business and give the same attention and care to it that they would to poultry, sheep, horses and cattle, there is reason to believe that the profits will be as large if not larger. Again, the person who loves the hand-



Fur Farm on Open Ground.

ling of fur-bearing animals will be making his living at the business he enjoys most.

Those who expect to raise coon in a small enclosure, should have the wire turned in several feet at the top, or the chances are they will follow along the under side to the edge and thus escape. In the enclosure for raccoon, the strip of tin around the fence some three or four feet high is strongly recommended. There should be some logs, dens, and low, branchy trees for the

animals to play in is to their liking. The more homelike their enclosure, the sooner they become contented. This means that they grow faster, which is all to the financial interest of the coon raiser.

An enclosure of several acres for coon, taking in trees suitable for dens, could be used for fox raising as well. The coon would raise their young in the "den trees" and therefore would not bother the foxes, as those having young would be in pens. The male foxes having access to the entire enclosure might steal the feed for the female coon left at the roots of the den trees. Should there be trouble on this point, the food could be placed on a platform against the body of the tree out of reach of the foxes.

## CHAPTER XI.

### THE BEAVER AND OTTER.

**T**HESE two very important fur-bearing animals were once quite numerous throughout practically the whole of the United States and Canada, but because of the persistency with which they were hunted, have become rare in many of the sections where they were once found in abundance. Especially is this true of the beaver. Almost all of the states in which beavers are still found, as well as the various provinces of Canada, have made laws to protect these animals, but they are still hunted and trapped, and the day is not far distant when the beaver will be extinct.

The otter is a more wary animal than the beaver, and as a consequence will linger within the bounds of civilization long after the beaver has disappeared, but for all this they are becoming very rare in most of the settled sections. As these animals both belong to different orders and their habits are entirely different, it will be necessary to take up each separately.

**THE BEAVER.**—As before mentioned, the beaver has become extinct in many sections

where it was once found, and at present they are practically confined to Canada, Alaska, the Northern States and the Western mountain regions. A few are still found in the more isolated portions of the South, but there they are quite rare except in a few small sections. Thruout the Central and many of the Eastern and Southern States, they have entirely disappeared. There is only one species of the beaver, but there are several varieties, all of which are very much alike in appearance and the habits of all are the same, except where it is changed because of difference in food, climate, etc.

The beaver has always been an interesting animal, not only to those directly interested in furs, but to all others, and practically everybody knows something regarding the habits of the animal. One of their most remarkable habits is that of building dams on the stream, or at the outlet of the pond or lake on which they are located. These dams are intended to regulate the height of the water. They will vary from two to five feet in height, and from twenty to one hundred yards in length, according to the size of the stream and the nature of the shores.

The dams are composed of sticks and chunks of wood, stones, sods, etc. They always watch the dam closely and keep it in repair, and each fall it is strengthened by adding new material.

In addition to the main dam there are, as a rule, one or more smaller dams built lower down stream. What these small dams are for is not known for a certainty, but sometimes, when the lower dam backs the water up to the large one, the beavers will, in the fall after the ice has formed, dig a passage through the upper dam, which allows the water to fall and leaves an air space between the water and the ice, and it is perhaps for this reason that the smaller dams are constructed.

Somewhere on the edge of the pool where the water is not too deep, the beavers make their lodge, or house. These houses sometimes rise eight feet above the water and will measure fifteen feet in diameter. They are constructed of the same materials as used for the dam, and are always repaired and strengthened before freezing weather comes. There are two entrances to the house and they are always located deep under water.

The food of the beaver consists principally of bark of poplar, birch, willow, cottonwood, alder and wild cherry. They are also fond of the roots of the water lily. In the South it is said that they quite often feed on corn, when located near the farms. They would doubtless eat many kinds of roots and vegetables if same could be procured. In some few sections, where

the nature of the stream is such that houses and dams are not a success, the beavers live in holes in the bank of the stream and are called "bank beavers"; however, they are the same variety as the house building kind.

In the Northern districts, where the ponds are covered with ice six months of the year, the beavers spend the entire winter under the ice. For this long period of imprisonment they must lay up a large store of food. This food consists of small, green saplings and brush, cut into suitable lengths and stored under water, in front of the house. They eat only the bark and the peeled sticks are used to repair the house and dam. The young beavers are born in April and May and there are usually only two at a birth, but sometimes there will be three. These young animals remain two years with the parents, so that a full family will consist of the two old ones, two or three medium size and two or three small beavers. However, there are "bachelor beavers", old males who always live alone, and have a small house somewhere along the shore of a stream or pond.

It was the beaver that was most sought by the early trappers, for the fur was more in demand than the fur of any other animal. At present it is not as popular as in days of old, but we do not believe that its value will de-

crease, as the catch becomes lighter each succeeding year. The skins do not become prime as early as those of some other animals, but are in good condition in advance of the muskrat. The fur of the beaver, otter, muskrat and bear remains in good condition until late in the spring.

During the summer months many of the beavers travel about on the streams and if a house is found at this time it may be deserted, or at the best, only one or two animals will be found there. As fall approaches, they all return to the lodge and from that time until the water is frozen they will be hard at work laying up the winter's store of food.

THE OTTER.—The otter is occasionally met with in almost all parts of North America, in some places fairly plentiful, in others very rare, but they are found in greatest numbers in the swamps of some of the Southern States, and in the wilder portions of Canada, Alaska and Newfoundland. There are two species, the common otter and the sea otter, which latter is only found in the North Pacific and is now quite rare. Of the common otter there are some three or four varieties, differing only in size and color. The habits of the otter are very little known by the average man, and many of the trappers know little about this animal. They are rambling

animals, traveling the streams and lakes for great distances. They will travel sometimes ten or fifteen miles to visit some certain lake and perhaps will only stay there over night. Again, if undisturbed, they may remain for a month or more on some small pond.

They are on very friendly terms with the beaver and will frequently spend several weeks or months with a beaver family, apparently living in the same house. If an otter knows the location of two or more families of beavers, it will spend practically all of its time with one or other of the beaver families, or may make frequent visits from one to the other.

The otter is an exceedingly active animal and is so much at home in the water that it is able to catch fish with ease, and they are its principal food. Where fish are plentiful, they will kill them merely for pleasure, and what they can not eat, they will store up in some little bay or inlet along the shore. These, however, are not placed there for future use, as the otter will only eat food that is strictly fresh. Besides fish, they also eat large numbers of frogs, which are easily secured. They also eat muskrats and sometimes surprise these animals by coming up into the houses from below, thus preventing the inmates from escaping.

The otter does not travel much on land, ex-



cept when crossing country from one lake or stream to another. Their bodies being long and their legs short, walking is, for them, rather difficult and their mode of locomotion is a series of plunging leaps. On the snow or ice they move along rapidly by throwing themselves forward, sliding on their bellies. They are very playful animals and sometimes amuse themselves by sliding down a slippery bank. They also have landing places where they go to roll in the leaves and grass. In the spring they often lay for hours on some old log by the side of the stream, basking in the warm sun. They can remain a long time under water, and in winter travel long distances under the ice,—in fact, they prefer to travel this way whenever possible.

The home of the otter is a burrow in the bank of a stream, the entrance under water. At the end of the burrow is a nest lined with leaves and grass. They also, sometimes, den in hollow logs and the trunks of hollow trees. The dens are always located in the most secluded places, as far as possible removed from danger of discovery. The young are born in April or May and the number is from two to four.

With regard to raising the beaver and otter for profit, we will say that there has been comparatively few attempts at the business and we are unable to get any authentic data with regard

to these experiments. However, the animals do well in captivity, in zoos, and when kept by private individuals, as pets, and it is our opinion that if one will but go slowly and learn the habits and nature of the animals, a fair degree of success may be attained. It should be understood that conditions must be favorable and the animals should be given a range as nearly like their natural home as possible. Of course, one could not make a success of raising beavers in an open field. They must have wooded land where their natural food, quaking aspen (sometimes poplar), birch, willow, cottonwood, alder, is plentiful. A pool on some quiet little stream, bordered by a large tract of forest, would be the proper place. Beavers are not given to roaming, except during the summer months, and in such cases they always return to their home before cold weather comes.

We believe that the animals could not be raised successfully by any of the plans recommended for the rearing of other fur-bearing animals, but should simply be placed in a large enclosure, in the proper location, and allowed to take care of themselves. The animals will breed perfectly without any attention and there will be no danger of them killing their offspring, as is the case with other fur bearers. There is no doubt that the beaver and the otter will do

well in the same enclosure, for in the wild state they are very sociable and are fond of one another's company.

If otters are kept in an enclosed pond, it will be necessary to keep them supplied with food, and perhaps the best way would be to keep the ponds stocked with live fish and frogs. With the beaver the matter of providing food is more simple, as it will only be necessary to make the enclosure where their natural food is found in abundance.

## CHAPTER XII.

### KILLING, SKINNING AND STRETCHING.

**W**HEN "killing time" comes, care should be taken to not frighten the animals left for breeding purposes more than is absolutely necessary. All animals that are tame enough should be driven into a separate enclosure and out of sight of the others before being killed. Perhaps as good a method of killing as any is to use a good club, striking on the head just over the eyes or ears.

The above method is not for skunk, as they should be killed without the enclosure becoming so strongly scented. A pole several feet long with a strong loop on the end can be slipped over their head and well back on the neck. The animal can now be lifted clear off the ground and carried wherever the killing is desired. If the killer does not mind a little perfume he knocks them on the head, or if a barrel of water is handy they can be drowned and few scented. The drowning, however, is not recommended, as it takes the fur hours to dry and is therefore extra work. Some even claim that the water spoils the luster of the fur to a certain extent.

Some animals, such as coon and skunk, do not leave their dens during severe weather, so that it is advisable to begin selecting those that are to be killed days and even weeks in advance of the time decided upon. These should be placed in an enclosure or pen by themselves so that the remaining ones will not be disturbed.

Even those animals that come out to their feed regularly during the cold days should be handled in a similar manner so as not to disturb those to be kept.

The animals that are to be kept for breeding purposes need not be fed so heavily during the winter months or after those that were intended for market have been killed. Of course in the spring after the females have young, they must be fed heavily.

Some raisers, as soon as the young are weaned, select those that are to be killed the coming winter, keeping them separate from the breeding stock so that they can be fed properly. That is a great saving of food, as those for market should be fed much more than the breeders at this season — say during the months of September, October and November.

Much importance should be attached to the skinning and stretching of all kinds of skins so as to command the highest commercial value. The otter, foxes, marten, mink, opossum, civet

and skunk should be cased, that is, taken off whole.

Commence with the knife in the center of one hind foot and slit up the inside of the leg, up to and around the vent and down the other leg in a like manner. Cut around the vent, taking care not to cut the lumps or glands in which the musk of certain animals is secreted; then strip the skin from the bone of the tail with the aid of a split stick gripped firmly in the hand while the thumb of the other hand presses against the animal's back just above. Make no other slits in the skin, except in the case of the skunk or otter, whose tails require to be split, spread, and tacked on a board.

Turn the skin back over the body, leaving the pelt side out and the fur side inward, and by cutting a few ligaments, it will peel off very readily. Care should be taken to cut closely around the nose, ears and lips, so as not to tear the skin.

The beaver and raccoon should be skinned open; that is, ripped up the belly from vent to chin after the following manner: Cut across the hind leg as if to be "cased" and then rip up the belly. The skin can then be removed by flaying as in skinning a beef.

Many inexperienced trappers stretch coon skins too long and draw out the head and neck.

This can be avoided. Coon can be cased but most dealers prefer to have them stretched open.

You should have about three sizes of stretching boards for mink and fox. For mink they should be  $4\frac{1}{2}$  inches down to 3 inches and for fox from  $6\frac{1}{4}$  inches down to 5 inches wide; in length the fox boards may be 4 feet and the mink boards 3 feet.

The boards should taper slightly down to within 8 inches of the end for fox, and then rounded up to a round point. The mink boards should be rounded at 4 or 5 inches from this point. You will vary the shape of the board in proportion to the width. Stretching boards should not be more than  $\frac{3}{8}$  inch thick. Have the boards smooth and even on the edges. Other stretching boards should be made in proportion to the size and shape of the animal whose skin is to be stretched.

You should not fail to remove all the fat and flesh from the skin immediately after the skin is on the board. If a skin is wet when taken from the animal, it should be drawn lightly on a board until the fur is quite dry. Then turn the skin flesh side out and stretch.

Do not dry skins at a fire nor in the sun, nor in smoke. It often burns them, when they will not dress and are of no value. Dry in a well-covered shed or tent where there is a free cir-

ulation of air, and never use any preparation, such as alum and salt, as it only injures them for market. Never stretch the noses out long, as some trappers are inclined to do, but treat them as above described, and they will command better values. Fur buyers and dealers are inclined to class long nosed skins as "southern" and pay a small price for them, as southern skins are so much lighter than those of the north, in fur.

Foxes of the various kinds should be cased and put on boards fur side in for a few days, or until dry. As the pelt is thin, they soon dry, when they must be taken off and should be turned fur side out. In shipping, see that they are not packed against furs flesh side out.

Skunk should be cased fur side in, and stretched on boards for several days. The white stripe cut out, blackened, etc., reduces the value.

Mink should be cased fur side in and stretched on boards for several days or until dry.

Muskrat should be stretched fur side in, and a few days on the board will be sufficient. They are left as taken off, that is, fur side in. Cut the tails off when skinning—they are worthless.

Opossum are stretched on boards fur side in and are left in that condition after removing the boards. Cut the tails off when skinning—they have no value.



Raccoon should be stretched open (ripped up the belly), and nailed on boards or the inside of a building. Some dealers allow as much for coons cased, from any section, while others prefer that only Southern coon, if any, be cased.

Otter are cased and stretched fur side in. The pelt being thick and heavy, takes several days to dry properly. They are shipped flesh side out.

Beaver are split but stretched round and should be left in the hoop or stretcher for several days.

## CHAPTER XIII.

### DEER FARMING.

**T**HIS chapter is from Farmers' Bulletin 330, issued July 28, 1908, by United States Department of Agriculture and written by D. E. Lantz, Assistant, Biological Survey.

The term "deer" is here used in its general sense, in which it includes the elk, the reindeer or caribou, the moose and other species, besides those usually referred to as deer.

U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF BIOLOGICAL SURVEY,  
*Washington, D. C., June 3, 1908.*

SIR: I have the honor to transmit the accompanying manuscript on the subject of Deer Farming in the United States, and to recommend its publication as Farmers' Bulletin No. 330. As a result of the growing scarcity of game animals in this country the supply of venison is wholly inadequate to the demand, and the time seems opportune for developing the industry of deer farming, which may be made profitable alike to the state and the individuals engaged

therein. The raising of venison for market is as legitimate a business as the growing of beef and mutton, and state laws, when prohibitory, as many of them are, should be so modified as to encourage the industry. Furthermore, deer and elk may be raised to advantage in forests and on rough, brushy ground unfitted for either agriculture or stock raising, thus utilizing for profit much land that is now waste. An added advantage is that the business is well adapted to landowners of small means.

Respectfully,

C. HART MERRIAM,  
*Chief Biological Survey.*

HON. JAMES WILSON,  
*Secretary of Agriculture.*

#### INTRODUCTION.

The present bulletin discusses briefly the economic possibilities of raising deer and elk in the United States. It is believed that when the restrictions now imposed by State laws are removed this business may be made an important and highly profitable industry, especially since it will be the means of utilizing much otherwise unproductive land. The raising of venison should be, and is naturally, as legitimate a business as the growing of beef or mutton, and State

laws should be so modified as to permit the producer, who has stocked a preserve with deer at private expense, to dispose of his product at any time, under reasonable regulations, either for breeding purposes or for food.

The growing scarcity of game mammals and birds in the United States and the threatened extinction of some of them over large parts of their present ranges make the preservation of the remnant highly important. Very important also is the increase of this remnant so as to make game once more abundant. It is believed that by means of intelligent game propagation, both by the states and by private enterprise, many of our depleted ranges can be restocked with big game.

#### IMPORTANCE OF THE DEER FAMILY.

The members of the deer family (*Cervidæ*) rank next to the cattle and sheep family (*Bovidæ*) in general utility, and are the most important of the big game animals of America.

Wherever obtainable in quantity the flesh of deer of different kinds has always been a staple article of diet, and under present market conditions it is hardly necessary to say that venison is perhaps the most important game, being a favorite with epicures and also having a wide

use as a substitute for beef and mutton, which meats it resembles in texture, color, and general characteristics. Its flavor is distinctive, though it suggests mutton rather than beef. In chemical composition it is very similar to beef, though, judging from available data, it is not so fat as stall-fed cattle. The following figures show how it compares with beef and mutton: A lean venison roast before cooking has been found to contain on an average 75 per cent of water, 20 per cent of protein or nitrogenous material, and 2 per cent of fat; a lean beef rump, some 65 to 70 per cent of water, 20 to 23 per cent of protein, and 5 to 14 per cent of fat; a lean leg of mutton, 67 per cent of water, 19 per cent of protein, and 13 per cent of fat.

Venison, beef, and other common meats are very thoroughly digested, whatever the method of cooking. Venison may be roasted, broiled, pan-broiled, or used for making stews, in much the same way as beef. Venison, particularly steak, to be at its best, should be eaten as soon as possible after it is cooked.

The general popularity of venison is so great and the demand for it so widespread that overproduction is improbable. The other products of the deer—skins and horns—are of considerable importance, and in countries where deer are abundant and especially where large herds

are kept in semi-domestication, the commerce in both is very extensive.

#### THE DOMESTICATION OF DEER.

A number of species of the deer family have been proved to be susceptible to domestication. The reindeer, however, is the only one that has been brought fully under the control of man. The fact that the European red deer and the fallow deer have been bred in parks for centuries without domestication does not prove that they are less susceptible to the process than the reindeer. The purposes for which they have been held captive and the environment given them have been markedly different. It must be remembered, also, that few attempts have been made to rear and domesticate deer under intelligent management. The work has been largely a matter of chance experiment. If they had been as long under careful management as cattle, they would now, probably, be equally plastic in the hands of a skillful breeder.

But raising deer for profit does not necessarily imply their complete domestication. They may be kept in large preserves with surroundings as nearly natural as possible and their domestication entirely ignored. Thus the breeder may reap nearly all the profit that could be ex-

pected from a domestic herd, while the animals escape most of the dangers incident to close captivity. But the breeder who aims at the ultimate domestication of the animals, and whose herd approaches nearest to true domesticity, will in the end be most successful.

#### SPECIES TO BE SELECTED FOR BREEDING.

The number of species of deer suited for breeding in inclosures in the United States is great, though the chances for success are by no means the same for all. As a rule those native to America are to be preferred, since they are already acclimated. In selecting any species, similarity between its natural habitat and that to which it is to be transferred must be considered. Important, also, is its adaptability to varied conditions, as shown by former attempts to acclimatize it.

Unless they have shown a peculiar adaptability to such change, deer should not be taken from arid parts of the United States to humid parts. To a disregard of this principle are probably due many of the failures that have attended experiments in breeding the American antelope, the Columbia blacktail deer, the moose, and other animals in places differing widely from their natural ranges.

The history of attempts to acclimatize the several kinds of deer shows that some readily adapt themselves to a great variety of conditions, and efforts to introduce them into new countries have been almost uniformly successful. Such has been the experience with the axis deer, the Japanese and Pekin sikas, the red and the fallow deer of Europe, and especially with the wapiti, or Rocky Mountain elk, and the Virginia deer. While experiments with the foreign species named offer every promise of success to the owners of American preserves, there are obvious reasons for recommending the two native animals just mentioned as best suited for the production of venison in the United States.

#### THE WAPITI, OR ROCKY MOUNTAIN ELK.

The Wapiti (*Cervus canadensis*), including two related species and a geographic race, and known in America as the elk, is, next to the moose, the largest of our deer. It was once abundant over the greater part of the United States, whence its range extended northward to about latitude 60° in the Peace River region of the interior of Canada. In the United States the limits of its range eastward were the Adirondacks, western New Jersey, and eastern Pennsylvania; southward it reaches the southern Alle-



ghenies, northern Texas, southern Mexico, and Arizona; and westward the Pacific Ocean.

For the practical purposes of this bulletin all the forms of the wapiti are treated as a single species. At the present time the range of these animals has so far diminished that they occur only in a few scattered localities outside of the Yellowstone National Park and the mountainous country surrounding it, where large herds remain. Smaller herds still occur in Colorado, western Montana, Idaho, eastern Oregon, Manitoba, Alberta, British Columbia, and the coast mountains of Washington, Oregon, and northwestern California. A band of the small California valley elk still inhabits the southern part of the San Joaquin Valley.

The herds that summer in the Yellowstone National Park and in winter spread southward and eastward in Wyoming are said to number about 30,000 head, and constitute the only large bands of this noble game animal that are left. Although protected in their summer ranges and partially safeguarded from destruction in winter by the State of Wyoming, there is yet great danger that these herds may perish from lack of food in a succession of severe winters. Partial provision for winter forage has been made within the National Park, but the supply is inadequate for the large number of animals.

Further safeguards are needed to place the Wyoming elk herds beyond the reach of winter starvation.

In addition to the wild herds, there are a considerable number of elk in private game preserves and parks, as well as in nearly all the public zoological parks and gardens of this country. The herds in captivity form the nucleus from which, under wise management, some of the former ranges of this animal may be restocked and from which a profitable business of growing elk venison for market may be developed. At the present time this species affords a most promising field for ventures in breeding for profit.

### *Habits of Elk.*

The elk is both a browsing and a grazing animal. While it eats grasses freely and has been known to subsist entirely upon pasture, it seems to prefer a mixture of grass and browse.

The elk is extremely polygamous. The adult bulls shed their antlers annually in March or April, and new ones attain their full size in about ninety days. The "velvet" adheres until about August. While the horns are growing the bulls usually lead solitary lives; but early in September, when the horns are fully matured,

the rutting season begins. Fights for supremacy then take place, and the victor takes charge of as many cows as he can round up and control. The period of gestation is about  $8\frac{1}{2}$  months. The female does not usually breed until the third year, and produces but one calf at a time.

Although the elk is less prolific than the common deer and some other species that have been bred in parks, it increases fully as rapidly as the common red deer of Europe. Moreover, it makes up for any lack of fecundity by its superior hardiness and ease of management. It has been acclimatized in many parts of the world, and shows the same vigor and hardiness wherever it has been transplanted. In Europe it has been successfully crossed with Altai wapiti and the red deer, and in both instances the offspring were superior in size and general stamina to the native stock.

#### *Elk Venison.*

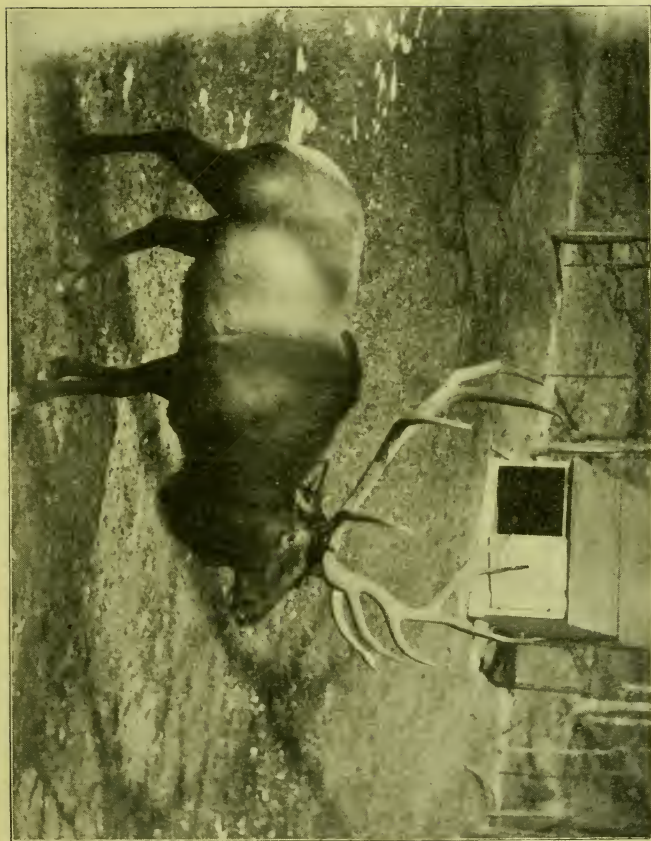
The flesh of the elk, although somewhat coarse, is superior in flavor to most venison. That of the bulls is in its best condition about the time the velvet is shed. By the time the rut is over, in October, their flesh is in the poorest condition. As the open season for elk is usually in October and November, and only bulls are

killed, it follows that hunters often obtain the venison when it is poorest. The meat is not best when freshly killed, but should be left hanging for four or five days before it is used. Of course fat elk are better eating than lean, and it is said that venison from castrated bulls is superior to any other.

### *Domestication of Elk.*

With few exceptions the early attempts to domesticate elk were made by men who were wealthy enough to disregard all thought of profit in raising them. They were usually placed under the care of servants and the bucks were left uncastrated until they became old and unmanageable. Soon the serious problem of controlling them outweighed the novelty of their possession, and one by one attempts at domestication were abandoned.

A desire to preserve this important game animal has caused a renewal of attempts to breed it in confinement, and at present there are small herds under private ownership in many places in the United States. The Biological Survey has recently obtained much information from owners of herds in regard to their experience in breeding and rearing the animals, and also their opinions as to the possibility of making the business of raising them profitable. Of about a



Elk in Enclosure. Shelter in Background.

dozen successful breeders, nearly all are of the opinion that raising elk for market can be made remunerative if present laws as to the sale of the meat are modified.

One especially important fact has been developed by the reports from breeders. It is that the elk readily adapts itself to almost any environment. Even within the narrow confines of the paddocks of the ordinary zoological park the animal does well and increases so that periodically the herds have to be reduced by sales.

The fullest reports that have been received by the Department of Agriculture from breeders of elk are from George W. Russ, of Eureka Springs, Ark., through H. N. Vinall, of the Bureau of Plant Industry.

Mr. Russ has a herd of 34 elk. They have ample range in the Ozarks on rough land covered with hardwood forest and abundant underbrush. The animals improve the forest by clearing out part of the thicket. They feed on buds and leaves to a height of 8 feet, and any growth under this is liable to be eliminated if the range is restricted. If not closely confined, elk do not eat the bark from trees, nor do they eat evergreens. In clearing out underbrush from thickets they are more useful than goats, since they browse higher. Goats, however, eat closer to the ground; and as the two animals get along

well together, Mr. Russ recommends the use of both for clearing up brushy land and fitting it for tame grasses.

The increase of elk under domestication is equal to that of cattle. Fully 90 per cent. of the females produce healthy young. An adult male elk weighs from 700 to 1,000 pounds; a female from 600 to 800 pounds. The percentage of dressed meat is greater than with cattle, but, owing to hostile game laws, experience in marketing it is very limited. An offer of 40 cents a pound for dressed meat was received from St. Louis, but the law would not permit its export. Mr. Russ says:

“From the fact that as high as \$1.50 per pound has been paid for this meat in New York City and Canada, and that the best hotels and restaurants pronounce it the finest of all the meats of mammals, we are of the opinion that if laws were such that domesticated elk meat could be furnished it would be many years before the supply would make the price reasonable compared with other meats. Elk meat can be produced in many sections of this country at less cost per pound than beef, mutton, or pork.”

Mr. Russ thinks that large areas of rough lands in the United States not now utilized, especially in localities like the Ozarks and the Alleghanies, could be economically used to pro-

duce venison for sale, and he regards the elk as especially suited for this purpose.

Another feature of Mr. Russ's report is of more than passing interest. He says:

"We find from long experience that cattle, sheep, and goats can be grazed in the same lots with elk, providing, however, that the lots or inclosures are not small; the larger the area the better. We know of no more appropriate place to call attention to the great benefit of a few elk in the same pasture with sheep and goats. An elk is the natural enemy of dogs and wolves. We suffered great losses to our flocks until we learned this fact; since then we have had no loss from that cause. A few elk in a thousand-acre pasture will absolutely protect the flocks therein. Our own dogs are so well aware of the danger in our elk park that they can not be induced to enter it."

\* Judge Caton, in his *Antelope and Deer of America*, also remarks on the animosity of elk toward dogs, and says that the does always lead in the chase of dogs that get into the elk park. If elk will attack and vanquish dogs and coyotes and thus help to protect domestic animals grazing in the same pastures, a knowledge of the fact may be of great advantage to stockmen who desire to give up herding sheep and resort to fenced pastures instead. The addition of a few



elk in the pasture may be an efficient protection from dogs, coyotes, and wolves. However, outside of fenced pastures elk do not always show themselves hostile to dogs and coyotes.

*Management of Elk in Inclosures.*

Lorenzo Stratton, of Little Valley, Cattaraugus County, N. Y., began experiments in breeding elk about sixty years ago. His plan of management consisted essentially in taming the calves when very young and continuing the petting process with the entire herd. He visited the animals daily in the pasture and always carried dainties to feed them. As the bulls became old and developed signs of viciousness, they were castrated, younger animals being used for breeding. He thus developed a thoroughly domesticated herd.

For economic reasons, it is not always possible to follow Mr. Stratton's plan. Those who grow the animals for venison and in large preserves would find it impracticable to tame all the calves. However, if elk or deer are grown for stocking parks or private preserves, the tamer they are the easier it will be to handle and ship them.

RANGE.—In choosing a range for elk, the natural food supply is important. They thrive best

in preserves having a variety of food plants—grasses, bushes, and trees. Rough lands, well watered with clear streams and having some forested area, are well adapted to their needs. About as many elk can be kept on such a range as cattle on an equal area of fair pasture. There should be thickets enough to furnish winter browse, but this should be supplemented by a supply of winter forage.

FOOD.—Except when deep snows cover the ground, elk will keep in good condition on ordinary pasture and browse; but a system of management that provides other food regularly will be found more satisfactory. Hay and corn fodder are excellent winter forage; but alfalfa hay has proved to be the best dry food for both elk and deer. A little oats or corn—whole or chopped—may be fed each day. Elk are fond of corn, and feeding it affords excellent opportunities for winning their confidence and taming them. The same may be said of salt, which should be furnished liberally to all deer kept in inclosures. Running water, although not essential, is of great importance in maintaining elk in good condition.

FENCE.—Elk are much less nervous than ordinary deer, and less disposed to jump fences. When they escape from an enclosure they usually return of their own accord. If tame, they may

be driven like cattle. Ordinarily, a 5-foot fence of any kind will confine elk. Henry Binning, of Cora, Wyo., writes us that a 4-foot woven-wire fence is ample for these animals. A small enclosure in which a vicious bull elk is to be kept should be higher and of stronger material. Mr. Russ's report, already partly quoted, states that where lumber for posts is cheap a good elk fence may be built for \$200 a mile. But the actual cost will, of course, vary greatly according to style, price of labor, nearness to market, and other circumstances.

**COST OF STOCK.**—The cost of stocking an elk preserve is not great. Usually surplus stock from zoological parks or small private preserves may be obtained at low cost, varying with the immediate demand for the animals. At times they have sold for less than \$20 a head, and with the present restrictions on sale, low prices are likely to continue. A few years ago T. J. Wilson, of Lewisburg, Ohio, paid \$165 for three animals. A Michigan breeder recently offered to deliver a dozen head, sex and age not given, all fine specimens, for \$500. This is, of course, a low price, not more than cattle would bring and less than the venison would be worth if it could be sold. If restrictions on the sale and shipment of venison from private preserves were removed, prices of the stock would, of course,

soon advance, and necessitate a greater outlay in starting the business.

**VICIOUS MALE ELK.**—The male elk is ordinarily docile, but in the rutting season the older ones often become ill-tempered and dangerous. Several tragedies connected with attempts to domesticate elk are matters of history. One was recorded by Judge Caton in his *Antelope and Deer of America* as having occurred in his own park. Another took place at Bull City, Osborne County, Kans., in October 1879, and resulted in the instant death of Gen. H. C. Bull, the mortal wounding of two other men, and the serious injury of another, from the attacks of an infuriated bull elk that had previously been regarded as extremely gentle.

Wild and unconfined deer and elk flee from man under nearly all circumstances, but when wounded and closely pressed they have been known to attack hunters. It is unlikely that, even in the rutting season, a wild bull elk would attack a human being. But the tame or partially tame animals that have become familiar with man are to be feared and should not be approached in that season without extreme caution. A male elk or deer that has once shown viciousness can not again be trusted.

The remedy for viciousness in the male elk is castration. It is unsafe to keep an uncastrated

male elk over 4 years old, unless he is in a strongly fenced inclosure from which visitors are excluded. The effects of castration are to make the animal docile and to greatly enhance his value for venison. This is in accord with observed results in the production of beef, pork, and mutton. Venison grown in domestication under a system in which the male animals intended for slaughter are castrated should be uniformly of the highest grade and far superior to that obtained in the wild state during the usual open season for hunting. This consideration is of the greatest importance in fixing the final status of venison grown under domestication.

#### *Breeding the Virginia Deer.*

The Virginia, or whitetail deer (*Odocoileus virginianus*) is the common deer of the United States. Including the half dozen geographic races that occur within our borders, it is distributed over most of the country, except Nevada and the major portions of Utah, Arizona, Washington, Oregon, and California. It is extinct in Delaware and practically so in a number of States in the Middle West. South of our borders a number of closely related species occur.

In view of the wide natural range of the

whitetail deer, its adaptability to nearly all sections of the United States can not be doubted. Testimony as to its hardiness in parks and preserves is not so unanimous as that concerning the wapiti; but the general experience of breeders is that with suitable range, plenty of good water, and reasonable care in winter, raising this deer for stocking preserves or for venison may be made as profitable as any other livestock industry. Not only do deer thrive on land unsuited for cattle or horses, but, like elk, they may be raised to great advantage in brushy or timbered pastures fully stocked with cattle or horses, as the food of deer rarely includes grass.

Advocates of the Angora goat industry state that within the United States there are 250,000,000 acres of land not suited to tillage or to the pasture of horses, cattle, or sheep, which are well adapted to goats. Much of this land is suited also to deer and elk, and can be utilized for these animals with less injury to the forest cover than would result from its browsing by goats.

The whitetail deer has often been the subject of experiments in domestication. The beauty of these animals, especially the fawns, appeals to every admirer of wild life, and early settlers of the country soon learned how easily they

could be tamed and how promptly they attached themselves to the persons who fed them. The dangerous character of the same pets, especially the males, when grown up was soon learned also. It followed that the domesticating process usually ended with the maturity of the first subject, which was soon disposed of or banished to a safe inclosure.

The propagation of the Virginia deer has seldom been undertaken in a systematic way. The animals have often been bred in parks for pleasure or in large preserves for sport, but the economic possibilities in raising them have received little attention. Recently breeders have recognized the fact that they are profitable under proper management and would be much more so were conditions for marketing live animals and venison more favorable.

#### *Experiences of Breeders.*

The Biological Survey has reports of successful experience in raising Virginia deer from more than a dozen persons, located in different parts of the country, who are now engaged in the business. The management of the herds varies slightly with the surroundings and the object for which they are kept.

Thomas Blagden, of Washington, D. C., be-

gan raising deer in 1874. After an experience of over a third of a century he is confident that the business can be made profitable. In his own herds he has carefully avoided in-breeding by securing new bucks from time to time. His stock is vigorous and of the large size characteristic of the Adirondack and other northern deer. Consequently the animals are in demand for breeding purposes, the bucks bringing \$50 each and the does, \$75. He feeds grain, using corn and a mixture of bran and meal, and during the summer cuts as much wild forage as possible. He finds that the animals prefer the rankest weeds to the choicest grass. Of the various kinds of hay, they prefer alfalfa. He provides abundant water at all times.

John W. Griggs, of Goodell, Iowa, writes that he has been engaged in raising deer for about fourteen years. Until two years ago he sold all his surplus stock for parks, but since then has disposed of about half of it for venison. For park purposes he gets \$20 to \$30 a head, but they bring fully as much or more when fattened for venison. As to management of deer, Mr. Griggs writes:

“In raising a large herd the park should be divided into two or three lots, and one plowed each year and sown to red clover, mustard, rape, and seeds of different kinds of weeds. Bluegrass



and timothy are useless. Corn is the principal grain I feed. I feed it winter and summer. In winter I feed also clover hay, oat straw, and weedy wild hay. Deer when rightly handled are very prolific, and from 50 does one can count on 75 fawns. They can be raised profitably for venison—very profitably until overdone; but I would not advise one to go into it on a large scale without previous experience with deer.”

The report received from C. H. Roseberry, of Stella, Mo., although less enthusiastic than others, is quoted because his herd approaches more nearly a state of true domestication. Under date of January 13, 1908, Mr. Roseberry wrote as follows:

“My experience in breeding the common or Virginia deer covers a period of seventeen years, beginning in March, 1891, when, as a boy of 16, I built a small inclosure of  $1\frac{1}{2}$  acres to confine a single doe that was captured as a fawn in the neighboring forest.

“A buck and other does were secured from year to year, until in 1900, by purchase and natural increase, my herd numbered 25 head of all ages.

“From 1891 to 1901 I lost every year from disease an average of 20 per cent. The climax came in the drought year of 1901, when my loss

was 50 per cent from the disease known as "black tongue."

"I am convinced that, like cholera in swine, individuals recovering from this disease are immune from further attack. Apparently all of my herd were afflicted. The survivors and their progeny constitute my present breeding stock. I have made no purchases since 1901, nor have I suffered any loss from disease.

"For the last seven years my herd has averaged 70 per cent increase, all of which I have sold at satisfactory prices. I began selling at \$20 per pair of fawns at 4 months of age and \$30 per pair of adults. I now get \$40 and \$60, respectively. I sell almost exclusively for pets and for propagating purposes, although a few surplus bucks have been sold for venison, averaging me 15 cents per pound gross weight.

"If we except the goat, I know of no domestic animal common to the farm that requires so little feed and attention as the deer. My herd has a range of only 15 acres, two-thirds of which are set to white clover, bluegrass, and orchard grass. I provide also a small plat of wheat or rye for winter pasture. With the above provision, in this latitude, no feed is required between April 15 and November 15. During the rest of the year a ration of corn, bran, or other mill feed somewhat smaller than that required

for sheep, in connection with a stack of clover or pea hay to which they have free access, is sufficient to keep them in good condition. Deer eat with relish nearly all of the common coarse weeds, and for clearing land of brush they are, I think, second only to the common goat.

“Probably the greatest expense connected with the business of raising deer is the fencing. Another item of trouble and expense, when the animals are raised for pets, requiring that they be handled and shipped alive, is the fact that the fawns must be taken from the does when 10 days old and raised by hand on cow’s milk. They are quite easily raised in this way, with but slight percentage of loss, but require frequent and careful attention for the first month. When they are allowed to run with the does their natural wildness can not be overcome, no matter how gentle the does may be.

“I have found the business profitable on the lines indicated. I believe they could be profitably bred for venison alone—certainly with less trouble and expense, since the fawns could be reared by the does and the trouble and expense of raising by hand would be eliminated.

“My experience does not coincide with that of some other breeders in respect to the weakening of reproductive powers of deer by the confine-

ment in parks. I hav no barren does. Usually they produce a single fawn at two years of age; afterwards twins, and in rare cases triplets."

*Management of Virginia Deer.*

As to the management of deer little need be added to the statements from practical breed-



Tame Deer Eating Watermelon.

ers already given. Virginia deer are polygamous, like cattle; the rutting season is in November; the period of gestation is about seven months, and the fawns are born in May or June. Young does usually breed when about 17 months old and have but one fawn the first

time; afterwards the commonly produce twins. The fawns are spotted until the first shedding of the hair in the fall.

While deer are chiefly browsing animals, in captivity they eat nearly every kind of vegetation, including most kinds of garden stuff. They are fond of acorns, beechnuts, chestnuts, and other mast. Lily pads, leaves, lichens, and mosses are freely eaten. With plenty of range and an abundant variety of plants there need be, therefore, no apprehension concerning the deer's food. A good supply of running water must be provided, and the animals should have access to rock salt. If the browse and pasturage are scant, a small ration of grain should be fed. Of the grains, corn is generally recommended as a food; there is no waste, as the deer pick up every grain. Coarse hay full of weeds is preferable to timothy or other tame hays, except alfalfa. Of clover hay, deer usually eat the blossom heads greedily, but waste the other parts. In winter feeding is necessary everywhere, and in the northern half of the United States shelter of some kind should be provided.

The remarks about castrating elk apply as well to the common deer. A number of vigorous bucks, however, must be kept with any considerable herd of does, for a single buck can not serve an unlimited number. Frequent changes

of blood by introducing new bucks should be practiced to avoid inbreeding.

*Wild Deer in Private Game Preserves.*

Individual owners, as well as associations, have established large private preserves in many parts of the country and stocked them with deer and other big game. The objects have been to preserve the animals and to provide sport for the owners. In the free life under the protected conditions generally provided, deer do remarkably well, the increase being even more rapid than in small parks. There can be no doubt of the success of ventures in propagating the Virginia deer under natural conditions as wild game, as is proved by the experience of a large number of hunting clubs and private owners.

Deer in Buckwood Park, a New Jersey preserve of 4,000 acres, belonging to Charles S. Worthington, increased in the ten years between 1892 and 1903 from 19 to about 400 head, and the number was then lessened because it was thought too large for the permanent sustaining capacity of the park. The St. Louis Park and Agricultural Company have about 1,000 deer and 400 elk in their 5,000-acre preserve in Taney County, Mo. The Otzinachson Rod and Gun

Club six years ago placed about 90 deer, mostly does, in their 4,000 acre park in Clinton County, Pa. These have multiplied to nearly 2,000 head, and a further increase of about a thousand fawns is expected during the present season (1908). Doubtless these experiences are not exceptional.

The good effect of such preserves on the supply of game in the State should not be overlooked. While they may temporarily restrict the hunting privileges of a few citizens, they ultimately become a source of game supply secondary in importance only to State preserves or game refuges. Already a number of private reserves have become overstocked, and game has escaped or been turned over to the State to become the property of the people. The success of private enterprise in propagating large game in inclosures has thus become an object lesson for State game commissioners and others, and suggests the feasibility of the State's undertaking a similar work for the people.

#### GAME LAWS IN RELATION TO DEER FARMING.

The chief obstacle to profitable propagation of deer in the United States is the restrictive character of State laws governing the killing, sale, and transportation of game. Many of the States, following precedent, lay down the broad

rule that all the game animals in the State, whether resident or migratory, are the property of the State. A few States except game animals that are "under private ownership legally acquired." A few others encourage private ownership by providing a way in which wild animals—deer and the like—may be captured for domestication. Generally, when private ownership of game is recognized by law, the right to kill such game is granted, but the owner is hampered by the same regulations as to season, sale, and shipment that apply to wild game. One by one, however, State legislatures are coming to recognize the interests of game propagators, and game laws are gradually being modified in accordance with the change of view.

The chief source from which deer and elk may be obtained for stocking preserves is from animals already in captivity. These must be transported from place to place or there can be no commerce in them, yet the laws of many States absolutely forbid their shipment. The laws as to possession and transportation of deer carcasses make the shipping of venison also illegal. General export of venison is legal from only six of the States, and three of these have no wild deer left to protect.

The laws concerning the season for killing and the sale of deer are often equally embarrass-



ing to those who would produce venison for profit. The owner of domesticated deer can not legally kill his animals except in open season. Owners of private preserves are similarly restricted and are limited to the killing of one or two animals in a season. More than half the States and territories absolutely forbid the sale of venison. A few forbid the sale of venison produced within the State, but permit the sale of that imported from other States, a most unjust discrimination against home industry.

The following States have recently modified their laws so as to provide, under regulations, for the sale of deer from private preserves. Transportation and even export are included in some of them.

ARKANSAS.—Possession, sale, and shipment of deer or fawns is permitted when they have been raised in captivity for domestic purposes and are accompanied by an affidavit from the raiser.

COLORADO.—Owners of private preserves under a license are permitted to sell and ship deer or other quadrupeds that are accompanied by an invoice. A fee is required for each animal sold.

ILLINOIS.—Any person who raises deer for market may kill and sell them at any time in the same manner as other domestic animals.

INDIANA.—The provisions of the law as to pos-

session and sale do not apply to persons who have under ownership or control any deer raised in a deer park.

MASSACHUSETTS.—The owner may sell his own tame deer kept on his own grounds.

MINNESOTA.—Persons who desire to domesticate deer, moose, elk, or caribou may secure a permit to do so from the State board of game and fish commissioners by paying a fee of 50 cents for each animal in captivity and a like fee for each animal added later by natural increase or otherwise. The animals kept in captivity may be sold or shipped within or without the State, by permission of the commissioners.

MISSOURI.—Deer or elk, alive or dead, may be shipped from any private preserve and sold in the markets of the State when accompanied by a tag furnished by the game warden of the county, showing whose property it is, where killed and to whom shipped.

NEW HAMPSHIRE.—The Blue Mountain Forest Association may kill elk, deer, or moose in their preserve for one month after the open season, and at any time may transport them outside the State.

NEW YORK.—Deer may be sold during the open season; and moose, elk, caribou, and antelope from private parks may be sold during the same period. Common carriers may transport ani-

mals into the State for breeding purposes, but may not transport venison unless it is accompanied by the owner.

NORTH CAROLINA.—Seventeen counties permit the owner and keeper of an inclosed game preserve, who raises deer for use or sale, to kill, sell, or use those raised or kept in said inclosure.

PENNSYLVANIA.—Owners of game preserves who hold a game propagating certificate may sell and transport deer or fawn alive for propagating purposes only, after securing the written consent of the president of the board of game commissioners.

In three or four other States game “under private ownership, legally acquired,” is supposed to be exempt from general provisions of the game law; but in a test case as to its sale or export it is doubtful whether the courts would so hold without more specific provision legalizing such commerce.

#### SUMMARY.

The domestication of deer and elk offers an interesting field for experiment, as well as remunerative returns for the investment of capital.

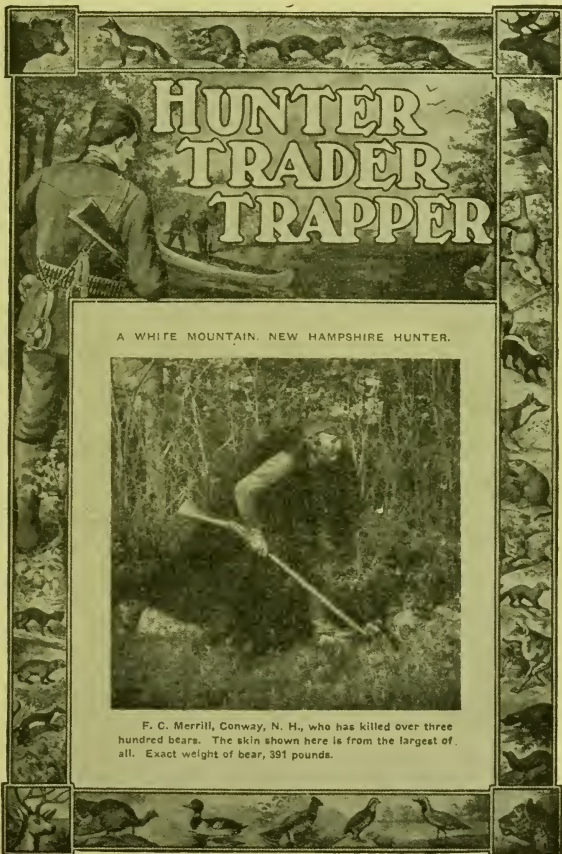
The wapiti and the Virginia deer can be raised successfully and cheaply under many different conditions of food and climate. The production of venison and the rearing of both spe-

cies for stocking parks may be made profitable industries in the United States.

Instead of hampering breeders by restrictions, as at present, State laws should be so modified as to encourage the raising of deer, elk, and other animals as a source of profit to the individual and to the State.

Safeguards against the destruction and sale of wild deer in place of domesticated deer are not difficult to enforce. For this purpose a system of licensing private parks, and of tagging deer or carcasses sold or shipped, so that they may be easily identified, is recommended.

It is believed that with favorable legislation much otherwise waste land in the United States may be utilized for the production of venison so as to yield profitable returns, and also that this excellent and nutritious meat, instead of being denied to 99 per cent of the population of the country, may become as common and as cheap in our markets as mutton.



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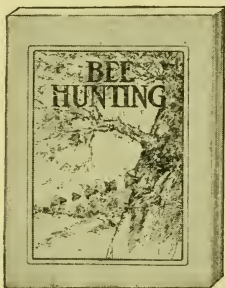
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